

Scholars' Association
Onassis Foundation

Financial and Economic Crisis:
The Return to Stability

Conference Proceedings
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Edited by P. Prodromidis

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Karatzas Building Auditorium, National Bank of Greece

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Preface

It is with great pleasure that the Onassis Foundation set under its aegis this international conference that was organized by the Onassis Scholars' Association and refers to the current economic and financial crisis that the world has been experiencing since August 2007. The problem is particularly acute for Greece, which, in addition, has been hit by its longstanding fiscal and structural problems. What is continuously demanded since then is the return to economic stability and growth. Both practitioners and academics, countries and organizations, search for ways to overcome the crisis. We congratulate the Scholars' Association for taking this initiative and for working hard to organize a well-structured conference inviting top academics and practitioners who made significant contributions to this issue. All these are presented in this volume; we hope that it will prove useful to policy makers and to those endeavouring to set in order the economic and financial system.

Anthony Papadimitriou
President of the Alexander S. Onassis Public Benefit Foundation

The undertaking of scientific events falls inside the scope and objectives of the Onassis Scholars' Association that was created in 1986 and currently counts 1600 members out of the almost 5000 scholars of the Onassis Foundation. Furthermore, the association's activities aim at contributing to the main issues that confront our society, utilizing its human resources. The economic crisis that has been with us for a long time now, along with the intense economic crisis in Greece, motivated our association to proceed towards the organization of this international conference. On this, our association was encouraged by the Onassis Foundation which, in addition, provided its invaluable support for the realization of this conference. The Association would like to express its gratitude to the Foundation. We thank all the distinguished speakers and the participants for their contribution in the form of presented material, questions and comments, wishing that this volume puts a stone on the issue of overcoming this crisis.

Panayotis Alexakis
Chairman of the Onassis Scholars' Association

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The Organizing Committee also wishes to thank Elisavet Pantazi, Constantina Chryssanthakopoulou and Fotini Oikonomou for their invaluable support.

Opening Ceremony

Anthony Papadimitriou, President of the Alexander Onassis Benefit Foundation

Stavros Labrinidis, MEP, Vice Chairman of the European Parliament

Dimitrios Sioufas, MP, former Speaker of the Greek Parliament and former Minister of the Greek Government

Dimitrios Avramopoulos, MP, former Minister of the Greek Government and former Mayor of the city of Athens

Anthony Papadimitriou:

Αξιότιμε κύριε Πρόεδρε της Βουλής, τέως Πρόεδρε της Βουλής, κύριε Υπουργέ, κύριοι υπουργοί, κύριε Λαμπρινίδη, distinguished guests, ladies and gentlemen. It is with great pleasure that I welcome you to this conference, on behalf of the Board of Directors of the *Alexander S. Onassis Public Benefit Foundation*, and in particular on behalf of the Vice President, John Ioannidis, the Secretary of the Board, Marianna Moschou and Vice President Emeritus, Paul Ioannidis, who are present here. We have warmly embraced the initiative of the *Onassis Scholars' Association* to organize a conference on the current world economic and financial crisis and the return to economic stability.

Originally, about a year ago, when this idea was discussed, we were really not anticipating that this conference would still be topical. We thought of it as a scientific conference which would discuss the reasons, the causes of the crisis as a past event. However, as things have it, this crisis did not pass; in fact, it deepened and became probably one of the worst crises since the Great Depression of the 1930s. Regrettably, this Conference is now more topical than ever.

I would like to highlight a number of features of why the *Onassis Foundation* decided to hold this conference. First of all, it is a scientific conference. The views of the speakers are their own scientific opinions; and of course, we welcome scientific dialogue and the free expression of differing views. However, particularly economics, and, in this case, economic dealing with a crisis which is still in progress, do have important social and political implications. Any economic theory, which can or may be discussed by the speakers and participants who are here today, has specific connotations. And we cannot consider this crisis as a purely economic event. It does have social implications and it does have political implications; and maybe these are inseparable from the purely scientific and economic preoccupations of some of the speakers.

In ancient Greece there was a saying, which I don't remember who said it actually,[1] but I remember it from a poem of Kavafis: «*Θεοί μεν μελλόντων, σοφοί δε προσιόντων, άνθρωποι δε γιγνομένων [αισθάνονται]»,* which means that only Gods know about what is going to happen in the future; wise men know of what is coming, in the short run; and men, mere human beings, only know what is actually happening

[1] L. Flavius Philostratus, (c. 170-247 AD).

to them on this day. We have here a panel of wise men, I hope, and they may tell us what is going to happen, not just with the aim of saying what were the causes of the crisis; but in particular I would hope, and I anticipate that this will happen, to discuss what can be done to stop the crisis, to mitigate its effects today, as well as to find ways of redressing the economy, of taking things back to where they were, not in 2008, which was a very difficult year in the sense that it was a bubble in every sense of the word, but prior to that, when things were more stable.

Scientists propose theories and clarify their consequences. And the practitioners, and by that I mean not just the politicians, but also the bankers, the industrialists, the entrepreneurs (and we have here a number of entrepreneurs, ship owners amongst them who have honored us with their presence today), all of us in fact who act in an economic way wonder "What are the consequences of the things that have happened?" The *Onassis Foundation* is, of course, deeply involved in all these things. We have a business, we run a business in shipping, real estate, and portfolio management among others. We are exposed to the US markets and our shipping is affected by developments in China. We have real estate in various parts of the world; and we are concerned about the consequences of the crisis in Rumania, in the central European countries and other places.

So we look forward to participating in this conference. We look forward to a positive outcome from this conference, in the sense that, hopefully, we shall all have a more clear view, if not actually agree, on what should be done. Thank you very much.

Stavros Labrinidis:

Mr. President of the *Onassis Foundation*, former President of the Greek Parliament, distinguished guests, ladies and gentlemen, it is a great honor for me to be here and to have the opportunity to congratulate the *Onassis Foundation* for one additional, exceptional step towards helping us understand and, as Greeks, presumably with some passion, but mostly with thought and compassion, why we got here and how we can get out of this. And not just us Greeks, but us Europeans as well, I would add.

Mister President, given your example, I would proclaim to be human, not even wise. The best I can do is just tell you what I think is happening now and to relay to you the sense of what we at the European Parliament feel is happening now, and how we should change it, and how we got here. And I will limit myself to stating, very

schematically I confess, four main reasons why Greece primarily, Europe secondarily, found itself in this position, and some lessons for the future.

The first reason is very Greek-specific. Our country has structural problems, which we all know: Corruption, a huge public sector, a health sector that siphoned billions of euro (more than it needed), a political system that didn't work well. They have to change. No matter what happened with in the financial crisis, whether or not there was a collapse in 2007, we as a country will have to change these, as difficult as that might be.

The second reason is again Greek-specific and it is what took a very problematic economy to the brinks. In other countries you hear complains about corruption and complains about the public sectors, but in Greece, primarily due to governance, these were augmented in the past five or six years. I think that some facts and figures here that are particularly well known (I am not sure if they are to our foreign guests) are very telling. In the past five years, debt increased by 120 billion euro, though it had only increased by 180 billion since the beginning of the modern Greek state, back in the 1800s. Our public sector increased in the past five years, by about 200,000 employees, both permanent and temporary. A public sector already over-bloated, mind you, beforehand. Our competitiveness collapsed in five years, from about 27th in the world, according to the *World Economic Forum* figures, to about 74. As I mentioned, this was again a very Greek-specific reason. This is why we had to take extremely tough measures to save the country, as it is often said. This is what pushed the country to the brink of bankruptcy.

But the other two reasons that I want to touch upon very briefly are not Greek-specific. They are European and world-specific. Indeed, they are the ones that we are discussing and legislating for at the European Parliament, as we speak. The first one has to do with the lack of economic governance in Europe. Though many may talk about economic governance, they may have a different perspective. In my view, when we collectively adopted the common currency, the euro, about ten years ago, there was a presumption that the monetary union would bring about a convergence of our economies, automatically. This was proven to be false. Indeed, what we saw over the past ten years was a divergence of our economies; especially the South diverging from the North. Now, one could claim and, unfortunately, if you read the German press of the past few months, you will see quite a number of those claims, that this is DNA related, that somehow, the southerners have a problem. I.e., they do not work,

they steal and sleep a lot. However, this, obviously, is not the cause. Instead, I submit to you, that the southern and the northern economies were structurally very different. The South relied mostly on services, tourism, agriculture (though Spain, Greece and Portugal are by no means identical). And the North focused mostly on heavy industry and exports. For a convergence to occur, the South would have to uproot its economic structure dramatically in order to get closer to the North in the course of the decade. This is an extremely difficult undertaking, as even the best politicians or economists confess. Instead, the South found it much easier to take advantage of environment created by the euro in order to borrow cheaper, and grow and import more, usually products from the North. Many times I say to my German friends, "I wish you came to Greece and saw all the BMWs and Mercedes automobiles in the streets; then you might feel a little better about those bad Greeks and what they have done to your economy." Indeed, it is that kind of cheap lending and cheap borrowing that the euro brought about, that permitted countries in the South to grow as they did. So when the bubble burst, Greece was first to suffer the consequences. For that reason, our perspective regarding economic governance is quite different compared to the that of others. We insist that Europe has to invest in growth, not simply in strict measures of applying the *Stability and Growth Pact*; because without growth, you are stuck in a vicious circle. Cutting, cutting, cutting does not by itself get an economy out of a crisis. Some countries, such as Germany, have up to now seen economic governance mostly as a whip, not as a carrot. They do not have the vision of investing in a coordinated economic fashion on the competitive advantages of the South, and Greece has different advantages than Germany. Instead, they appear to assume that if they punish more and threaten more, and ensure that countries keep the debt and deficit ratios inline, that would be good enough. I think they are wrong and what they do is very dangerous; and I am pleased to tell you that in the European Parliament, this debate is not going their way, even though it does in the European Council, at this stage.

Final reason and I close, Mr. President, is the financial markets. There is no question that in the past few months, Greece with its twin problems, structural difficulties and five years of collapse, found itself with its back to the wall more than it ever did in the past. Greece turned out to be the weak link in the eurozone and it was punished for that. There is no question in my mind that E.U. took a very long time, though some may say a very short time by European standards, but a very long

time by real economy standards, in order to bring into place the financial mechanism that supports Greece and then the rest of eurozone. In that time span, the markets hit and did hit very hard. I think there is a big debate going on about this. People will tell you, "Well, no, come on! The markets are rational, do not try to find a scapegoat here. You know, if you were a poor pensioner in the US, where would you invest, in Greece or in Germany?" And there is, in fact, some truth in this. But if one only looks at what "Standard & Poor's" did to Greece and then to Spain, just in the past couple of weeks, one cannot help but see the irrationality of otherwise "rational" markets. It is, many would claim, preposterous to downgrade a country because it is not taking tough enough measures to reign in the deficit; and then, once it takes these tough measures to downgrade it again on the grounds that these will kill growth. This is crazy. And this is exactly what the E.U. is coming in to try to legislate. Do not strangle the markets. Ensure that this kind of game, which may be cause of concern when played on big companies, for dozens of people may lose their jobs, cannot and should not be played on countries, where millions of people's lives are at stake.

Mr. President, thank you for the invitation and this excellent opportunity. I very much look forward to listening to your wise men. Thanks.

Dimitrios Sioufas:

Καλή σας μέρα. Καταρχάς, συγχαρητήρια για την πρωτοβουλία του *Ιδρύματος Ωνάση*, να οργανώσει αυτή τη διεθνή συνάντηση για την παγκόσμια οικονομική κρίση. Και δράττομαι της ευκαιρίας από αυτό το οποίο είπε πριν λίγο ο Πρόεδρος του Ιδρύματος, ο κύριος Αντώνης Παπαδημητρίου, ότι μόνον οι θεοί γνωρίζουν τι θα γίνει. Να σας γυρίσω λίγο πίσω, σε μια συνομιλία την οποία είχε στις αρχές της δεκαετίας του '60 ο Πρόεδρος των ΗΠΑ, Kennedy, με τον τότε Πρόεδρο της Ινδίας, Radhakrishan. Ήταν μια εξαιρετικά έντονη παγκόσμια συζήτηση και αναμέτρηση των δύο κόσμων, όταν ο Πρόεδρος Kennedy του είπε ότι δεν μπορούμε να ελέγξουμε τα γεγονότα. Και η απάντηση του Ινδού Προέδρου ήταν: «Μπορεί να μην μπορούμε να ελέγξουμε τα γεγονότα, αλλά μπορούμε να ελέγξουμε τη στάση μας απέναντι στα γεγονότα». Και με αυτή την αφορμή για τη σημερινή συνάντηση, καλωσορίζω τους διακεκριμένους καλεσμένους μας από το εξωτερικό, τους καθηγητές, αλλά και τους λαμπρούς επιστήμονες από την Ελλάδα που βρίσκονται πάνω στο πάνελ, με τον κεντρικό τραπεζίτη της χώρας, τον κ. Προβόπουλο, και περιμένουμε να ακούσουμε τις απόψεις τους με πάρα πολύ μεγάλη προσοχή.

Θέλω να καταθέσω τρεις σκέψεις. Η πρώτη σκέψη είναι ότι δεν είναι ο Νότος μόνον που έχει προβλήματα. Πάρτε το παράδειγμα της Ιρλανδίας. Η "τίγρης" των προηγουμένων δεκαετιών είναι η χώρα, η οποία βρέθηκε να αντιμετωπίζει την οδυνηρότερη των κρίσεων και μάλιστα πάρα πολύ νωρίτερα. Άρα η κρίση ήταν και στον Βορρά και μάλιστα σε μια χώρα, η οποία χωρίς να έχει δομικά προβλήματα, όπως πολλές από τις οικονομίες του Νότου, είναι και αυτή στο επίκεντρο και των ελλειμμάτων και του χρέους, αλλά και του δανεισμού. Αυτό ως πρώτη παρατήρηση.

Η δεύτερη παρατήρηση: Η χώρα μας έχει προβλήματα, αλλά δεν είναι η μόνη. Εδώ τα αισθανόμαστε περισσότερο έντονα από ό,τι άλλες χώρες, αλλά ανάλογα προβλήματα έχει η Πορτογαλία, έχει η Ισπανία, έχει η Ιταλία· αλλά χωρίς καμία αμφιβολία, προβλήματα ελλειμμάτων αλλά και χρέους άνω του 60% της Συνθήκης του Μάαστριχ έχει και η Γαλλία και η Γερμανία και πολύ περισσότερο η Μεγάλη Βρετανία. Έβλεπα πριν λίγο καιρό στον αγγλικό Τύπο, τον κεντρικό τραπεζίτη της Μεγάλης Βρετανίας να λέει πριν τις εκλογές της 6ης Μαΐου, ότι η κυβέρνηση η οποία θα προέλθει από τις εκλογές της 6ης Μαΐου δεν θα επανεκλεγεί για μια γενιά. Τι εννοούσε με αυτό; Ότι θα αναγκαστεί να πάρει πάρα πολύ οδυνηρά μέτρα για να φέρει σε λογαριασμό και εκεί τα δημόσια οικονομικά.

Ενδεχομένως στη χώρα μας έχει δημιουργηθεί ένα κλίμα, θα το έλεγα εθνικής κατάθλιψης, θα το έλεγα ένα κλίμα εθνικής μελαγχολίας. Αλλά είναι στο χέρι μας αυτή την κατάσταση να τη φέρουμε σε λογαριασμό. Δεν θα αναφερθώ ούτε στα λάθη ούτε στις παραλείψεις, αλλά θα σταθώ μόνο στα θετικά: Ότι τις τελευταίες δεκαετίες, αυτή η χώρα, με τη συνδρομή όλων των κυβερνήσεων και όλων των πολιτικών δυνάμεων, περνάει την ηρεμότερη πολιτική περίοδο, με σταθερή πολιτική δημοκρατία, από της ιδρύσεως του ελληνικού κράτους, πριν από 200 περίπου χρόνια. Και αν κάνει κανείς μια διαδρομής την ελληνικής ιστορίας, θα δει ότι αυτή η πορεία δεν ήταν καθόλου εύκολη. Και έχει βρεθεί να είναι το 2010, με όλα αυτά τα προβλήματα, μία από τις 25 πιο πλούσιες, πιο ανεπτυγμένες χώρες στον πλανήτη. Άρα έχει τις δυνατότητες γιατί έχει το ανθρώπινο δυναμικό, έχει μια γεωστρατηγική θέση που μπορεί να την αξιοποιήσει. Αισιοδοξώ. Εκείνο το οποίο πρέπει όμως ο πολιτικός κόσμος και κυρίως η κυβέρνηση να προσέξει είναι ότι οι παρεμβάσεις και τα μέτρα δεν θα πρέπει να θίξουν τον πυρήνα της κοινωνικής συνοχής. Δεν εννοώ το κοινωνικό κράτος, αλλά την κοινωνική συνοχή. Και αυτό το οποίο γίνεται, μπορεί με μια μεζούρα (είτε της Ευρωπαϊκής Ένωσης, είτε της Κεντρικής Ευρωπαϊκής Τράπεζας, είτε και του Διεθνούς Νομισματικού Ταμείου) να μετράει το αποτέλεσμα

εξόδου από την κρίση, αλλά κάθε φορά θα πρέπει να βλέπουμε τι εφαρμόζεται, σε ποια χώρα εφαρμόζεται, κάτω από ποιες συνθήκες, με κύριο γνώμονα να μην διαταράξουμε την κοινωνική συνοχή. Αν αυτό το πράγμα μπορέσουμε και το καταφέρουμε, είμαι αισιόδοξος ότι θα μπορέσουμε να βγούμε από την κρίση και να βγούμε πιο γρήγορα από ό,τι μπορεί να προβλέπει το οποιοδήποτε πρόγραμμα. Και επίσης, να μην μηδενίζουμε ποτέ όσα έγιναν τα προηγούμενα χρόνια, από οποιαδήποτε κυβέρνηση. Έγιναν σωστά πράγματα και ενδεχομένως να έγιναν και λάθη και παραλείψεις.

Καλώς ήρθατε στην Ελλάδα, οι καλεσμένοι από το εξωτερικό. Ευχαριστούμε πολύ τους διακεκριμένους έλληνες επιστήμονες και εδώ και από το εξωτερικό, και εύχομαι καλή επιτυχία σ' αυτή τη συνάντηση. Ευχαριστώ πολύ.

Dimitrios Avramopoulos:

Mr. Chairman, ladies and gentlemen, first of all, allow me to express my thanks for giving me the opportunity to share some moments with you. But beyond that, I would like to tell you that I am here representing the parliaments' principal opposition party, one of the mainstream political parties in Greece; and as you understand, we all greatly interested on the topic of your conference and the "Return to Stability."

Of course, the return to stability is preceded by another chapter, which we could entitle "Going into the Crisis," and it is the one on which I would like to focus by making a few remarks. Talking on behalf of a part of the political system, and noting that countries around the world now face problems similar to those faced by Greece today, we wonder on the main role of the political system. It is to create the necessary institutions in order to prevent a crisis from taking wider dimensions and especially touching the very sensitive social fiber?

This is the problem that Greece faces today: Beyond the European mechanisms, beyond what we must do in order to overcome this crisis, we must analyze how the political system of Greece functioned during the so-called *Μεταπολίτευσις*, i.e., since the last dictatorship. In my view, the political system of Greece, unfortunately, although we managed to establish democracy, we did not manage to make our county more productive and we did not manage to enhance our democracy institutionally. Political parties that governed Greece during the last forty years, approximately, gave powers that belonged to the Greek people, to what we call "partycracy," bureaucracy, and unfortunately unions. Thus, beyond a certain moment, the political system was

not in a position to face all these challenging problems in an efficient way. That is where we are today. So one of the main lessons to be learned from what we experience in Greece is how to enhance our democracy and make it more productive.

I personally believe that it also answers another issue concerning our political habits. We must understand that nothing can be faced in a pragmatic and efficient way, if we do not create a framework of common logic with regard to facing and managing crises. The problem is not where the mistakes brought us or when these mistakes were made; but how to face reality and, through that, come out with a new political system. All parties are judged today in the eyes of the Greek public opinion, of the people. What we all want to see is a message for our future: hope, optimism and concrete measures in financial, in economic, but also in political terms. I believe that this is the duty of the political system; and I understand that all these prominent scientists, academicians, politicians who will speak in this forum will also touch on this dimension, a dimension that has to do with the organization of our society.

If I selected these two remarks to make, it is because I believe that we all – it doesn't matter what is the political party or the political ideology we represent in this gathering – must understand that we have a share on what has happened to our country. The problem is not the quantity of the contribution in this problem but how the whole system works. So, one first remark has to do with what I mentioned before, namely, that we must create a framework of common logic, as far as the internal function of the system is concerned. The second is to foster and deepen the national understanding in front of this problem. And the third and most important is to ensure social cohesion. Because, from the moment this crisis gets out of political control, unfortunately, and this is my fear, it will be have very dramatic social repercussions. And that is what we have to prevent from happening.

I don't want to add anything more to the discussion. Once again, I want to express my gratitude to the *Onassis Foundation* for having taken this initiative: An initiative, my dear friend, President, which should have been taken by all parties, already. Thank you very much.

First Session

Chair

Panagiotis Korliras, Athens University of Economics and Business and Centre of Planning and Economic Research

Speakers

George A. Provopoulos, Bank of Greece and University of Athens

Malcolm Sawyer, Leeds University Business School

Philip Arestis, University of Cambridge and University of the Basque Country

Michael Faure, University of Maastricht

The origins of the present crisis in Europe and lessons for the euro

George A. Provopoulos
Governor of the Bank of Greece

It is a great pleasure to take part in this conference on the "Financial and Economic Crisis" organised by the Scholars Association of the Onassis Foundation. Aristotle Onassis, the originator of this foundation, was, among other things, a creative thinker and a philanthropist. He arrived in Greece in the early 1920s as a refugee and, through wise decision-making and hard work, became an internationally-prominent entrepreneur.

However, he never forgot his origins and, as exemplified by this foundation, passed on to future generations the ability to advance scientific and artistic knowledge.

My presentation will deal with the origins of the present crisis in Europe and the lessons of the crisis for Europe's single currency, the euro. Greece is at the epicentre of the crisis; my presentation will, therefore, highlight the Greek roots of the crisis.

1. The origins

To provide some perspective to the present situation, let us look back just a year. At that time, conferences were being held throughout Europe celebrating the tenth anniversary of the euro. Academic economists were writing articles speculating that the euro was poised to challenge the U.S. dollar as the leading international currency. What a difference a year makes! Today, analysts are writing about a possible break-up of the euro zone, a notion that, as I will explain, is absurd. Meanwhile, the euro has fallen sharply against the dollar since the beginning of this year, and the speculation that the euro will soon replace the dollar as the leading international currency has subsided.

How did we come so far so fast? How could Greece, a country with only about 2 ½ per cent of euro-area GDP, cause tremors of such magnitude that they have shaken the foundations of Europe's single currency? To answer these questions, we need to consider the basis upon which monetary union in Europe has been built.

The inception of the euro zone on January 1, 1999 marked a world premiere. For the first time in history, sovereign states - - eleven at that time - - abandoned their own

national currencies in favor of a common currency, the euro, and surrendered their monetary-policy sovereignty to a newly-created, supranational institution, the European Central Bank. All previous monetary unions among sovereign states involved at least an element of coercion. For example, the fifteen countries that comprised the former Soviet Union had no choice but to use the rouble as their currency. In the case of the euro zone, in contrast, the members willingly gave up their national currencies for the euro.

The euro was adopted because a monetary union confers a number of important advantages on participating countries.

- For countries with histories of high inflation, such as Greece, it lowers inflation expectations and, therefore, nominal interest rates. With lower nominal interest rates, the cost of servicing public-sector debt is reduced, facilitating fiscal adjustment and freeing resources for other uses.
- With low inflation, economic horizons lengthen, encouraging borrowing and lending at longer maturities. The lengthening of horizons and the reduction in interest rates stimulate private investment and risk-taking, fostering economic growth.
- For all participating countries, it does away with the possibility of competitive devaluations, thus boosting intra-area trade.
- It introduces a common measure of value across countries, increasing price transparency and, therefore, competition.
- It eliminates the costs of converting currencies, thereby facilitating trade and investment.
- It eliminates exchange-rate fluctuations among participating countries, thereby reducing risk premia.
- It eliminates the need of foreign-exchange reserves for intra-area transactions, thereby reducing the cost of conducting business.

These advantages of a common currency exist so long as the central bank of the monetary union delivers price stability and is credible. In the case of the euro zone, the ECB quickly established its anti-inflation credentials and became credible.

So much for the benefits of the euro. What about the costs? In joining the euro area, a country gives up two potential tools to adjust the domestic economy in the event of a country-specific shock. First, it loses the ability to set its own domestic monetary policy. Second, it loses the ability to change the nominal exchange rate of

its currency. To compensate for the loss of these two potential tools, a country should possess the following:

- relatively-low fiscal imbalances, so that fiscal policy can be used counter-cyclically in case a country-specific shock occurs, and
- flexible labour and product markets, so that the country can be competitive without having to rely on changes in the exchange rate of a domestic currency to achieve and/or maintain competitiveness.

The need of low fiscal imbalances and flexible labour and product markets is especially important in the euro area. Unlike the United States, for example, the euro area does not have a central fiscal authority that can redistribute fiscal resources from a low-unemployment region to a high-unemployment region to reduce the effects of asymmetric shocks. Moreover, because of language and cultural differences among European countries, labour is less mobile among euro-area countries than it is among regions of the United States. For these reasons, it is all-the-more important to have adjustment mechanisms in place at the *national* level in the euro zone. Low fiscal imbalances and flexible product and labour markets provide mechanisms to smooth the adjustment to shocks.

Against the backdrop of these advantages and constraints of a common currency, let me describe some salient features of the Greek economy since it became the twelfth member of the euro area on January 1, 2001.

2. The Greek Economy: 2001-2009

Entry into the euro area provided Greece with an improved, stability-oriented environment. The ECB was - - and is - - the guardian of monetary stability. The Stability and Growth Pact was supposed to help ensure fiscal discipline. These changes in the economic environment were crucial benefits for a country that had experienced persistent budget deficits, and inflation rates that were at double-digit levels from the early-1980s until the mid-1990s.

Not surprisingly, the new environment, especially the low interest rates, contributed to robust real growth rates. From 2001 through 2008, real GDP rose by an average of 3.9 per cent per year - - the second-highest growth rate (after Ireland) in the euro zone - - underpinned by household spending for consumption, housing investment, and business investment. Inflation, which averaged almost ten per cent in the decade prior to euro area entry, averaged only 3.4 per cent over the period 2001

through 2008.

On the surface, therefore, the Greek economy appeared to have entered a new era marked by robust growth and low inflation. Beneath the surface, however, long-standing problems were continuing.

- Fiscal policy was pro-cyclical throughout the period 2001 through 2009, with deficits consistently exceeding the Stability Pact's limit of 3 per cent by wide margins and no durable progress in lowering the public debt-to-GDP ratio.
- Expansionary fiscal policy was mainly expenditure-driven, leading to a rise in the share of government spending; in the three years, 2006 to 2009, the share of government spending increased from 43 per cent of GDP to 50 per cent.
- Although inflation in Greece during 2001 through 2009 was low by the *country's* historical standards, inflation was relatively-high by *euro-area* standards. Inflation was, on average, more than one percentage point higher per year than in the rest of the euro area. Wage increases, adjusted for productivity changes, also exceeded the average increases in the rest of the euro area.
- With both prices and wages growing at relatively high rates, competitiveness declined. In the period 2001 through 2009, competitiveness, as measured by consumer prices, declined by almost twenty per cent; as measured by unit labour costs, competitiveness declined by over 25 per cent.
- With relatively high real growth rates and declining competitiveness, the current-account deficit, which already had topped 7 per cent of GDP in 2001, rose to about 14 ½ per cent of GDP in both 2007 and 2008.

The large and growing fiscal and external imbalances were not sustainable. On various occasions, including the publication of our *Annual Reports* and our bi-annual *Monetary Policy Reports*, during the past several years the Bank of Greece has stressed the unsustainability of these imbalances and the need of urgent policy adjustments. Unfortunately, our calls for actions were not heeded. The present financial crisis is the outcome of the lack of policy responses to the imbalances.

3. The Crisis in the Greek Economy

The present financial crisis marks a third stage of the crisis that erupted in August 2007, following the collapse of the US subprime mortgage market, and escalated with the demise of Lehman's Brothers thirteen months later. Yet, during the first two years

of the global financial crisis, the Greek economy escaped relatively unscathed. There were few, if any, forewarnings that the Greek economy would become the object of the speculators' attention. The spread between Greek and German sovereign ten-year bonds, a key indicator of relative risk as perceived by credit markets, hovered around 130 basis points during the period August through October 2009. Earlier in the year, at the height of the Lehman's phase of the crisis, spreads had climbed to over 300 basis points. That earlier widening of spreads occurred despite the fact that markets were expecting a fiscal deficit of less than 4 per cent of GDP and a debt-to-GDP level of only about 96 per cent of GDP, figures that would be repeatedly revised upward during the remainder of the year.

In the fall of 2009, two developments combined to disrupt the relative tranquillity of Greek financial markets. First, in October the newly-elected Greek government announced that the 2009 fiscal deficit would be 12.7 per cent of GDP, more than double the previous government's projection. In turn, the 12.7 per cent figure would undergo further upward revisions, bringing it up to 13.6 per cent of GDP. Second, in November 2009 Dubai World, the conglomerate owned by the government of the Gulf emirate, asked creditors for a six-month debt standstill. That news rattled financial markets around the world and led to a sharp increase in risk aversion.

In light of the rapid and sharp worsening of the fiscal situation in Greece, financial markets and rating agencies turned their attention to the sustainability of Greece's fiscal and external imbalances. The previously-held notion that membership in the euro area would provide an impenetrable barrier against risk was shaken. It became clear that, while such membership provides protection against exchange-rate risk, it cannot provide protection against credit risk.

The subsequent course of events has made global headlines, so I do not need to dwell on details. Allow me, however, to highlight the following.

- First, in contrast to the origins of initial stage of the global crisis in August 2007, which involved a crisis in the U.S. banking sector that spilled over to the real economy, in Greece the problems posed by both the fiscal and external imbalances spilled over to the real economy. The Greek banking sector has had sound fundamentals as reflected, for example, in high capital-adequacy and Tier 1 ratios.
- Second, the crisis in Greece contributed to widening spreads in other euro-area countries judged to have large fiscal and/or external imbalances. The spread of the

crisis to other parts of a geographical area represents a continuation of a process observed in other recent crises, including those in Latin America in 1994/95 and in Asia in 1997/98.

- Third, the commitment by the Greek government to reduce the fiscal deficit from last year's 13.6 per cent of GDP to 8 per cent this year and below 3 per cent in 2013, and the 110-billion euro support package agreed between the Greek government and the European Commission, the ECB, and the IMF, are unprecedented in terms of magnitudes. I have no doubt that the government will take whatever measures are needed to attain its fiscal objectives to ensure fiscal sustainability. It will, however, take some time to convince the markets of the government's determination to achieve those goals. Decades of fiscal mismanagement and faulty fiscal reporting have caused the markets to adopt Saint Thomas's dictum: to see is to believe.
- Fourth, I am also confident that the government will implement the structural reforms and privatisations that are part of the support package. These are needed to reduce excessive bureaucracy and rigidities in the labour, product and service markets that discourage investments in high-value added sectors.

Allow me to say a few words about Greece's debt situation. Some market analysts are of the opinion that Greece's debt dynamics are unsustainable. They are wrong. They overlook the fact that a crucial element underlying the evolution of the debt-to-GDP ratio is the denominator of that ratio, which includes the growth of real output. In this connection, the combination of factors comprising the support program -- that is, fiscal discipline, the liberalisation of markets, privatisations, and measures to increase the efficiency of the bureaucracy -- will contribute to confidence, decrease the size of the public sector, reduce interest-rate spreads, and boost competitiveness and economic growth. In turn, higher growth, along with declining fiscal deficits, will cause a reversal of the rise in the debt-to-GDP ratio observed in recent years. Moreover, fiscal discipline will add to saving, thereby supporting private investment and growth potential. These effects may not be visible immediately, but they will materialize and will revitalise the Greek economy.

4. Some Lessons

What, then, are the lessons that can be drawn from the crisis? In my view, some of the key lessons concern the limits to the use of fiscal policy and are as follows.

- First, the view that fiscal policy can be used in a flexible way to smooth the effects

of shocks in a monetary union has been shown to be overly simplistic. As the case of Greece illustrates, the systematic use of fiscal policy in the past can lead to problems of debt-sustainability, constraining the *current* use of fiscal policy. I need to mention that fiscal expansions in many countries with relatively-low debt levels in the immediate aftermath of the Lehman crisis were successful in lessening the impact of the dislocation in their real economies. Even in those countries, however, there is now a need for decisive actions to achieve a lasting and credible consolidation of public finances.

- Second, rather than smoothing the adjustment to shocks, in Greece pro-cyclical fiscal policy has been the major *source* of shocks. It has led to an increase in the size of the government sector in the economy, increasing bureaucratic inefficiency and crowding-out the traded-goods sector of the economy.
- Third, fiscal transfers in the face of *permanent* shocks can have the perverse effect of locking resources in place, and, thereby, preventing necessary adjustment. The remedy for non-competitive areas of the economy is *not* to channel even-larger amounts of government spending into those areas but rather to introduce structural reforms that improve overall competitiveness by allowing the transfer of resources to the more-dynamic sectors of the economy.
- Fourth, as we have seen, a country with large fiscal imbalances that is in a monetary union can create negative spillover effects, raising interest rates and increasing the cost of debt servicing for other members of the union. The credibility of the ECB provides the potential of a low interest-rate environment, which can foster higher growth and employment throughout the euro area. However, as recent events have underlined, monetary policy needs to be complemented by responsible fiscal policy to maintain such a low-interest-rate environment.

5. Conclusions

As I mentioned at the outset, the euro area has the capacity to deliver enormous advantages to its members. To benefit fully from those advantages requires fiscal responsibility and open and flexible markets. It also requires a governance structure that will ensure that the Stability and Growth Pact fulfils its role as a key pillar of the euro area.

The support package agreed between the Greek government and the European Commission, the ECB and the IMF provides the government with a unique

opportunity to adjust the economy. The package provides a blueprint for sharply reducing fiscal imbalances and for the undertaking of structural reforms. It will set-off positive growth dynamics that will, among other things, lower the debt-to-GDP ratio. The growth potential of the Greek economy is enormous. It is my firm belief that the present crisis will prove to be the catalyst that will reshape the economy, making Greece a competitive and prosperous member of the euro zone. It is also my firm belief that it will not be long before articles again start talking about the euro's strong position as an international currency.

Ladies and gentlemen, thank you for your attention.

Macroeconomic policies for economic recovery and stability

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1. Introduction

The financial crises of 2007/09, largely but not wholly emanating from USA and the UK, developed into the 'great recession' on a worldwide basis (with a few countries exempted from actual falls in output) through various forms of contagion based on the financial and trade linkages between countries. The 'great recession' has not yet developed into a 'great depression' through governments allowing the automatic fiscal stabilisers to operate along with some discretionary measures on the fiscal side and very low policy interest rates and forms of 'quantitative easing' on the monetary side. For many countries, recession (defined in terms of falling output on a quarterly basis) ended in the second half of 2009. In general, the initial macroeconomic policy responses were largely those which could be described as Keynesian in nature, and as such stood in some contrast to the previously prevailing policy orthodoxies (exemplified in the policies embedded in the Stability and Growth Pact of the Economic and Monetary Union) of limits on the size of budget deficits. But after around 1 to 1 ½ years of fiscal policies for stabilisation of the economy, there are now considerable dangers of a retreat into deflation as countries seek to reduce their budget deficits. There are now considerable dangers are that the pre-Keynesian notions are re-asserting themselves – again exemplified by the pressures within EMU for the reductions in budget deficits without regard for the consequences for employment and output. There are clear dangers of 'double dip' recession and of the 'great recession' being the first part of a 'great depression'.

In this paper we focus on a range of longer term issues with regard to macroeconomic policies though with some reference to some immediate policy issues.. The background to this comes from the implications of the 'great recession' for the macroeconomic policy framework, and this is considered in the next section. This is followed by two sections which make proposals for the development of different agendas for fiscal policies and then for monetary policies. The remaining two main

[1] I am grateful to Philip Arestis for comments on an earlier draft and for on-going discussion on the topics of this paper.

sections consider briefly some issues relating to current account deficits and to financial governance.

2. The neo-liberal macroeconomic policy agenda

It would be reasonable to describe the dominant sets of macroeconomic policies across many countries prior to the onset of the financial crisis as focusing on monetary policy which in turn was largely using interest rates set by independent central banks in pursuit of inflation targeting with fiscal policy at most consigned to the role of automatic stabilisers around a budget position close to balance. A fiscal policy of constraint and consolidation and a monetary policy to the fore and conducted by an 'independent' central bank focused on a low inflation objective have been the hall marks of macroeconomic policies around the world for the past two decades or more. [1] This approach to macroeconomic policy was itself based on the view that the macroeconomy was essentially stable. It could be said that the 'new consensus macroeconomics' (NCM) underpins the dominant approach to macroeconomic policy (monetary policy directed to inflation, downplaying fiscal policy to that of, at most, an automatic stabiliser)—or at least that the 'new consensus' was formulated (as in, for example, Meyer, 2001) as a reflection of (justification for?) the prevailing policy orthodoxy. The thrust of the 'new consensus' approach (for a critique, see Arestis and Sawyer, 2008a; Sawyer, 2008) is based on farsighted optimising individuals interacting through competitive markets where there is an equilibrium interest rate ('the natural rate of interest') at which the inflation rate will be constant and output will be at the capacity level (associated with full employment). The invocation of Taylor's rule (wherein the setting of the interest rate depends on the deviation of inflation from target and the size of the output gap) would ensures that the central bank acts in a stabilising rather than destabilising manner. Even if the Central Bank actually wished to follow Taylor's Rule, it may not be able to do so through lack of information on 'trend' level of output (and hence the calculation of output gap) and on the 'natural rate of interest'; we can go further and argue that the 'trend' level of output can only be calculated *ex post* and that the 'natural rate of

[1] In his paper introducing the term 'Washington consensus', John Williamson included 'fiscal discipline' as one (indeed the first mentioned) of the ten propositions for 'policy reforms that most of official Washington thought would be good for Latin American countries' (Williamson, 1990). In the additions for an "Augmented" Washington Consensus, Rodrik (2006) included independent central banks and inflation targeting.

interest' is a theoretical concept which may not have a real world counterpart. The actions of the Central Bank may well de-stabilise rather than stabilise an economy.

Blanchard et alia (2010) note (as many others have) that in the past twenty years or so, 'fiscal policy took a backseat to monetary policy. The reasons were many: first was wide scepticism about the effects of fiscal policy, itself largely based on Ricardian equivalence arguments. Second, if monetary policy could maintain a stable output gap, there was little reason to use another instrument. … Third, in advanced economies, the priority was to stabilize and possibly decrease typically high debt levels; in emerging market countries, the lack of depth of the domestic bond market limited the scope for countercyclical policy anyway. Fourth, lags in the design and the implementation of fiscal policy, together with the short length of recessions, implied that fiscal measures were likely to come too late. Fifth, fiscal policy, much more than monetary policy, was likely to be distorted by political constraints. The rejection of discretionary fiscal policy as a countercyclical tool was particularly strong in academia. In practice, as for monetary policy, the rhetoric was stronger than the reality.' (pp.5-6).

The NCM framework, widely accepted not only in the academic sphere but also by policy makers (for example, Bank of England, 2005; and the economic models used in many Central Banks, Fagan and Morgan, 2005), underpins central bank independence and the inflation targeting policy implication. But the NCM is based, notoriously, on an absence of banks (as often remarked, banks are not mentioned in the index of the major book on the 'new consensus' Woodford, 2003). Yet it is banks that transmit changes in the policy interest rate through lending and borrowing interest rates, and more significantly it is banks that create credit bubbles. The NCM has also virtually eliminated any role for fiscal policy and relies on monetary policy to ensure that the economy operates close to its supply-side equilibrium. Any hint of instability, arising, for example, from the cumulative causation processes analysed by Wicksell (1898), was notable by its absence.

This general policy framework was widely seen as having been a success in underpinning the relatively low inflation of the past 15 or so years, and a reduction in the degree of economic fluctuations (the 'great moderation'). 'But we now realize that economists and policymakers alike were lulled into a false sense of security by the apparent success of economic policy ahead of the crisis—a period known as the "Great Moderation" when fluctuations in both output and inflation in most advanced

economies were successfully reduced and living standards rose. The crisis has taught us a lot and we want to proactively draw lessons from the "Great Recession."'.[1]

The 'great recession', the financial crisis, and, to a much lesser extent, the recent record on inflation has not only cast considerable doubts on claims of a 'great moderation' but also on the effectiveness and applicability of the 'consensus' macroeconomic policies of the past two decades. These doubts arise in (at least) three ways. First, the financial crisis serves as a vivid reminder that financial crises are a rather frequent feature of market capitalist economies, albeit not usually on the scale in terms of countries affected of the financial crisis of 2007/09. Financial crisis bring substantial costs, and their prevention (or at least mitigation) should be at the front line of macroeconomic policy. The crisis has also been a reminder of the importance of credit and credit relations, and of the inherent instabilities of the financial system (in the spirit of Minsky, 1982) and thereby put into doubt the relevance of a policy framework and macroeconomic theory which are based on stability. Second, monetary policy was directed to inflation. We have argued elsewhere that inflation targeting has not been responsible for the low inflation which has generally been experienced but in any case we argue that directing monetary policy towards financial stability is a more important than inflation targeting (Arestis and Sawyer, 2008b). Third, fiscal policy was limited to at best the role of automatic stabilisers. The 'great recession' has shown the relevance of having effective automatic stabilisers but also the necessity of discretionary fiscal policies and a willingness by governments to run substantial deficits in the face of major downturns in demand.

3. Imbalances, savings gluts and fiscal policy

The relationship between savings and investment has been central to much macroeconomic analysis. It has been one of the key battlegrounds in macroeconomic theory as to how intentions to save and intentions to invest relate to one other. The mainstream view has often been based on either a loanable funds approach whereby the interest rate adjusts to bring them into balance or on a Central Bank interest rate setting process (such as that formalised in Taylor's rule) which performs a similar task. The Keynesian view has been that it is quantity adjustments of output etc which serve to bring savings and investment into balance. Budget deficits are then seen as a

1 According to Blanchard, as quoted in www.imf.org/external/pubs/ft/survey/so/2010/INT021210A.htm (accessed May 2010).

way of absorbing 'excess' savings (intended savings over intended investment) without the deflationary implications.

Mainstream economics has long stressed the role of budget constraints within which individuals operate, and that the optimisation of utility under assumptions of non-satiation leads individuals to operate at their budget constraint. The NCM extended that to include governments and to place individuals facing an intertemporal budget constraint (so that in effect over a life time, expenditure equals income). But these intertemporal budget constraints bring in a form of Say's Law (that is the essential equality between income and expenditure) and that any individual's deficit/surplus positions will even out over time (enforced through the budget constraint). There is then the sense that the market enforces the sustainability of debt on each individual, and that adjustments of deficit positions are not problematic. The manner in which the assumption of an intertemporal budget constraint appears to rule out any need for fiscal policy and budget deficits is discussed in Arestis and Sawyer (2009).

The Keynesian approach emphasises not so much that there are budget constraints but rather that individuals may well operate within their budget constraints (that is save) and that the financial surpluses plus financial deficits of sectors sum to zero. If one sector of the economy seeks to accumulate a surplus another must be prepared to operate with a deficit. It is always debatable whether in such a situation it is the surplus sector which is 'forcing' the deficit sector into deficit, or vice versa. The deficits of sectors (e.g. countries) appear to continue for many years with the consequent build-up of debt, which can then be followed by a sharp adjustment process as the funding of the deficit suddenly dries up.

It has been argued (notably Bernanke, 2005; Greenspan 2010[1]) that there was a 'savings glut' (during the 2000s) – presumably relative to investment – which put downward pressure on interest rates, which enabled the US (amongst others) to run large current account deficits as the USA drew on these savings coming from the emerging markets. If that is correct, then lower interest rates may be less an indicator of monetary 'loosening' – in Wicksellian terms if the natural rate of interest had been lowered, then actual interest rates (as set by the central banks) should follow, and for

[1] 'Whether it was a glut of excess intended saving, or a shortfall of investment intentions, the result was the same: a fall in global real long-term interest rates and their associated capitalization rates. Asset prices, particularly house prices, in nearly two dozen countries accordingly moved dramatically higher.' (Greenspan, 2010)

demand and inflation it should be the difference between the actual rate and the natural rate. But (as Patanak, 2010, points out) this line of argument assumes a translation between a 'loanable funds' view of interest rate determination and the reality of (at least short-term) interest rates as set by the Central Banks. More significantly Patanak (2010) argues that this overlooks the basic Keynesian point that 'excess' savings would have a deflationary impact on the economy – whereas the period in the mid 2000s was one of unprecedented global growth.

The notion of a possible 'savings glut' raises two issues. First, whether the level of savings which would correspond to a high level of economic activity is broadly in line with the level of investment. If investment is linked with the growth potential of the economy, the implication for investment (net) is roughly v (capital output ratio) times the growth of output; which with growth of around 2 ½ per cent, v of around 4 would imply net investment of around 10 per cent of GDP; depreciation on capital stock approximately equal to v times GDP, would be v.δ GDP (δ rate of depreciation) say around a further 10 per cent. However, investment demands will change over time. Some have argued that the era of financialisation has tended to reduce levels of investment[1]. Others would see environmental concerns and lower growth rates as also tending to reduce investment.

Keynes raised the issue from the savings perspective: 'the richer the community, the wider will tend to be the gap between its actual and is potential production; and therefore the more obvious and outrageous the defects of the economy system. For a poor community will be prone to consume by far the greater part of its output, so that a very modest measure of investment will be sufficient to provide full employment; whereas a wealthy community will have to discover much ampler opportunities for investment if the saving propensities of its wealthier members are to be compatible with the employment of its poorer members. If in a potentially wealthy community the inducement to invest is weak, then in spite of its potential wealth, the working of the principle of effective demand will compel it to reduce its actual output, until, in spite of its potential wealth, it has become so poor that its surplus over its consumption is sufficiently diminished to correspond to the weakness of the inducement to invest.' (Keynes, 1936, p31).

[1] For review see, for example, Hein (2010).

Second, savings generally take the form of the acquisition of financial assets, and the feature of financial assets is that whilst they are assets for the holders they are liabilities for the issuer of the financial assets. In a monetary production economy, assets are matched by liabilities, debts by credits. The development of the financial system tends to have the feature of separation between those who save and those who undertake investment. In an underdeveloped financial system where an enterprise is largely reliant on funds supplied by its owner, there is a close link between saver and investor. This is all to state the rather obvious – but contains the significant point that there will be build-ups of liabilities and assets, and of debts and credits. There will inevitably times when the liabilities cannot be repaid.

Another feature of the past decade or so was the degree to which there were differences between countries in their current account position, and hence in the inflow or outflow of capital from the countries concerned. The large deficits of USA, and UK and Spain, and the large surpluses of China, Germany and Japan are well-known. This is though a more general phenomenon: 'During the 1990s, the average absolute current account imbalance for a G20 economy was 2.3% of GDP. In the three-year period from 2006-08, the average imbalance had risen to 5.4% of GDP. However, not only has the size of the current account imbalances been unusual, the pattern of countries running deficits and those running surpluses is also the opposite of what one would normally expect. Standard economic theory predicts that emerging economies—with relatively low capital intensity, high rates of return and the prospect of higher income levels in the future—should save less than they invest and, therefore, run a current account deficit. Developed economies, meanwhile, with mature capital stocks and low internal rates of return, would typically be expected to save more than they invest and, therefore, to run a surplus.' (Daly and Broadbent, 2010). Many have argued that the flow of capital from the emerging markets to the USA (and UK) does not conform to 'common sense' or to a capital flow based on differential rates of profits (under the assumption that capital rich countries have a low rate of profit based on marginal productivity considerations, and capital poor countries a high rate of profit). But the capital outflows from Germany and Japan do not fit that pattern. Also investment tended to rise faster in the OECD area than output and faster than investment had increased in the previous decade (comparing 1996-2007 with 1985-1995). OECD area as a whole (OECD *Economic Outl*ook Tables 50 and 51) ran a

current account deficit – which was broadly speaking equal to the deficit of USA, and hence the rest of the OECD area were in broad balance).

When it is recognized that fluctuations in economic activity arise largely from fluctuations in the level of private sector demand, then the need to use offsetting variations in public sector demand becomes readily apparent. The objections raised against fiscal policy through appeals to Say's Law and Ricardian equivalence clearly do not apply when the very reason for a downturn is a failure of Say's Law. That is to say, budget deficits are only required because private demand falls short of supply.

One objection to fiscal policy then remains, namely the issue of lags of observation, implementation and impact. This objection, it should be remarked, would also apply to monetary policy, particularly in the form of frequent decisions over interest rates which has characterised monetary policy in recent years. Automatic stabilisers of the tradition form (that is tax revenues varying through movements in the level of output) are rather useful in this regard and depend on the progressivity of the tax system (and expenditure) and the scale of government. There is a good case for the enhancement of these automatic stabilisers – whether through a more progressive system, increased scale of government activities or through changes in tax rates triggered by prespecified changes in the level of economic activity (Baunsgaard and Symansky, 2009).

Our view starts from the Keynesian proposition applied at the global level that there are no forces at work which ensures that at a high level of economic activity there is a balance between (desired) savings and (desired) investment. At the national level, a similar argument can be applied with the complication of introducing the foreign sector. The Keynesian perspective here is threefold. First, much depends on the propensities to save and invest. If those propensities are not well aligned, there are potential problems. At the domestic level, when there is a tendency for investment to run ahead to domestic savings, the gap may be met by borrowing from overseas which can generate longer term sustainability issues. But at the global level that option is not available. It would require fiscal surpluses. But when there is a tendency for savings to run ahead of investment, then significant and sustained budget deficits.

Second, there is little reason to think that the rate of interest would be capable of balancing savings and investment at high levels of economic activity. At the present time, very low rates of interest have not been able to say. The key role then of budget

deficits is in effect to bridge the gap between savings (at a high level of economiuc activity) and investment.

Third, there are important sectoral/country breakdowns with a pattern of current account deficits/surpluses which may not be sustainable through build-up of assets and liabilities and sudden reverses of 'sentiment' (there is also the complication of assets and liabilities denominated in different currencies).

One set of sectoral relationships at the national level can be written as:

(1) $(S - I) + (T - G) + (M - X - NI) = 0$

where S is private savings, I private investment, T tax revenue, G government expenditure, M imports, X exports and NI net income from abroad. In the event that the rate of interest was set at the 'natural rate' and the exchange rate where there was current account balance, then the budget deficit would be zero. The post-Keynesian perspective (particularly as developed in the stock-flow consistent approach) recognizes that surpluses and deficits, borrowing and lending are two sides of the same coin – the ability of one sector to run a deficit relies on another sector being willing to run a surplus. It is also recognized that deficits imply rising debt (or diminishing assets) and surpluses rising assets (or declining debt). Changing assets and liabilities have implications for future flows of interest payments, dividends etc..

It is useful to disaggregate (1) further as follows :

(2) $(S_h + DS_h) + (S_f - I) + (T - G) + (M - X - NI) = 0$

where S_h is acquisition of financial assets by households ('savings') and DS_h net increase in debt by households, and hence the first term in the equation is net household savings, S_f savings by firms (retained profits). An individual household may be both saving and dissaving at the same time (e.g. making contributions to pension funds but also taking out consumer credit).

One system response for a tendency of savings to exceed investment, which may be relevant to the development of the financial crisis, is the encouragement of debt. It is evident that household debt rose substantially in many countries, often seemingly underpinned by rising property prices. Deficit spending by households may provide an unsustainable 'push' to consumer spending – it can be seen as unsustainable through the implications of rising debt levels.

The broad relationship between the desires to save and the desires to invest can be seen as of considerable significance. The mainstream view would be that those desires would be brought into balance (at high levels of economic activity) through variations

in the rate of interest. That view would not permit of the existence of basic imbalances between the two sets of desires to save and to invest. There are clearly many cases (notably in non-industrialised countries) where the needs for investment far exceed the ability to save. But when the desire to save exceeds the desire to invest, there can be deflationary consequences. However, those consequences can be mitigated through overseas lending and through budget deficits. When the savings comes not so much for 'desires' but from the institutional arrangements and pressures (e.g. compulsory pension contributions) then a response can be extended consumer debt. The argument here is that often overseas lending (and more its counterpart borrowing by other countries) and consumer debt may not be sustainable and subject to instability and 'crashes'.

The basic argument here arises from the centrality of the relationship between intentions to save and to invest. Since those intentions come from different groups and since the factors influencing them are rather different, there is little reason to think they will be aligned. The traditional Keynesian view has been that the intentions can be brought into line through variations in the level of economic activity, and the effects on that level can be substantial and detrimental (notably when intentions to save exceed those to invest). The differences between savings and investment can be accommodated in a variety of other ways – budget position, current account, pressures on consumer debt. In each case, deficits and surpluses arise, and those may well be unsustainable over time, requiring at some stage adjustments.

The global economy is a closed economy; a significant difference between global economy and a closed national economy is that the latter uses a single currency whereas in the former there are numerous currencies (though it could be approximated by three and half major currencies –dollar, euro, yen and pound – with many other currencies linked to one of the major ones). At the global level $S - I = G - T$, and the effects of the recession is that the balance between savings and investment $S - I$ has risen, and hence rises in budget deficits $G - T$ have been required. For individual countries $S - I = G - T + (X + NI - M)$. Countries where there had been a current account deficit were borrowing from overseas ; following the financial crisis, in general, there was little change in the current account deficits since exports and imports both fell. There were exchange rate changes but of course in different directions; exchange rates rather slow to act. Two kinds of problems then arose: (i) what had been private borrowing from overseas became public borrowing ; since

there is public focus on budget deficits though not on private borrowing, and there are constraints on budget deficits (SGP and all that), (ii) some countries which had been heavily reliant on overseas borrowing (including FDI) (e.g.. Ireland, Latvia) found it more difficult to borrow, requiring (particularly when in a fixed exchange rate situation) deflation.

It is now a straightforward matter to apply the basic insights of Keynes and Kalecki that attempts to reduce budget deficits can only come about if there is a corresponding reduction in S – I which can be some combination of reduction in savings and increase in investment. The 'fiscal consolidation' approach, drawing on 'super Ricardian equivalence', argues that policies to reduce budget deficits stimulates consumption and investment. The Keynesian perspective is more that the reductions in public expenditure and increases in tax rates designed to reduce budget deficit will reduce income, which thereby reduces savings (and perhaps investment). It is clearly possible that reductions in both savings and investment alongside a reduction in income would leave the budget position unchanged (or even worsened). The implications for the present economic situation are then straightforward. Unless there is a revival in consumption and investment, attempts to reduce budget deficits will be deflationary and may not even be achieved.

Attempts to reduce budget deficits will have cumulative adverse effects. Under the SGP, a budget deficit is deemed too large ('excessive') if in effect it exceeds 3 per cent of GDP or if, given the position of the business cycle, it is incompatible with overall balance (even if that is in conflict with the 60 per cent debt rule). This is part of a general approach to budget deficits which relies on numerical targets which are 'plucked' out of the air. The previous UK government's 'golden rule' of public finance – balanced current budget over the business cycle, borrowing to invest – was similar. The other approach to judgement on the scale of the budget deficit is from a 'functional finance' perspective – which is that the scale of the budget deficit should be set to achieve a high level of economic activity. An 'excessive' deficit from a 'functional finance' perspective would be one which lead to levels of demand in the economy which could not be met by the supply potential of the economy. Thus assistance (from e.g. IMF) should be based on that criteria of 'excessive' budget deficit. Thus rather than a mechanical rule (such as balanced budget), fiscal policy should be judged in terms of its contribution to securing high levels of demand.

The build up of debt consequent on budget deficit may run ahead of GDP, and hence interest payments build up. How significant that is depends on the relationship between the average growth rate and the rates of interest on government bonds. This approach may involve reductions over time in public expenditure (other than interest payments).

In the context of the eurozone, rather similar considerations apply in the sense that trade with the rest of world is relatively small and that the current account position of the EMU as an entity is close to balance. At the present time, there are in effect co-ordinated attempts to reduce budget deficits as attention is paid to seeking to enforce the limits on budget deficits enshrined in the Stability and Growth Pact. But attempts to reduce budgets deficits will be unsuccessful unless there is some combination of falls in savings, rise in investment and in export surplus. But what is required at the level of the eurozone, as at the global level, is a collective agreement to maintain budget deficits until there is clear evidence of sustained revival of lending, of investment and of consumer expenditure.

It is self-evident that at the global level, the revival of economic activity has to come from some combination of increased investment and reduced propensity to save. Unless and until that happens, budget deficits will be necessary to support the level of demand. In a similar way, general reductions in wages and prices do not help. A single country (particularly if in a fixed exchange rate situation) may be able to stimulate the demand for its exports by lowering its domestic wages and prices, but this is not an option of the global level. In a closed national economy, it would be a simple matter of running a budget deficit until private demand revived. The simple point is that the excess of savings over investment can only be realised if there is a corresponding budget deficit, and that (in an underemployed economy) increases in the budget deficit are in effect 'self funding'. At the national level, the simple complication is that a budget deficit will be partially funded through borrowing from overseas (to the degree to which the country is running a current account deficit).

Collectively governments could run sufficient budget deficits to ensure a global high level of economic activity (subject to caveats on the distribution of demand relative to capacity). Individually some governments may face constraints arising from the need for them to borrow in a foreign currency and the degree to which the current account is in deficit.

For the individual countries, a high level of economic activity may well require a substantial budget deficit – indeed we would argue that this has been the typical position that a country runs a budget deficit, and that it is likely to be generally required in the future. But for many countries a budget deficit would be combined with a current account deficit, and the need for borrowing from overseas. For a closed national economy, and therefore for the global economy (apart from issues arising from the use of multiple currencies), budget deficits are only required if there is an excess of savings over investment, and that is precisely the condition needed for a budget deficit to be funded. The arguments of Kalecki and others (see also Sawyer, 2010) to the effect that budget deficits generate the funds required from private savings hold. The policy dilemmas are from the limitations which there can be on a national level in the funding of a budget deficit, and particularly that which arises from any necessary borrowing in a foreign currency. It can also be the case that a national government may seek to run an 'excessive deficit' where 'excessive' is treated as in the 'functional finance' view expressed above – namely that the economy is being pushed past the supply potential of the economy. But the general thrust is that there has to be international support to enable each country to make their contribution to the sustenance of high levels of demand and economic activity. Unless it is clear that a country is attempting to run what is clearly an 'excessive', there needs to be international co-operation to ensure that funds are available for the budget deficit, particularly when borrowing from overseas is involved. Thus in contrast to the current system where a country seeking IMF support and loans is generally required to adopt deflationary policies, loans should be available to any without an 'excessive deficit' as defined above.

In the present climate there is a considerable danger of semi-co-ordinated deflation. As each country seeks to reduce its budget deficit through cutting public expenditure, there is the danger that not only will they have limited success in reducing their own budget deficit but also their actions would help to make budget deficits of other countries worse.

4. Current account deficits and their resolution

One of the major concerns over a fixed exchange rate system was how would the pattern of balance of payments deficits and surpluses be resolved without recourse to deflation, particularly by the deficit countries. A floating exchange rate regime could

be seen to avoid that issue – in part by avoiding balance of payments deficits and surpluses with a country's exchange rate ensuring balance between demand for and supply of a currency. Floating exchange rates have though brought volatility of exchange rates (both nominal and real) and large (and often persistent) current account imbalances (and correspondingly capital account imbalances). The capital account *may* be subject to rapid change through a loss of confidence by lenders in a country's economic prospects, with consequent effects on the exchange rate and on the current account position necessitating sharp adjustments to the level of imports through domestic deflation (with some adjustments to the level of exports from exchange rate changes).

A country which is experiencing a large capital inflow could implement some policies which limit the possibilities for rapid withdrawal of funds, but this does not address the vulnerability of a country with a large current account deficit requiring continuing capital inflows. It has to be acknowledged that a country can benefit from capital inflows particularly where this leads to enhanced investment. Further, in the absence of capital controls, it is difficult to envisage ways in which the capital inflows and outflows can be in any way controlled. The crucial questions for a country relate to the sustainability of capital inflows, and more the uses to which the capital inflows are put – whether in effect to fund capital formation, to feed into credit and asset price bubbles or to finance consumer expenditure.

The pattern of current account deficits and surpluses within the EMU lie at the heart of the current difficulties. The persistent current account deficits of the Mediterranean countries during the 2000s has meant that they have built up (generally private) debts with other countries. The 'great recession' has in general had little effect on current account positions as imports and exports both fell, and the rise in budget deficits (and corresponding rise in net savings by private sector – that is the excess of private savings over investment) has meant the replacement of private borrowing from overseas with public borrowing from overseas.

The assistance required relates to the balance of payments position: the difficulties vary depending on fixed or flexible exchange rate; in the former, adjustments to the exchange rate appropriate; in the latter some support to limit the speed of fall of exchange rate may be needed, in the context of a current account deficit where capital funds become difficult to obtain.

5. Monetary policy

The consensus monetary policy has been an interest rate policy conducted by a independent or quasi-independent central bank in pursuit of an inflation objective ('inflation targeting') with fiscal policy demoted to the role of automatic stabilisers. The inflation of 2008 undermined claims on the long term success of inflation targeting though the ECB had never been successful in keeping inflation on an annual basis below 2 per cent.

The evidence from macroeconometric models (reviewed in Arestis and Sawyer, 2004; see also, Arestis and Sawyer, 2008a) is that variations in interest rates have a rather small effect on the pace of inflation – a typical result is that a 1 percentage point change in the policy interest rate (held for a year) has an impact of the order of 0.1 to 0.2 per cent on inflation. It is also well-known that interest rate policy is intended to work through its effects on demand and thereby on inflation, and hence a policy which is ill-equipped to deal with cost inflation. The 'caveat' to this argument is that these macroeconometric models build in a form of rational expectations which are that, in effect, there is the belief that the inflation target will be achieved. But the 'theory' of monetary policy is built upon the credibility of the central bank and in their ability to achieve the inflation target. Hence it can be argued that looking at the effect of interest rate on inflation is to miss the more significant contribution of the combination of independent Central Bank and inflation targeting, namely the locking in of low inflation expectations, which thereby helps to ensure the low inflation outcome. A question is whether the economies are moving into a more inflationary climate – in the UK following the independence of the Bank of England in May 1997 it was one month short of ten years before the governor had to write a letter of explanation as to why inflation was outside the target range, but since then has written seven letters. In the eurozone, inflation has been persistently above the 'near to 2 per cent' target of the ECB, albeit by only small amounts. The OECD (2010, p.39) has recently warned that 'There remains a risk that the strong recovery in non-OECD economies that have a relatively high demand for raw materials could place upward pressure on commodity prices', and then 'a downside risk is that long-term inflation expectations become unanchored and drift upwards.' Goodhart (2005, p.169), drawing on his experience on the Monetary Policy Committee and the work done within the Bank of England, comments that 'unless the shocks hitting the system were really quite small, the extent of policy-induced demand management, even if perfectly

calibrated, could not be responsible for the achievement of the stability and successful growth that we have enjoyed'

Inflation has been relatively low in most industrialised countries and on a global scale for much of the past two decades, and proponents of inflation targeting have claimed the credit for that low inflation. We have argued elsewhere that inflation targeting itself has not lain behind this low inflation (Arestis and Sawyer, 2008b). Inflation targeting has in effect sought to return to a crude demand reduction approach to the control of inflation, albeit that the instrument chosen (interest rate) was not the most effective one (that is fiscal policy would have been more potent). The cloud on the horizon is to find an alternative and effective way of maintaining low inflation, without having to resort to demand deflation and the associated losses of employment and output. This is particularly urgent in the EMU context. It is not only that inflation targeting has not been able to perform though the miss in terms of inflation were rather small and any losses from higher inflation were likely trivial (and hence could be addressed by a somewhat higher target rate of inflation, Blanchard et alia (2010) ask 'are the net costs of inflation much higher at, say, 4 percent than at 2 percent, the current target range? Is it more difficult to anchor expectations at 4 percent than at 2 percent?'). It is more that a single policy instrument cannot address differential inflation between countries. Yet it is that differential inflation, as reflected in movements in unit labour costs and competitiveness, which exacerbate the current account imbalances plaguing the EMU. It can only be through development of prices and wages policies at the country level in a co-operative setting that the tendencies of inflation rates in eurozone member countries be addressed.

It is then argued that there is a need to develop policy instruments to address the issue of inflation which does not rely on demand deflation and which are effective (as doubt has been cast on the effectiveness of monetary policy as a tool for the control of inflation). It has also been argued that interest rates, set in pursuit of inflation targeting, have an impact on a range of other significant variables, notably the exchange rate and asset prices. In part, the manner in which interest rates are seen to influence inflation is through the exchange rate and asset prices : higher interest rates are viewed as tending to raise value of the exchange rate (having downward impact on domestic inflation) and to depress asset prices (thereby generating a wealth effect which tends to lower demand). But those economic variables are clearly important in their own right (rather than merely as a route to inflation) and more significantly

interest rates and other changes may feed into price bubbles, whether of the exchange rate or asset prices. It is not a matter of incorporating (or not) asset prices into the targeted measure of inflation for that does not adequately reflect the possible implications of asset price bubbles (and in any event would be limited to assets such as housing).

Financial stability, rather than inflation targeting, should become the central bank's primary objective (and, as argued in Arestis and Sawyer, 2010, with an interest rate policy which aims to secure a constant real rate of interest). Buiter (2008, p. 10) points out that 'financial stability means (1) the absence of asset price bubbles; (2) the absence of illiquidity of financial institutions and financial markets that may threaten systemic stability; (3) the absence of insolvency of financial institutions that may threaten systemic stability'.

The recent Banking Act 2009[1] in the UK establishes that 'an objective of the Bank [of England] shall be to contribute to protecting and enhancing the stability of the financial systems of the United Kingdom (the "Financial Stability Objective")', with the Bank working with other bodies such as the Treasury and the Financial Services Authority and with the establishing of a Financial Stability Committee. At present this is placed alongside the monetary stability objective under the heading of "inflation targeting". This could be seen as a significant step away from the operational independence of the Bank of England and from the single objective of low inflation. We argue that the financial stability objective should be the prime objective and the operational independence of the Bank of England should be ended.

Current events and the general record on financial crises (see Laeven and Valencia, 2008, for details of crises and their costs over the past three decades) indicate the substantial costs associated with a lack of financial stability, which far outweigh any costs associated with inflation. In terms of the general multiple instruments–multiple objectives policy framework, it may not be possible to uniquely assign each instrument to a specific objective. Nevertheless, it may be possible to link an instrument mainly with a specific objective, recognising that coordination in the use of instruments can be advantageous. In this context, the argument is that the main link should be monetary policy–monetary and financial stability.

[1] Available at www.opsi.gov.uk/acts/acts2009/ukpga_20090001_en_1

Addressing issues of financial stability (or what may be termed the pursuit of macro prudential regulation) clearly requires the development of a range of policy instruments. There are though two other important ingredients in this idea of financial stability as the key objective of the monetary authorities. First, the many of the arguments for an independent Central Bank – based on the 'conservative' (inflation averse) central banker with credibility – fall. Further with multiple objectives pursued by multiple instruments there is a need for co-ordination between the macroeconomic authorities (e.g. Ministry of Finance, Central Bank), which is precluded by independence strictly interpreted. Second, (and related) monetary policy under inflation targeting was intended to not only target inflation but also to reduced the volatility of output and guide output to its 'natural' level. This was summarised in Taylor's rule where the interest rate was intended to be set based on deviations of inflation from target and output from 'natural' level. The idea of Phillips' curve melds those together – in that constant inflation rate is said to be consistent with zero output gap and a positive output gap would be associated with rising inflation both of which would point towards a higher rate of interest.

6. Financial contagion and regulation

It is a rather trite observation that there has been globalisation with vastly increased financial flows and that financial liberalisation had developed apace with de-regulation the order of the day, not to mention 'lack of belief' by the regulators in the processes of financial regulation. It has been suggested above that issues of financial stability and what may be termed macro prudential regulation should be the key objectives of central banks which involves them in the development of a range of additional policy instruments. The process of financial globalisation has proceeded apace and outpaced the processes of financial governance. Financial regulation has largely taken place at the national level. Whilst Basle II went some way in the allocation of responsibilities for financial regulation with regard to banks and other financial institutions operating across national borders, more needs to be done.

The Washington consensus could be seen as in effect imposing a common theoretical and policy framework on economic governance, and above we have highlighted the nature of the consensus with regard to fiscal and monetary policy. The general thrust towards de-regulation and financial liberalisation was a further feature. One of the challenges now across the board is whether a more Keynesian consensus can emerge

from the ruins of the financial crisis. We have put forward some elements of a more Keynesian approach but would be rather doubtful as to whether there will be any acceptance of that.

One key aspect of the policy measures adopted in response to the financial crisis was the invention of government in a number of ways to prevent financial companies going bankrupt, with (temporary) public ownership often used. The deposits of the public with banks were often implicitly or explicitly guaranteed by government. When a bank or other financial institution can be closely identified with a specific country it can be seen to be the responsibility of the national government as to whether a failing financial institution is bailed out and/or given financial support. In the EU, this is subject to the rules on state aid. One step which is then required is the development of clear policies within the EU on the obligations of national governments for provision of aid to failing financial institutions. Financial integration clearly involves the further development of EU-wide (and beyond) financial institutions, with the associated implication of the development of clear EU policies on 'failing' financial institutions. This is an element of a more general feature – namely how to deal with 'failing' financial institutions which operate on a multinational basis, particularly where the institution is genuinely multi- rather than uni-national, and hence where it is not possible to identify such an institution with a specific nationality and national government.

7. Concluding remarks

In the past two decades, macroeconomic policy has often conformed to the precepts of the 'new consensus in macroeconomics with monetary policy assigned to 'inflation targeting' and fiscal policy to the role of automatic stabiliser generally in the context of 'fiscal consolidation' with drives to reduce public debt. The period of the mid-2000s was one of apparent economic success (though rather less so for the eurozone countries) with low inflation and high (by historic standards) economic growth. Some signs of the undermining of this success came with rising inflation in 2007-08. But this was completely overshadowed by the financial crisis and the 'great recession' which brought to a sharp end ideas of the 'great moderation'. The mid-2000s were characterised (even if not widely realised at the time) by credit booms, fragile financial system and asset price boom. It was also characterised by imbalances – between countries and between sectors. Some have argued it was a period of a

'savings glut' – leading to lower interest rates which then spurred asset price rises. Our interpretation is somewhat different – a tendency towards over-savings (in the sense of savings running ahead of investment) which was initially rather offset by rising consumer debt (this may sound paradoxical but it should be borne in mind that only some households and firms wish to be net savers). When the consumer debt becomes unsustainable and in the midst of the near collapse of the financial sector, then the excess of savings over investment becomes an issue. Much, though not all by any means, of the potential excess of savings over investment was absorbed by government budget deficits, and indeed it is only through governments running budget deficits that the excess of savings over investment can be realised. Budget deficits will in general be required unless and until consumer spending and investment revive, and do so in a manner which is sustainable. A more likely outcome it would seem is that there will be a tendency of savings to run ahead of investment, in which case there has to be provision for substantial budget deficits. We have argued that the concept of 'excessive' budget deficits has to be changed from one which plucks some numerical value out of the air (as under the Stability and Growth Pact) to one which regards a budget deficit as excessive only if the economy is thereby 'overheating'.

It has also been argued here that inflation is an re-emerging issue for which current institutional arrangements are not built to cope with. Insofar as inflation is more a global rather than a national problem, there is clearly no international mechanism to address it. At the national level there is again a need to develop non-deflationary means of damping down inflation, and this is particular so in the context of the Economic and Monetary Union.

The case has been put for a focus of monetary policy on issues of macro prudential regulation and financial stability. This requires the develop of a range of monetary policy tools, but also a recognition that this is the appropriate role for central banks.

The imbalances in current account positions, and the associated capital flows, have had their part to play in the genesis of the financial crisis. At the present time, the most serious of these imbalances are those between EMU countries, and it is the near impossibility of countries within a fixed exchange rate regime correcting those imbalances which threaten to undermine and perhaps destroy the euro. In the last section of the paper we have mentioned one further aspect of the need for international co-operation.

References

Arestis, P and Sawyer, M. (2006), 'Interest rates and the real economy' in C. Gnos and L.-P. Rochon (Eds) *Post-Keynesian Principles of Economic Policy* (Cheltenham: Edward Elgar), pp. 3–20.

Arestis, P. and Sawyer, M. (2004), 'Can monetary policy affect the real economy?', *European Review of Economics and Finance*, 3(3), pp. 9–32.

Arestis, P. and Sawyer, M. (2008a), 'A critical reconsideration of the foundations of monetary policy in the new consensus macroeconomics framework', *Cambridge Journal of Economics*, 32(5), pp. 761–779.

Arestis, P. and Sawyer, M. (2008b), 'New consensus macroeconomics and inflation targeting: Keynesian critique', *Economia e Sociedade*, Campinas, 17, Número especial, pp. 629–654.

Arestis, P. and Sawyer, M. (2009), 'The intertemporal budget constraint and the sustainability of budget deficits' in J. Creel and M. Sawyer (eds.), *Current Thinking on Fiscal Policy*, Basingstoke: Palgrave-Macmillan

Arestis, P. and Sawyer, M. (2010), 'What Monetary Policy After the Crisis?', *Review of Political Economy*, forthcoming.

Bank of England (2005) *The Bank of England Quarterly Model* (London: Bank of England).

Baunsgaard, T and Symansky, S. (2009), 'Automatic Fiscal Stabilizers', IMF Staff Position Note SPN/09/23.

Bernanke, B. S. (2005), 'The Global Saving Glut and the U.S. Current Account Deficit', Sandridge Lecture at Virginia Association of Economics, Richmond, Virginia' (available at www.federalreserve.gov/boarddocs/speeches/2005/200503102/default.htm).

Blanchard, O., Dell'Ariccia, G. and Mauro, P. (2010), 'Rethinking Macroeconomic Policy', *IMF Staff Position Note*, February 12, 2010, SPN/1003.

Buiter, W.H. (2008), 'Central banks and financial crises', *Maintaining Stability in a Changing Financial System* (Kansas City: Federal Reserve Bank of Kansas City).

Daly, K and Broadbent, B. (2010), 'The Savings Glut, the Return on Capital and the Rise in Risk Aversion', *Goldman Sachs, Global Economics Paper* No: 185

Fagan, G. and Morgan, J. (2005), *Econometric Models of the Euro-Zone Central Banks*, Aldershot: Edward Elgar

Goodhart, C.A.E. (2005), 'The experience of inflation targeting since 1993' in P. Arestis, M. Baddeley & J. McCombie, (Eds), *The New Monetary Policy* (Cheltenham: Edward Elgar), pp. 164–171.

Greenspan, A. (2010), 'Testimony : Financial Crisis Inquiry Commission'

Hein, E. (2010), 'A Keynesian Perspective on 'Financialisation'' in P. Arestis and M. Sawyer (eds.), *21st Century Keynesian Economics*, Basingstoke: Palgrave Macmillan

Keynes, J.M. (1936), *The General Theory of Employment Interest and Money*, London: Macmillan

Laeven, L. and Valencia, F. (2008), 'Systemic Banking Crises: A New Database', *IMF Working Papers*, WP/08/224

Meyer, L.H. (2001), 'Does money matter?', *Federal Reserve Bank of St. Louis Review*, 83(5), 1-15.

Minsky, H. P. (1982), *Can "It" Happen Again: Essays on Instability and Finance*, Armonk: M.E. Sharpe.

OECD (2010), *Economic Outlook*, May 2010

Patanak, P. (2010), 'The Theory of the Global "Savings Glut"' (mimeo; downloaded from www.networkideas.org/featart/jan2010/Prabhat_Patnaik.pdf)
Rodrik, D. (2006), 'Goodbye Washington Consensus, Hello Washington Confusion? A Review of the World Bank's *Economic Growth in the 1990s:Learning from a Decade of Reform', Journal of Economic Literature* Vol. XLIV (December 2006), pp. 973–987
Sawyer, M. (2008), 'Neither new nor Keynesian: a critique of the New Keynesian programme', *METU Studies in Development*, 35(1), pp. 61–80.
Sawyer, M. (2010), 'Budget deficits, public debt and the level of public investment' in M. Florio (ed), *Public Investment, Growth and Fiscal Constraints: Challenges for the EU New Member States*, Aldershot: Edward Elgar
Wicksell, K. (1965, 1898), *Interest and Prices* Reprints of Economic Classics, New York 1965 (Originally written in January 1898.)
Williamson, J.(ed.) (1990), *Latin American Adjustment: How Much Has It Happened?* Washington, D.C.: Institute for International Economics.
Woodford, M. (2003) *Interest and Prices: Foundations of a Theory of Monetary Policy* (Princeton: Princeton University Press).

Discussion

Chair:
Before giving the questions addressed to Professor Sawyer, let me mention two things.

- The confidence expressed by the Governor of the Bank of Greece on the success of the package, the EU-ECB-IMF package for Greece.
- What Mr. Avramopoulos mentioned: something that at least in our studies about the Greek case we have stressed more than once, that the current economic crisis is also a political crisis and a political issue.

Now, for Professor Sawyer, I have, sir, two questions, please, from the audience, from the floor. In your presentation, you suggested that the difference between saving and investment should be related to fiscal deficits. Isn't that dangerous vis-à-vis the external balance? That is the first question. The second question: You suggested financial stability instead of inflation stability for the Central Bank. A member of the audience asked if you can elaborate on that, if you could be more explicit.

Malcolm Sawyer:
With regards to the first point, it is not me that is suggesting savings minus investments should be related to the budget deficit; it is essentially a national income accounting identity. As I indicate on the overhead, at a national level, one would also have to include the current account position as well. But if you take it globally, across all nations, then the current account position cancels out as it were, because they have to sum to zero across all countries, so that globally the difference between savings and investment would be equal to the budget deficits, as a matter of accounting identity.

Chair:
But the loans cancel out within the euro zone.

Malcolm Sawyer:
Well, not far off. Because in the euro zone, the current account position is 1% of GDP. I think that the point I wanted to make is that if we are in a situation globally, where there is a tendency for savings to exceed investment, or the desire to save exceeds the desire to invest I should say, then, if we want to have a reasonable level of economic activity, it follows that there will have to be budget deficits. Well we can, from a traditional point of view, reconcile savings and investment through the falling income that will reduce the actual savings to inline with the investment. So I wanted to make two related points. One was that if I am right in saying there is this tendency towards savings exceeding investment then there has to be budget deficits. And I was linking that with my observation that traditionally, as it were, countries have run budget deficits. Maybe at the order of 2%, 3%, 4% of GDP a year, but they have run budget deficits. There is nothing unusual about that. What is unusual is the Stability and Growth Pact saying that the budget deficit should average out zero. I would say that at a national level, there is a link – as you indicated – between the bounce between the savings and investment, the budget deficit and the current account deficit position. Exactly how they relate could vary from country to country, but I think in the case of Greece, in orders of magnitude, there is at the moment a similarity between the budget deficit and the current account deficit. But I was also making the point that if from where you are right now, where any of us, any country is right now, with their budget deficit, if that budget deficit is to be reduced, then there has to be some combination of savings, investment and the current account position changing. And if they don't change, then the budget deficit will not change. It is a matter of

an accounting identity. The other point I was making was that in so far as countries do have budget deficits and current account deficits, then I treat the current account deficit as a more serious problem than the budget deficit. And I think they are kind of linked, in the sense that if a country is running both a budget deficit and a current account deficit, then it is likely to be the case most of the borrowing to cover the budget deficit will be from overseas and that is going to make the problem rather more difficult. Elaborating in terms of financial stability, I think I can only elaborate in the following sense. Firstly, in terms of what should be seen to be the center of the central bank or the financial authorities' policy objectives. In a sense, we have had over the last 15 years or so, inflation targeting as the key objective. But in regard to that, Phillip and myself have in various stages cast out upon the effectiveness of inflation targeting. But what I wanted to argue was that thinking to achieve financial stability through various forms of macro-credential regulation, that is, elements of perhaps credit controls of reserve ratios addressed to the development of financial price bubbles, policies to limit the expansion of credit, those types of policies should become the central focus of the central banks, rather than inflation targeting. Partly, as I was indicating, on the basis that financial stability or the lack of financial stability imposes a great deal more cost on us than the high or moderate inflation would. But I wouldn't want to go much further in terms of what should be the policy instruments, because that is getting aside from my range of expertise. What I want is to express the idea that financial stability becomes the major objective. And I would also link that with the idea that there has to be some degree of coordination across macroeconomic policymakers.

Chair:
Allow me one final question for myself. We read, for example, in publications such as "The Economist" or even recently "The New York Times" the doubts about the viability, the sustainability of this fiscal direction of the euro zone. How do you explain that in continental Europe there is more orthodoxy and economic thinking about this than in the Anglo-Saxon countries? What is your gut feeling about this?

Malcolm Sawyer:
Given the discussion that has been going on in the UK at the moment, there is going to be an emergency budget tomorrow. I think the orthodox thinking on fiscal policies is having resurgence in the UK. I suppose historically countries like Germany have been less Keynesian should we say than the Anglo-Saxon. After all, it is the German governors that put in an institutional amendment to ban fiscal deficits. The UK is at the moment somewhere in between. The US do seem to be the center of the more Keynesian approaches at the moment and much of continental Europe rather less, partly lead by the Germans.

Chair:
I finish with that. The agenda of the day in Europe is to set fiscal rules for everyone, even uniform. Do you think that is dangerous or is it helpful?

Malcolm Sawyer:
If you take the perspective I have, which is that fiscal policy should be used as far as you can to sustain high levels of demand, then the needs in different countries will be different. Some countries, particularly those that run a large export surplus or those that have a large volume of investment, will in some sense will have much less need for budget deficits than others. I think, if we just look across the countries of the Economic and Monetary Union or the

European Union more general and their deficit positions – not just since they have joined the euro, but before – have been very different. I think countries like Sweden, historically have on the long run surpluses. And that might be quite appropriate in the context of Sweden, if their investment and export positions are such that they can have a fiscal surplus, without damaging the level of demand. I think one of the Keynesian economics are also been seen to always have budget deficits. I think in a sense that is not quite right. I think the Keynesian view is to use the fiscal policy and budget position to sustain demand. Sometimes, that will involve having a budget surplus; sometimes it will involve having a budget deficit. My particular criticism on the Stability and Growth Pact is that it is sought to impose uniformity, a uniformity that may be appropriate for one or two countries, but is unlikely to be appropriate across countries.

Philip Arestis:
I think your point about the difference between the United States and Europe is a very interesting point, actually. And I think that if you look at the history of the United States and the history of EMU, very short of course, or the European experiment more generally, you will find that in the United States, from around the 1870s until the new deal of the '30s, it was more or less as we know Europe today; a kind of co-federal, rather than federal. And they had huge problems in terms of the South, as opposed to the North. And it was only during the new deal, when positive measures were taken in order to promote the South, in a way that it wouldn't have managed by itself. And you know, now we have the United States as we know them, and there is no much difference, more generally speaking, between the South and the North. In Europe, by contrast, we haven't had this federal solution. We haven't had the United States of Europe. And consequently, two things are very important to say. The first one is that we don't have economic integration in Europe. And we don't have economic integration in Europe for the very simple reason that we don't have fiscal transfers and of course we don't have labor mobility. In the absence of economic integration, history tells us, the only way for a monetary union to succeed is that you have to have political integration. And therefore, the more and the quicker we move towards a federal state in Europe, the United States of Europe, the better I think we will be able to use fiscal policy the way the United States have been using it.

Chair:
That is very interesting. I would pursue this question much longer, but we don't have the time. So, thank you, Professor Sawyer. I think now it is Professor Arestis who will present his paper. But that topic needs a long-long discussion.

Philip Arestis:
Yes, I couldn't agree more with you, it is very interesting. Before I start my own contribution, can I just say very many thanks to the Foundation, to the organizers, both the academic and administrative, who have been wonderful in terms of making our lives much-much more comfortable than otherwise; and it has been wonderful to come back to Athens, in my case after a very long time. So, thank you very much and you of course, Chair.

Current crisis and economic policy implications

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1. Introduction

The purpose of this contribution is to discuss the origins of the current crisis along with relevant policy implications. The focus is on the emphasis given to the 'efficient market hypothesis' (EMH), namely that all unfettered markets clear continuously thereby making disequilibria, such as bubbles, highly unlikely, as the root of the crisis. Indeed, in terms of the EMH framework, economic policy designed to eliminate bubbles would lead to 'financial repression', a very regrettable outcome in this view. Ever since the early 1970s, when governments attempted and succeeded in implementing financial liberalization initiatives, especially in the US and UK, the focus has been on creating financial markets completely free from any policy interference. This is based on the belief that liberalised financial markets are very innovative, and sure enough they were. Over the period prior to the 'great recession' and after the intense period of financial liberalisation especially in the US, great strides were seen in the development and extension of new forms of securitisation and use of derivatives. This was a financial engineering practice, which led to the growth of collateralised debt instruments, especially so in the form of collateralised mortgages.

The experience with financial liberalization is that it caused a number of deep financial crises and problems unparalleled in world financial history, both in terms of their depth and frequency. However, most important for the purposes of this contribution, it was the experience of the US with financial liberalization that is most telling in terms of the cause of the current crisis. Financial liberalisation alone cannot fully explain the crisis. The size of the financial sector is also important. In this respect, it is important to note the enormous redistribution that had taken place in the countries at the centre of the crisis. This was a significant redistribution from wage earners to the financial sector had materialized prior to August 2007. That

redistribution along with the financial liberalisation attempts produced the new financial engineering rooted in the US as mentioned above, which led to an extraordinary mispricing of risk, were the main causes of the crisis.[1] But there were, we argue, contributory factors. We isolate three of them: the international imbalances, mainly due to the growth of China, the monetary policy pursued by countries over the period leading to the crisis, and the role of the credit rating agencies. The 'great recession', in our terminology, led to massive state support along with a subsequent deterioration of the public finances in most of the affected countries.

There are clear policy implications that emanate from the crisis (see, also, Arestis and Karakitsos, 2010a). We discuss them to conclude that an important policy that has not been addressed properly is that of financial stability (see, also, Goodhart, 2009; King, 2009). In fact, the emergence of Central Bank independence along with the rate of interest instrument, focusing crucially on maintaining price stability, implied that the objective of financial stability was downgraded and responsibility over it became obscure. We, thus, discuss the latter policy at some length emphasising the recent pronouncements on this front by President Barack Obama that are summarised under the acronym of the 'Volcker Rule'.

We proceed as follows. After this short introduction in section 1 we discuss the origins of the crisis in section 2. The economic policy implications are discussed in section 3 before we summarize and conclude in section 4.

2. Origins of the current crisis

In discussing the origins of the current crisis we are very much aware of the limitations of current macroeconomics. Indeed, we agree with Minsky (1982), who argued about three decades ago that "from the perspective of the standard economic theory of Keynes's day and the presently dominant neoclassical theory, both financial crises and serious fluctuations of output and employment are anomalies: the theory offers no explanation of these phenomena" (p. 60; see, also, Arestis, 2009).

The 'the great recession' has been caused by US financial liberalization attempts and the financial innovations that followed them. That was greatly helped by significant income redistribution effects from wages to profits of the financial sector.

[1] The mispricing of risk should not be surprising in that financial institutions have excessive incentives for risk-taking. This is associated with the 'moral hazard' problem, the result of governments offering protection to financial institutions against bankruptcy, which protects largely lenders from bad decisions. The attempt to avoid contagion effects in the economy results in 'moral hazard', thereby encouraging financial firms to take excessive risk.

An interesting statistic on this score is reported in Philippon and Reshef (2009) in the case of the US. This is the pronounced above average rise in the salaries of those employed in finance. Relative wages, the ratio of the wage bill in the financial sector to its full-time-equivalent employment share, enjoy a steep increase over the period mid-1980s to 2006. What explains this development is deregulation in a causal way, followed by financial innovation. The deregulation impact accounts for 83% of the change in wages. Indeed, wages in the financial sector are higher than in other sectors, even after controlling for education. Similar but less pronounced financial shares are relevant in the UK, Canada, Germany and Japan, among others. In China financial intermediary shares to GDP increased from 1.6% in 1980 to 5.4% in 2008 (Greenspan, 2010, p. 15).

Three other factors, the international financial imbalances, the monetary policy pursued at the time, and the role played by the credit rating agencies, can be suggested as factors that promoted, rather than caused, the 'great recession'. We take the view that although these factors were important, they were not the original cause of the 'great recession'. They were accentuating the process of financial liberalization and financial innovation rather than being part of the cause of the crisis. The rest of this section will attempt to explain the process just suggested.[1]

2.1 Income redistribution effects

An important factor that contributed substantially to the 'great recession' emerged from the steady but sharp rise in inequality, especially in the US and the UK but elsewhere, too. The share of national income taken up by profits had reached close to a post World War II high before the onset of the recession; while real wages had fallen even behind productivity. The declining wage and rising profits share were compounded by another long-term economic term: the increasing concentration of earnings at the top, especially in the financial sector. Figures 1 to 5 make the case vividly.

Figures 1 and 2 make the point in the case of the UK (both figures are from Lansley, 2010). Figure 1 clearly shows the falling share of wages, while Figure 2 shows clearly how wages fell below productivity. Figure 3 makes the case of the

[1] Reinhart and Rogoff (2009) demonstrate that the class of the bubble of August 2007 differs from earlier less serious bubbles in terms of their deflationary consequences. The difference is attributed to the degree of debt leverage in the financial sector, especially so when the maturity of debt is less than the maturity of the assets it funds.

increasing shortfall of the real wage rate from productivity since the early 1970s in the case of the US. The real wage rate fell well behind productivity in the aftermath of the Second World War (WWII) reaching its maximum shortfall of around 15% during the Korean War. But the gap closed until the early 1970s when the real wage rate hit an all time high, increasing faster than productivity by more than 5% in April 1972. In the aftermath of the first oil shock the real wage rate fell yet again behind productivity, suggesting that employees bore the brunt of the redistribution of income from the US to the oil producing countries. Rising and high unemployment forced this redistribution of income. Unemployment soared from 3.5% of the labour force in early 1970 to nearly 11% in the midst of the 1980-82 recession (see Figure 3). However, as the price of oil and unemployment fell in the 1980s the real wage rate caught up once more with productivity gains. By the spring of 1999, the time of the repeal of the 1933 Glass-Steagall Act, the gap between the real wage rate and productivity had once again been eliminated. Fluctuations in unemployment caused by the early 1990s recession and the subsequent anaemic recovery contributed to an oscillating real wage rate around productivity, but on an upward trend. Nonetheless, the real wage rate fell behind productivity following the burst of the internet and housing bubbles and the resultant increase in unemployment, hitting an all time low of nearly -20% in the aftermath of the collapse of Lehman Brothers in September 2008.

These unfavourable trends in the real wage rate are partly reflected in the wages and salaries of private and government employees. Figure 4 shows that wages and salaries as percent of GDP did not improve as much as the real wage rate in the golden post- WWII era until the 1970s. The share of wages and salaries to GDP increased over the period by only 3%, from 50.5% to 53.5%. But from the beginning of the 1970s until now the share of wages and salaries to GDP fell by an astonishing 9% to 44.5% by the end of 2009. Wages and salaries improved their share only in the period 1994-2001.

In spite of these unfavourable trends in the real wage rate and wages and salaries, since the 1970s, the compensation of employees, which includes in addition to wages and salaries employer contributions for government social security and employee pension and insurance funds, shows a more complicated picture. The compensation of employees improved in the post WWII era, increasing from 54.5% to GDP in 1948 to nearly 70% by the early 1980s (see Figure 4). But since then it has declined to 65.5%. Hence, the net loss of the compensation of employees since financial liberalisation is

only 3.5% compared to 9% in wages and salaries and more than 10% shortfall in the real wage rate to productivity. The smaller deterioration in the compensation of employees to wages and salaries, though, is partly due to higher employer contributions for government social security and employee pension and insurance funds. These contributions have more than quadrupled in the post WWII era from 2.3% of GDP to 10.6% (see Figure 4). Nonetheless, the share of employer contributions to GDP has increased by only a tiny fraction (i.e. 0.5%) since the financial liberalisation of the early 1980s, thereby confirming the redistribution of income from employees to employers.

Figure 5 shows the increasing share of profits in relation to income in the case of the US and also in the case of the rest of the world, and more precisely in the case of the financial sector. We note from Figure 5 that the bottom of profitability at the end of 2001 hit an all-time low. This downtrend may be the result of shifting production abroad, which gathered pace in the era of globalisation, but also to the increasing challenge of the US from other industrialised countries, such as Japan, Europe and recently China. But the bleak picture of non-financial profitability is not shared by other subcategories. Financial companies, in particular, have seen a sharp uptrend in their profitability since 1982, which is nearly a six-fold increase (see Figure 5). The financial deregulation, which had commenced in the 1970s but continued at that time, especially the repeal of the 1933 Glass-Steagall Act in 1999, both discussed below, certainly contributed to the long-term improvement of the profitability of financial companies. These developments are at the heart of the 'great recession' as they enabled the creation of liquidity that financed the housing bubble, but also the internet and other bubbles of less importance, such as commodities, shipping and private equity. Now that the house bubble has burst and deleverage is taking place, it is very likely that the long-term uptrend in the profitability of financial companies will be reversed. Similar observations can be made in Europe, excluding the UK, where in 2007 Germany's finance minister encouraged European companies to "give workers a fairer share of their soaring profits" (Financial Times, 28 February 2007).

The rising profits share aped financial institutions thereby increasing leveraging (debt to assets ratio) and high risk-taking in financial institutions. In the words of the Chairman of the UK Financial Services Authority, "There has thus been an increasingly 'financialisation' of the economy, an increasing role for the financial sector. Financial firms as a result have accounted for an increased share of GDP, of

corporate profits, and of stock market capitalisation. And there has been a sharp rise in income differential between many employees in the financial sector and average incomes across the whole of the economy" (Turner, 2010, p. 6). This promoted the financial engineering based on the US subprime mortgages as explained in what follows in this section. These are important distributional effects, which are not accounted for by the prevailing view of theoretical macroeconomics and the economic policy implications of this framework, essentially monetary policy in the form of interest rate manipulation to hit a set inflation target.

This redistribution was greatly helped by attempts at financial liberalisation in many countries around the world. Of particular importance for our purposes was the financial liberalisation framework in the US. Both the redistribution just referred to along with the financial liberalisation policies led to a period of financial engineering in the US, which spread worldwide to produce the current 'great recession'. We turn our discussion to financial liberalisation essentially in the US, and the financial engineering there, in an attempt to explain the origins of the current crisis.

2.2 US financial liberalization and financial engineering

Financial liberalization in the US began in the 1970s. More precisely in 1977, when the US started to deregulate its financial system. There was the deregulation of commissions for stock trading in 1977 to begin with, and subsequently investment banks were allowed to introduce unsecured current accounts. The removal of Regulation Q in the 1980s followed, that is removing the placing of ceilings on retail-deposit interest rates. The repeal of the key regulation Glass-Steagall Act of 1933 in 1999 (promoted by the US financial sector, using as their main argument the Big Bang of 1986 in the UK) was the most important aspect of US financial liberalization for the purposes of the question in hand. The final step in the process was the Commodity Futures Modernisation Act (CFMA) of December 2000, which repealed the Shad-Johnson jurisdictional accord, which in 1982 had banned single-stock futures, the financial instrument that allows selling now but delivering in the future. All these financial liberalization attempts were important in promoting financial innovations in the US financial markets. We discuss their importance before we turn

our attention to the financial engineering that emerged directly from them and caused the financial crisis of August 2009.[1]

When fixed commissions were in place, investment banks would book stock trades for their customers; deregulation meant greater competition, entry by low-cost brokers and thinner margins. Then, in the late 1970s, investment banks were allowed to begin to invade the commercial bank territory, through the creation of 'money market' accounts (current accounts that were unsecured). Removing Regulation Q allowed fluctuation in interest rates, thereby forcing commercial banks to compete for deposits on price, which led them to pursue new lines of business. Such new business was to respond to the investment banks' needs for short-term funding. It created, however, a financial crisis in the 1970s and 1980s when savings banks could not fund themselves in view of the narrowing of the margins of lending and borrowing rates. Investment banks moved into originating and distributing complex derivative securities, like collateralized bond obligations (normal investment bonds backed by pools of junk bonds). However, that was not a great success and the move collapsed in the second half of the 1980s.

However, that originate-and-distribute failure was followed by a new initiative of asset-backed and mortgage-backed securities, which gained a clientele in the 1990s. That was partially enabled by the relaxing of the 1933 Glass-Steagall Act in 1987 (see further details below), when the Federal Reserve Bank (the Fed) allowed 5% of bank deposits to be used for investment banking, and then further promoted in 1996 when 25% of deposits were allowed for the same purpose. We then had in 1997 the Broad Index Secured Trust Offering (BISTRO), a bundle of credit derivatives based on pools of corporate bonds, and later the Collateralised Mortgage Obligations (CMOs) based on pools of subprime mortgages and Collateralised Debt Obligations (CDOs) based on other debt. BISTRO was not a great success in view of the corporate sector's booms and recessions at that time. However, CMOs and CDOs, which were based on mortgages and other assets, became a success due to of the steady growth of the housing market. That was the first cause of the crisis: the originate-and-distribute model of securitization and the extensive use of leverage.

[1] Prior to the financial liberalisation period, from around the late 1930s and the early 1970s, there had been direct controls on bank lending and exchange controls on international flows, which may very well contained innovation and efficiency in the banking sector. But as Bodo et al. (2001) demonstrate that period was free from serious banking crises.

This raises the issue of the difference between originate-and-distribute and originate-and-hold models. In the originate-and-hold model bank loans are held in the banks' own portfolios. In the originate-and-distribute (or originate-to-securitize) model bank loans are re-packaged and sold to other banks, foreign banks and the domestic and foreign personal sector. The latter model transfers the loan risk from the bank to whoever buys the Asset Backed Securities (ABS). Then the Commodity Futures Modernization Act (CFMA) of December 2000 emerged. This Act deregulated single-stock futures trading, and provided certainty that products offered by banking institutions would not be regulated as futures contracts. CFMA enabled and legitimised credit-default swaps (CDSs, credit derivative contracts between two parties, whereby there is guarantee in case of default), thereby creating a potentially massive vector for the transmission of financial risk throughout the global system.

The apotheosis of the financial liberalization in the US, however, had already come about with the repeal of the 1933 Glass-Steagall Act in 1999. The 1933 Act was designed to avoid the experience of the 1920s and 1930s in terms of the conflict of interest between the commercial and the investment arms of large financial conglomerates (whereby the investment branch tolerated high risks).[1] The ultimate aim of the 1933 Glass-Steagall Act was to separate the activities of commercial banks and the risk-taking 'investment or merchant' banks along with strict regulation of the financial services industry. The Act prevented investment banks from taking deposits and commercial banks from conducting security business, like principal trading, underwriting and securities lending. The goal was to avoid a repetition of the speculative, leveraged excesses of the 1920s and 1930s, which produced the stock market boom of the 1920s and its eventual crash in 1929. The boom had been fuelled by cheap credit from the banks.

The introduction of the Act in 1933 meant that without access to retail deposits and with money market instruments tightly regulated, investment banks funded themselves using their partners' capital. The repeal of the Act in 1999 changed all that: it enabled investment banks to branch into new activities, and it allowed commercial banks to encroach on the investment banks' other traditional preserves. It was not just commercial banks that were involved in that encroaching; insurance

[1] The 1933 US Banking Act was co-sponsored by Senator Carter Glass, member of the Senate, and Henry Steagall, member of the House of Representatives; thus the Glass-Steagall name. It was underpinned by legislation, signed by President Roosevelt in 1933.

companies, like the American International Group (AIG), and hedge funds were also heavily involved. Haldane (2010, Chart 2) clearly shows that the 1933 Act was effective from the 1930s to the late 1980s when, as mentioned above, the US authorities began to relax it at the same time of the redistribution effects and financial liberalisation attempts. In fact, concentration in the US banking sector remained flat over that period. The repeal of the 1933 Act in 1999, which allowed commercial and investment banks to mingle together had the dramatic effect of increasing the share of the top three largest US banks from 10 percent to 40 percent between 1990 and 2007. Interestingly enough, that dramatic increase in the size of the US banking is not mirrored in other industries. Haldane (op. cit.) shows that "The largest banking firms are far larger, and have grown faster, than the largest firms in other industries", so that "the too-big-to-fail problem has not just returned but flourished" (p. 9). Furthermore, Haldane (op. cit.) shows that "A similar trend is discernible internationally: the share of the top five largest banks in the assets of the largest 1000 banks has risen from around 8 percent in 1998 to double that in 2009" (p. 9).

The repeal of the Glass-Steagall Act in 1999 allowed the merging of commercial and investment banking, thereby enabling financial institutions to separate loan origination from loan portfolio; thus the originate-and-distribute model.[1] Indeed, financial institutions were able to use risk management in their attempt to dispose of their loan portfolio. Actually, risk aversion fell sharply. This was fostered by a new financial architecture in the form of securitisation and slicing risk through repackaging subprime mortgages, which were turned into CMOs and CDOs. This underpricing of risk came about by low risk spreads whereby the differentials between risky assets and safe assets declined substantially. It came about particularly over the long period 2001-2005 of unusually low nominal, and very low real, interest rates. But even over the longer period of the late 1980s/early 1990s to 2007, macroeconomic risks were reduced substantially in view of the 'great moderation' or 'great stability' era of low and stable inflation and steady growth.

[1] Goodhart (2009) suggests that the originate-and-distribute model should be labelled as 'originate and *pretend* to distribute' one. This can be so to "the extent to which banks transferred their assets to vehicles closely related to themselves, conduits and SIVs of various kinds, to which they were bound, either by legal commitment or by reputational risk, to support whenever funding or other financial conditions become adverse" (pp. 54-55).

Furthermore, financial institutions can now provide *risky* loans without applying the three Cs: Collateral, Credit history and Character (person or institution able to pay the loan off even in hard times). This fostered a new activity that relied on interlinked securities mainly emerging from, and closely related to, the subprime mortgage market.[1] Subprime mortgage is a financial innovation designed to extend home ownership to risky borrowers. The term refers to borrowers who are perceived to be riskier than the average borrower because of their poor credit history. Rising home prices encouraged remortgaging, thereby expanding the subprime mortgage market substantially. The growth of loans in the subprime mortgage market was substantial. As a percentage of total mortgages we had the following phenomenal increase: 1994: 5%; 1996: 9%; 1999:13%; 2006: 20%; 2007: 47%. Clearly, the world of CMOs and CDOs exploded at a stunning pace between around 2004 and 2007 with substantial profits for the relevant financial institutions.[2] It should also be noted that between 1998 and 2007 mortgage debt as a percentage of disposable income increased by more than 50% from 61% to 101%.[3]

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[1] Turner (2010) suggests that the advocates asserted that the securitization discussed in the text, "delivered efficiency and welfare benefits arising from the fact that investors could select precisely that combination of risk and return which met their preferences. A combination which they could then continually and smoothly adjust through time, not only by buying or selling the underlying credit instruments, but also through use of the credit derivatives markets ….. which developed alongside complex securitization" (p. 10). They also argued "that securitisation enabled investors to enjoy precisely the liquidity that they desired, given the marketable nature of credit securities. The long-term buy and hold investor could hold a credit security for its long-term contractual maturity, but the short-term investor could sell at any time" (p. 11).

[2] An interesting recent and relevant example of potentially serious problems with the CDO operation is the case involving the US Securities and Exchange Commission (SEC) and Goldman Sachs, the world's most powerful investment bank. SEC (2010) brought a case against Goldman Sachs, which is a devastating indictment not merely for the bank but may also be so for the entire financial system. The SEC accusation is that this bank created CDOs, called Abacus 2007-AC1, based on subprime mortgage assets. They were sold to one set of investors, a good number of which were large European banks, who were told that the CDOs were selected by an independent, objective third party. At the same time, and not known to investors, a hedge fund, which was choosing the most risky subprime mortgage assets that were included in the Abacus 2007-AC1, and 99 percent of which were downgraded subsequently, was betting against the created CDO, in that it would fall. All this crucial information was completely hidden from the investors. Not only was the product a complex one, but also a simple fraud. SEC is investigating whether this is an incident of a wider pattern of the investment banks approach. No wonder that serious criticisms have been launched against this institution's practice not merely in the US but also in Europe. The main criticism being that risky and complicated schemes were promoted at the expense of its own clients and helping the emergence of the 'great recession'. As reported in the Financial Times (8/9 May 2010), Goldman Sachs announced at the annual shareholders meeting (7 May 2010) that a new board committee will undertake a 'rigorous self-examination' of the firm's business practices. This would include more transparency in their dealings, especially in terms of the complex CDOs.

[3] Furthermore, and according to Inside Mortgage Finance Publications (2009), by the first quarter of 2007 subprime mortgage securities outstanding were over $900 billion, which represented a six-fold increase since 2001. Virtually all the subprime originations were securitised, when it was only half in 2000 (see, also, Greenspan, 2010).

Banks proceeded to set up trusts or limited liability companies with small capital bases, i.e. separate legal entities, known as Structural Investment Vehicles (SIVs). Parallel banking was thereby created outside the control and the regulatory umbrella of the authorities. This SIVs operation was financed by borrowing from the short end of the capital markets at a rate linked to the inter-bank interest rate. The short-term capital thereby raised, was used by the SIVs to buy the risky segment of the loan portfolio of the mother company, mainly risky mortgages. The risky loan portfolio was then repackaged in the form of CMOs and CDOs and sold to other banks and the personal sector, both to domestic and foreign investors; in terms of the latter it was mainly to Europeans.[1] So long as the short-term rate of interest was lower than the long-term rate, and along with the high commissions charged, big profits were secured, and the housing market turned into a bubble. It is true that after the internet bubble collapsed in March 2000 there was considerable fear, especially in the US, that price deflation might ensue. That fear, especially on the part of monetary policy makers, along with the apparent world glut of savings (Bernanke, 2005), led to a period of low nominal policy interest rates as just suggested.

When the yield curve was inverted, that is long-term interest rates became lower than short-term rates, the subprime mortgage market simply collapsed. It occurred following a period of a policy of rising interest rates (mid-2004 to mid-August 2007) after a prolonged period of abnormally low interest rates (initially 1997-1998 but more aggressively after the internet bubble of March 2000 but more so after November 2001, until central banks began to raise interest rates in 2005). The subprime mortgage market began its downward direction soon after; this occurred by late 2005 but accelerated more dramatically so by early 2007. The collapse of the subprime mortgage market by mid-2007 also meant the end of the housing boom and the burst of the housing bubble. Defaults on mortgages spread to investment banks and commercial banks in the US and across the world via the elaborate network of CMOs and CDOs. A pertinent question is why regulators appeared to have been ignorant of banks' reliance on the parallel banking sector in 2007 and before, when clearly they should not have been. It surely must be the case that the regulation regime at the time must have been totally ineffective.

[1] According to the IMF (2009, Table 1.2, p. 10), for example, the UK, but especially so the euro area banks, have shown a very high ratio of residential mortgage backed securities writedowns relative to residential mortgage loans (see, also, Greenspan, 2010).

The sale of CMOs and CDOs to international investors made the US housing bubble a global problem and provided the transmission mechanism for the contagion to the rest of the world. The collapse of the subprime market spilled over into the real economy through the credit crunch and collapsing equity markets in August 2007. Although it must be said that the first signs of the problem may be dated as early as March 2007, when US subprime investors announced major losses. Be that as it may, a breakdown of trust between the financial sector and households occurred, most specifically in the case of the subprime mortgage holders. As the losses on these mortgages and other toxic assets accumulated, banks lost trust between themselves, which led to the freezing of the interbank lending market in the second half of 2007. These problems further constrained the ability of the banking sector to lend to the real economy. Bank failures ensued, and are still taking place, which further eroded the ability of banks to lend. Then credit conditions in the real economy tightened further leading to corporate distress due to significant lack of bank credit; trade credit provided between firms also dried up.

All this emerged during the course of 2008, especially so after the collapse of the Lehman Brothers in September 2008. The Lehman Brothers incident in particular turned the liquidity crisis into a confidence crisis, causing panic in capital markets and a virtual freeze in global trade. There was a widespread collapse of confidence in the banking systems in the industrialized world, especially so in the interbank market, and with the money markets becoming dysfunctional. The transmission mechanism of monetary policy itself was thereby disrupted. That led to an unprecedented and synchronized downturn in business and consumer confidence around the world; a significant drop in aggregate demand thereby ensued. A fully-fledged global credit crunch and stock market crash emerged, as interbank lending was effectively frozen on the fear that no bank was safe anymore.

Not only did the events just elaborated upon take place within countries, but also amongst countries; and it was all originated in the US.[1] All in all, a significant and

[1] The inquest of the Lehman Brothers collapse (published on the 11th of March, 2010 and undertaken by Anton Valukas and handed to him by a US bankruptcy court) is actually very revealing in terms of the activities of financial institutions. Lehman Brothers was an organisation prepared to take short cuts and huge risks to boost earnings; control and accounting procedures were found totally lacking. In the process the device 'Repo 105' was invented, which allowed Lehman Brothers to reduce 'apparent' leverage. The device allowed Lehman Brothers to pledge assets as collateral worth 105% of the cash received from the counterparty, to be returned after a specified period. The transaction is treated as a

synchronous global severe downturn is well with us by now: the 'great recession'. The seriousness of the economic situation can be further highlighted by the estimated $4.1trillion losses in the world financial system, less than half of which has been formally written off.[1] No wonder central banks around the world have initiated unconventional monetary policies to help their financial markets to overcome their financial difficulties (see, for example, Borio and Disyatat, 2009). Not to mention the attempts by governments around the globe, with different degrees of intervention and enthusiasm, to contain the depth of the crisis through 'stimulus packages', both fiscal and monetary, and to revive the real economy (see, for example, Arestis and Karakitsos, 2010a).

We turn our attention next to the contributory factors to the crisis, beginning with international imbalances.

2.3 International imbalances

The process described so far was also accentuated by the international imbalances, which were built up over a decade or more prior to the crisis. The rise of China and of many other parts in Asia in particular, and the strategy they adopted to expand manufactured exports to create employment, produced high growth rates as a result. In some cases, that growth rate was more than double that of the developed world. Consumption was restrained in view of inadequate consumer finance, thereby creating a great deal of savings. Substantial trade surpluses emerged in these countries, which helped to keep total demand in line with supply. By contrast, countries importing these manufactured goods ran trade deficits and required low saving rates to balance their economies. As a result, high-saving countries created employment and low-saving countries enjoyed faster consumption growth in view of cheap imports.

The 'privilege' enjoyed by the US dollar as the world's currency encouraged and enabled that amount of savings to be channelled mainly into the US, helping to put

'sale' in which case the assets pledged can be removed from the balance sheet while the cash received is used to pay off liabilities thereby reducing apparent leverage at critical moments. This was deemed legal and used widely by Lehman Brothers, although some lawyers question its validity under US law.

[1] The total cost of the financial crisis is calculated to be anywhere between one and five times the value of annual GDP. For the global economy this would be a loss of up to $200 trillion (Haldane, 2010, p. 4). IMF (2010a) provides further relevant statistics in terms of output and unemployment across countries. Output and unemployment responses during the 'great recession' differed markedly across advanced countries. Output dropped by more than 8 percent in Ireland but by only half as much in Spain. Unemployment increased by 7.5 percent in both countries. By contrast, in Germany output dropped by 7 percent, while unemployment decreased over the same period.

downward pressure on US interest rates. Also, the increasing allocation of manufacturing jobs to the relatively low wage areas of Asia, and China in particular, where well educated low-cost workforce protected by the rule of law, and combined with developed world technology, helped to keep down wages and hence low inflationary pressures in the US and elsewhere. This along with the channelling of savings into the US also enabled the US low-to-mid-income households to increasingly rely on credit as a means of survival.

These factors, especially the massive flows of capital into western financial markets, especially the US, pushed down interest rates, which along with the low interest rate policy pursued by the Fed over the same period, encouraged risk-taking on an extraordinary scale, and enabled US households to live well beyond their means. Low interest rates at the same time helped to push up asset prices, especially house prices, thereby enabling the financial sector to explode. Banks expanded their balance sheets substantially; and as King (2010) put it: "In the five years up to 2007, the balance sheets of the largest UK banks nearly trebled. The build-up of risk came to threaten the stability of the entire financial system" (p.4). The explosion of the banking sector enabled lending to households and businesses to expand substantially along with lending to other banks. All these imbalances created a more buoyant market for financial institutions thereby feeding the originate-and-distribute culture and machine (see Arestis and Karakitsos, 2010a for further details).

An important lesson follows from this experience, which is that the interests of the private financial sector are inconsistent with those of the whole economy. Consequently, regulation of the financial sector by bodies accountable to the public should be carefully considered and implemented. Such required reform should, of course, entail regulation and relevant restructure not merely of the domestic banking system but also of the international monetary system. We consider domestic regulation below. It is, though, imperative to consider the possibility of regulating the international monetary system at this juncture in view of the analysis in this subsection. Global imbalances contributed to previous crises, and were an important item on the agenda at the Bretton Woods conference in 1944. Indeed, Keynes (1980) recognized the asymmetry of the obligations imposed on the countries involved with the problem of adjusting international imbalances. Keynes (op. cit.) argues, "To begin with, the social strain of an adjustment downwards is much greater than that of an adjustment upwards" but also "the process of adjustment is *compulsory* for the debtor

and *voluntary* for the creditor. If the creditor does not choose to make, or allow, his share of the adjustment, he suffers no inconvenience. For whilst a country's reserve cannot fall below zero, there is no ceiling which sets an upper limit. The same is true for international loans if they are to be the means of adjustment. The debtor *must* borrow; the creditor is under no such compulsion" (p. 6). In terms of the current international imbalances they have been allowed to continue for a long period in view of the privileged position of the US as the issuer of the world's reserve currency. The 'great recession' experience clearly implies that designing an international monetary system to avoid the problems alluded to by Keynes (1980) is long overdue.

A way forward is Keynes's (1980) proposal for an International Currency Union (ICU) with member central banks holding 'clearing accounts' in a new institution, the International Clearing Bank (ICB). The latter would issue 'bank money', the bancor. Each national currency would have a fixed, but adjustable, relation to the bancor. Residual international transactions would be settled through these accounts. The object of the ICB would be to maintain balance-of-payments equilibria between each of its members and the rest of the world. Persistent overdrafts and credits in the ICB's accounts would reflect deficits and surpluses in the balance-of-payments accounts of the countries involved. The aim of the ICU framework should be to bring simultaneous pressure on surplus countries to reduce their surpluses, and on deficit countries to reduce their deficits. This aim was reflected in the rules designed to govern the quantity and distribution of bancors. An important ingredient of this proposal is the suggestion "that central control of capital movements, both inward and outward, should be permanent feature of the post-war system"; and this should be "part of a uniform multilateral agreement by which movements of capital can be controlled *at both sides*" (Keynes, 1980, p. 52). Under current arrangements the best mechanism whereby this can be achieved is through the IMF in close collaboration with the G20 (which produces almost 90 percent of global GDP). In April 2009, the G20 agreed to a new policy coordination framework with the IMF. This could become the platform for a new initiative along the lines just suggested.

2.4 Monetary policy

The other feature suggested earlier is the particular monetary policy pursued over the period of the financial innovations as described above. More specifically, this feature springs from the focus of economic policy, and monetary policy in particular, on price

stability, and inflation targeting as the main framework of this type of policy, at the exclusion of any other objectives. Monetary policy is thereby geared to frequent interest rate changes as a vehicle to controlling inflation. It should be noted, though, that the US monetary authorities never pursued inflation targeting as the theoretical framework requires. The constitution of the Fed requires the pursuit of monetary policy for the achievement of a number of objectives, not merely that of price stability. The latter objective is required by the inflation targeting theoretical framework and adopted by the inflation targeting countries. Still, manipulating the rate of interest has been at the forefront of monetary policy in the US.

The impact of this policy has been the creation of enormous liquidity and household debt in the major economies, which reached unsustainable magnitudes and helped to promote the current crisis.[1] This was particularly so after the burst of the IT bubble in March 2000 when central banks, led by the Fed, pursued highly accommodative monetary policies to avoid a deep recession. Looking at debt statistics (see, BIS, 2008, p. 29), we find the following: between 1998 and 2002 outstanding household debt, including mortgage debt, in the UK was 72.0 percent of GDP; between 2003 and 2007 it shot to 94.3 percent of GDP; in the same periods, outstanding household debt jumped from 76.7 percent to GDP to 97.6 percent of GDP in the case of the US; and in the Euro Area from 48.5 to 56.6 respectively. This suggests that while monetary policy did not have a role in causing the crisis it was, nonetheless, largely responsible for its promotion and continuation.

It should be clear that the dominant argument that increased liquidity is always beneficial may not be so wide-ranging. Diminishing marginal utility and associated increased financial activity relative to real economic activity along with speculation create increasing dangers of destabilizing herd. This implies that an 'optimal level' of liquidity is evident. However, there is a serious complication in that although "an optimal level of liquidity, with increased liquidity and speculation valuable up to a point but not beyond that point" there is nonetheless "the complication for practical

[1] Interestingly enough, Alan Greenspan argued at the 2010 Financial Crisis Inquiry Commission that the house-price bubble and the subsequent global financial crisis were not caused by the low overnight interest rates of the central banks but by the low long-term mortgage rates. Nor would an attempt by the Fed to rein on the subprime mortgage industry have succeeded; this is so simply because, as Alan Greenspan's argued, the Congress would have blocked it – given the widely held view that the industry was bolstering home ownership across the US. In Alan Greenspan's view higher capital and liquidity requirements for banks and increased collateral requirements for financial products would restrict losses to equity holders only; taxpayers will not be at risk. The severity of future crises would thereby be mitigated.

policy makers that the point of optimal benefit is impossible to define with any precision, that it varies by market, and that we have highly imperfect instruments through which to gain the benefits without the disadvantages" (Turner, 2010, p. 28). As alluded to above, the enormous liquidity created over the period in view of the monetary policy pursued at the time, must have surpassed the 'optimal level' to which we have just referred.

It is also important to note that the credit part of liquidity was particularly important in promoting the 'great recession', as Schularick and Taylor (2009) show. It is the case, though, that policymakers and proponents of the current macroeconomic paradigm, the 'New Consensus' theoretical framework in Macroeconomics, do not take credit and money seriously; they have no role to play in monetary policy. Indeed, the proponents firmly believe that macroeconomic outcomes are independent of any financial factors. They ignore that "financial factors can have a strong, distinct, and sometimes even dominant impact on the economy" (Schularick and Taylor, op. cit., p. 1).[1] The credit system, though, could potentially have a role in producing financial instability, closely related to the proposition that 'financial crises are credit booms gone wrong', which is often attributed to Minsky (1977). Interestingly enough, Schularick and Taylor (2009) produce evidence that supports this view. Utilising a linear probability model, along with a probit model, conclude "that a credit boom over the previous five years is indicative of a heightened risk of a financial crisis" (p. 20), and that "the use of credit aggregates, rather than monetary aggregates, is of crucial importance" a result that leads to the further conclusion that "credit is a superior predictor, because it better captures important, time-varying features of bank balance sheets such as leverage and non-monetary liabilities" (p. 22). An important implication of these results for monetary policy purposes is that to the extent financial stability is the focus of monetary policy, then a better instrument to focus on is credit aggregates in view of its superior power to predict incipient crises. Even policymakers recognise the importance of the 'credit view' of financial crises For example the Chairman of the UK's Financial Services Authority has exressed a firm interest in this view along with the suggestion of the importance to regulate credit (see, for example, Turner, 2009).

[1] See Arestis (2009) for a comprehensive critique of the 'New Consensus' Macroeconomics.

As a result of these developments, the transmission mechanism of monetary policy has changed: the build up of household debt and asset holdings has made household expenditure more sensitive to short-term interest rate changes. Furthermore, the current high debt levels, combined with the difficulties in the 'real' sector, imply that lenders and equity holders stay away from the market place; not forgetting the presence and magnitude of toxic assets, which pose real problems that still need to be sorted out. The dangers with this type of conduct of monetary policy are clear: frequent changes in interest rates can have serious effects: low interest rates cause bubbles; high interest rates work through applying economic pressures on vulnerable social groups. There are, thus, severe distributional effects (see Arestis and Karakitsos, 2010a, for further details).

It should also be noted that monolithic concentration on price stability does not guarantee economic stability of the economy (King, 2009; IMF, 2009). In fact, it can lead to economic instability (see, also, Blanchard et al., 2010 and Karakitsos, 2010). Indeed, asset bubbles are often preceded by price stability. A few examples make the point very well: US 1929; Japan 1990s; South East Asia 1997; US again 2007. In all these cases, price stability was followed by the burst of a bubble. Central Banks should move beyond price stability. It is also relevant to note at this point that focusing on interest rate variations to prick a bubble cannot be relied upon. This is so for the simple reason that since such an attempt would require quite substantial changes in the rate of interest, the rest of the economy is bound to be seriously and adversely affected.

We have argued elsewhere that targeting net wealth might be a more appropriate variable to focus on, rather than inflation, for monetary policy purposes (Arestis and Karakitsos, 2010a).[1] A wealth target deals with the consequences of the rise and fall of asset prices on the economy and is not a target of asset prices per se - equities or houses. Net wealth is an ideal variable to monitor (and control) bubbles simply because it is at the heart of the transmission mechanism of asset prices and debt to consumption. Economic policy should be tightened/loosened as the ratio of net wealth to disposable income, over a period of time, is above/below a predetermined threshold. This would allow asset price booms, but it would prevent them from becoming bubbles that will ultimately burst with huge adverse consequences for the

[1] Net wealth is defined as the assets (financial and tangible) less the liabilities of the personal sector, which include mortgage debt and consumer credit.

economy as a whole. Such an approach will also help regulate financial engineering, since the central bank will monitor the implications of financial innovations as they impact net wealth, even if it is ignorant of them (as in the case of SIVs). Financial engineering is so complex that central banks have a tough time in measuring, monitoring and controlling the total liquidity in the economy. A net wealth target will check the consequences of this liquidity, while not impeding the financial engineering of the banks.

2.5 The role of credit rating institutions

There is sufficient consensus by now that credit rating agencies contributed to the current financial crisis.[1] The enormous growth of the international financial markets over the last 20-25 years could not have materialized without the credit rating agencies. The importance of the availability of internationally acceptable indicators of the risk of default is beyond doubt. And while the system of credit rating agencies has provided reliable ratings in terms of corporate and government bonds, the same cannot be said in terms of the collateralized products discussed above.

The complex structure of the CMO and CDO markets complicated the task of credit rating institutions, which erroneously assigned AAA-status to many worthless papers. In fact some 80 percent of the total value of CMOs and CDOs were rated as having AAA credit rating, thereby treated as completely safe (Goodhart, 2009). Greenspan (2010) puts it more blantly: "The venerated credit rating agencies bestowed ratings that implied Aaa smooth-sailing for many a highly toxic derivative product" (p. 13); and that "despite their decades of experience, the analysts of the credit rating agencies proved no more adept at anticipating the onset of crisis than the investment community at large" (p. 12). The overstated credit rating contributed to the growth of the CMO and CDO markets in the upswing but also to its downfall in the downswing. In the aftermath of the subprime crisis in the US, credit rating agencies were blamed for their high initial ratings of structured finance securities in that they did not reflect the true risks inherent in those securities. This unfortunate episode emerged in view of the credit rating agencies that rated only the credit default risk and not market or liquidity risk. For example, government debt with a rating of AAA had a different and superior overall quality as compared with the AAA of CMOs and

[1] Accusations of this type directed at credit rating agencies also featured in previous crises, starting with the South East Asian crisis of 1997 (see, for example, Utzig, 2010).

CDOs. Many lenders who bought CMOs and CDOs were under the impression that all three types of risks were included in the rating of these tranches. They were, thus, confusing the AAA rating of government bonds and CMOs/CDOs.

It may very well be the case, though, that rating agencies got this assessment of the credit default wrong. Although there is no evidence of this proposition, it may very well be the case that insufficient competition amongst the credit rating agencies means that they are not beyond reproach (Goodhart, 2009, chapter 2). In terms of the US monetary policy makers, Greenspan (2010) admits, "We at the Federal Reserve were aware as early as 2000 of incidents of some highly irregular subprime mortgage underwriting practices. But regrettably we viewed it as a localized problem subject to standard prudential oversight, not the precursor of the securitized subprime mortgage bubble that was to arise several years later" (p. 7, footnote 13). A policy debate has been triggered about the need to strengthen the regulatory framework for credit rating agencies; the G20 London agreement of April 2009 contains relevant regulatory provisions.

Two further relevant comments are in order. The first is that while credit rating agencies provide information on the audit quality, namely on the probability of default of financial products, they say nothing in terms of potential systemic risk. The latter being the danger of a chain reaction that emanates from a number of financial institutions faced with serious difficulties. It follows that while it may be rational for firms and investors to be guided by ratings in their investment decisions, they can destabilise the financial markets at a systemic level in the process. The second relevant comment on credit rating agencies concerns their role in the economy. This is to forecast the probability of default on the repayment period of the issuer of a debt liability. Their job is, therefore, relevant forecasting. The accuracy of their forecasts is clearly an important issue, which should be susceptible to ex post accountability. On this score there is no check on their forecasts since it is left to the credit rating agencies themselves what precisely to publish. Also, conflict of interests is another important feature of the credit rating agencies. They have been accused on this score in terms of their over optimism of their ratings of CMOs and CDOs. In this context it is important to note that credit rating agencies are paid by the issuers, not by the investors. In fact, the larger credit rating agencies receive most of their revenues from the issuers they rate; and these fees were enhancing their revenues and profits substantially during the boom. Thereby creating potentially a serious conflict-of-

interest case; this could very well distort upwards their ratings. Although reputation and competition might protect this upward bias, the super-normal profits earned and the fact that issuers seek out that credit rating agencies that provide the highest rating, "indicate(s) a prime facie case for bias" (Goodhart, 2009, p. 121).[1]

It should be noted with some interest that the Bank of England, and to a lesser extent the European central bank, signal a clear break away from credit rating agencies. In a recent consultative document the Bank of England, 2010; see, also, Bank of England, 2008) proposes to make its own risk assessments for different types of collateral. According to this consultative document the Bank of England seeks views on two specific issues: the first, "seeks market participants' views on further widening the range of collateral in the Discount Window Facility (DWF): specifically, a proposal to accept as eligible collateral portfolios of loans". The second "seeks views on the Bank's initiative to require greater transparency in relation to structured products (asset-backed securities and covered bonds (ABS)) as part of the eligibility criteria for instruments accepted in all of its operations, including the extended-collateral long-term repo operations, the Special Liquidity Scheme while it is outstanding, and the DWF" (Bank of England, 2010, p. 2). It is, of course, the second issue that is most relevant to our current discussion. The Bank of England began in December 2007 to accept asset-backed securities and covered bonds. The new element in the consultative document is to enhance the eligibility criteria of these securities. In this attempt, enhanced disclosure of information relating to these securities would be required.

Even more recently, the Bank of England repeated that credit-rating-agencies downgrades to a government bond would not necessarily perturb it to accept such security as collateral (10 May 2010).[2] As for the credit risk of assets, the Bank of England would decide on its own and pay little attention to what the credit rating agencies might suggest. The ECB, interestingly enough, also changed its lending rules (beginning of May) so that it would accept Greek debt as collateral.[3] Clearly both central banks give themselves more flexibility in terms of the collateral they would

[1] We may note in passing that the number of credit rating agencies is only three: the American-based Moody's and Standard & Poor's and the European-based Fitch. Clearly this is an insufficient number for healthy competition.

[2] The details on the collateral policy of the Bank of England are available at: www.bankofengland.co.uk/markets/money/eligiblecollateral.htm.

[3] In April 2010, Greek debt was substantially downgraded by the credit rating agencies to 'junk' status.

accept in their operations. In doing so they rely less on the judgment of credit rating agencies; thereby giving themselves a great deal of more discretion.

Further possibilities, in addition to the Bank of England (2010) consultative document, as potential remedies for the problems discussed above, have been suggested. Goodhart (2009, p. 121) summarises few of such potential proposals: issuers to pay for advice/analysis separately from the rating; provide more precise disclosure of credit rating agencies' fees; issuers to publish ratings from two or more credit rating agencies; establish an independent assessment body to check the accuracy of the probability of default predictions of the credit rating agencies; provide broad dissemination of the information details used to establish the credit rating. Further proposals for reform to ensure that credit rating agencies are trustworthy include (see, for example, Utlig, 2010, for a comprehensive review): leave the responsibility of repairing the damage credit rating agencies have suffered, and remedying the problems identified in view of the great 'recession', with the credit rating agencies themselves; involve the government to supervise the process or provide an additional credit rating agency; make the credit rating agencies legally liable for their actions; prevent issuers paying credit rating agencies, thereby forcing the latter to seek payment from investors; and there is, of course, always the possibility of abolishing them in view of their unacceptable performance and experience. If on the other hand credit rating agencies are indispensable, and thus vital to retain them in view of their role in assessing the risk of securities, reform becomes a very urgent matter.[1] An important prerequisite of a successful reform of the credit rating agencies is that it should be globally consistent; different regulatory requirements would simply destroy the international comparability of ratings thereby creating the potential of further financial crises.

The analysis so far has been concerned with the causes of the crisis. We turn our attention now to the economic policy implications of the crisis.

[1] This is even more urgent in view of the fact that they remain still influential. Witness the enormous problems that they have caused to Greece. Also, the impression they give of wishing to cause the break up of the European Union and the European Monetary Union. It is, therefore, at all surprising that the President of the European Commission made a serious and castigating statement on the role played by the credit rate agencies in promoting the crisis. He also put forward the proposition of placing them under the direct supervision of a 'European Securities Markets' authority (Financial Times, 6 May 2010). This was reinforced by a letter to Le Monde by The Chancellor of Germany and the President of France who recommend 'a clampdown on credit rate agencies' (7 May 2010).

3. Economic Policy Implications

3.1 Preliminary Observations

The obvious initial policy implication is that the focus on monetary policy to meet the single objective of inflation should be abandoned. IMF (2009) is very clear on this score, "We must learn lessons from the events of the past two years. They cannot be final conclusions because the present crisis has some way to run. But two stand out. First, price stability does not guarantee stability of the economy as a whole. Second, the instruments used to pursue financial stability are in need of sharpening and refining" (p. 5). The IMF (2009) argues along similar lines, in that Central Banks should move beyond price stability with the following possibility: "that central bank mandates be expanded to include concern for financial vulnerabilities" (p. 116; see, also, Blanchard et al., 2010). King (2009) also suggests that "price stability does not guarantee stability of the economy as a whole" and that "Inflation targeting is a necessary but not sufficient condition for stability in the economy as a whole" (p. 5).

Coordination of monetary and fiscal policies is vital, along with discretion in applying them. Fiscal policy should be used both in the short term and in the long term to address demand issues. In this respect, relatively frequent adjustments to fiscal stance in the light of macroeconomic developments are necessary. Monetary policy should focus on financial stability. Regional and industrial policies should be employed to create the required capacity. The perception of how one reaches such a conclusion relies heavily on the belief that the objectives of macroeconomic policy are sustainable (environmental and otherwise) along with equitable economic development and growth. Within this general focus, the main objective of macroeconomic policy is the achievement of full employment of the available labour force. Achieving such an objective would require, inter alia, the maintenance of a high level of aggregate demand consistent with full employment of labour. Also, the provision of sufficient productive capacity to enable the achievement of full employment; where sufficient is to be interpreted in terms of quantity, quality and geographical distribution. In this sense, industrial and regional policies are required to enhance supply. Public expenditure, particularly investment, can also be structured to ease supply constraints.

In terms of the inflationary process, inflation is viewed as multi-causal and the sources of inflationary pressure vary over time and economy. The range of factors,

which impact on the rate of inflation, includes: struggle over income shares; the level and rate of change of the level of aggregate demand and cost-push factors emanating notably from the foreign sector (change in import prices and the exchange rate). It is also the case that the evidence on the relationship between inflation and output suggests that it is not necessarily negative for at least single figures (Ferguson, 2005 summarises the argument; see, also, Ghosh and Phillips, 1998; Fisher, 1993; Bruno and Easterly, 1996; Levine and Renelt, 1994; Khan and Senhadji, 2001). The control of inflation, therefore, should be regarded as a side issue unless inflation is once again exhibiting tendencies to continue to rise and to exceed double figures. Under such circumstances, an incomes policy should be developed when inflation reaches high levels that can cause problems to the real economy.

Interest rate policy should be set so that the real interest rate is in line with the trend rate of growth, although this may be constrained by world levels of interest rates and the country's exchange rate. However, the main operations of any Central Bank should be directed towards financial stability. The events leading to the 'great recession' testify to this important requirement. Financial stability has attracted renewed interest and focus as an instrument of monetary policy. As such it requires further investigation, especially so in view of the recent initiatives by the President of the US and others. King (2009), for example, argues that "the instruments used to pursue financial stability are in need of sharpening and refining" (p. 5). This is a very welcome sign. We turn our attention to this development in what follows.[1]

3.2 Financial stability

3.2.1 General comments

The focus of financial stability should be on proper control of the financial sector so that it becomes socially and economically useful to the economy as a whole and to the productive economy in particular. Banks should serve the needs of their customers rather than provide short-term gains for shareholders and huge profits for themselves. In order to achieve these objectives a number of prerequisites should be in place. To begin with, the core function of banking should be re-stated. This should be to facilitate the allocation and deployment of economic resources over time and place to

[1] All the policies discussed in this sub-section should also include 'green elements'. Especially so since 'green fiscal measures' in the form of 'green investment' as well as 'green-efficiency' measures are most suitable and feasible under current circumstances.

socially useful purposes. It should also be to maximise long-term financial and social returns under conditions of uncertainty. In order to achieve these objectives a number of reforms should be undertaken. The most important, perhaps, is the separation of commercial banking from investment banking. Commercial banking sits at the moment uncomfortably with the risky activities of the investment banking; and most commercial banks have moved into investment banking in search of quick profits. Separation then should allow investment banks to go bust thereby instilling greater discipline and avoiding moral hazard.

A second reform should be the break up of banks that are 'too big to fail'. Allowing banks that are big to fail creates moral hazard: banks pursuing high risk activities confident that the public will have to bail them if and when things go wrong. Also banks need to be broken up both to reduce costs and risks to the taxpayer, and also to inprove the quality and range of services. A further reform is to tax the financial sector and, also, introduce a financial transactions tax. These would need to take place on a worlwide basis and used to slow financial speculation, one of the main causes of the credit crunch. Better regulation should be introduced. Banks should hold more capital, in the form of leverage and liquidity requirements, particularly in booms when risks are by far greater. [1]

Proposals that aim to tackle financial stability have been put forward and we briefly comment on them in what follows below. Probably the most important is the President Barack Obama's proposal, known as the 'Volcker Rule', and we turn our attention to this proposal immediately below.

3.2.2 The US case

On Thursday 21st of January 2010, President Barack Obama took an important initiative in the right direction in terms of his 'Volcker Rule', which states that "banks will no longer be allowed to own, invest, or sponsor hedge funds, private equity funds, or proprietory trading operations for their own profit, unrelated to serving their customers". In short, the proposal "would restrict commercial banking organizations from certain proprietary and more speculative activities" (Volcker, 2010, p. 1). The important implication of all this is that reducing speculative activities "would be a

[1] The proposed requirement discussed in the text by forcing banks to hold more capital could push the countries concerned into depression. This can come about since stringent capital requirements may leave the banks with insufficient funds for lending purposes. Due care and attention are, therefore, vital when constructing the relevant new rules.

significant measure to reduce risk" (Volcker, op. cit., p. 1). This amounts to curbing the size and scope of activity of the largest US banks in an attempt to prevent future financial crises. The plan includes limits to the size of banks and restrictions on riskier trading. This is a way of reducing the vast US bank balance sheets built over the years. Also of tackling the contentious issue of the US financial system that is replete with institutions that are 'too big to fail' and have to be rescued by the authorities when crises emerge.

Volcker (2010) is very explicit about the rational of this proposal. It relies heavily on the argument that there is "a strong public interest in providing a 'safety net' – in particular, deposit insurance and the provision of liquidity in emergencies – for commercial banks carrying out essential services. There is not, however, a similar rationale for public funds - taxpayer funds - protecting and supporting essentially proprietary and speculative activities. Hedge funds, private equity funds, and trading activities unrelated to customer needs and continuing banking relationships should stand on their own, without the subsidies implied by public support for depository institutions" (p. 1). The non-bank institutions "should be free to trade, to innovate, to invest – and to fail. Managements, stockholders or partners would be at risk, able to profit handsomely or to fail entirely, as appropriate in a competitive free enterprise system" (p. 1). The plan contains three important constituent elements.[1]

The first is that size matters. No financial firm should be allowed to become 'too big to fail'. A financial institution that it is too big to regulate and manage is 'a systematically dangerous institution'; such institution should not be allowed to grow. Indeed, the motto 'if you are too big to fail, you are too big to exist', has become a relevant and recent motto.

The second is essentially to eliminate proprietary investments (namely to prohibit banks that take insured deposits from running their own trading operations) and also ownership of hedge funds by banks. This is to avoid the potential for conflicts of interest when a bank is working on behalf of its customers and making its own investments. In this way, deposit-taking banks will not be able to engage in leveraged proprietary trading (i.e. using own funds in investments in search of excess returns), a

[1] The proposals discussed in the text are broadly similar to those of the former Federal Reserve Bank Governor, and currently Chairman of the Economic Recovery Advisory Board, Paul Volcker. It is for this reason that the proposals of President Barack Obama have been labelled as 'The Volcker Rule' (see Volcker, 2010). The proposals require legislation and are likely to be modified in the Congressional negotiations.

highly profitable, but exceptionally risky form of business.[1] Nor will they be allowed to own, invest in or sponsor hedge funds or private equity funds. Institutions, whose downside risk is publicly insured, either directly or indirectly, and because they can blackmail the country when they go down, should not undertake this kind of activity. Financial institutions should be limited to investing their customers' funds. In other words, the President's proposals forbid any bank holding deposits that are guaranteed by the government to operate hedge funds, private equity funds or trade on its own account.

The third element is that the financial sector must be restructured. There are viable small and medium-sized banks that did not fail by the subprime debacle. The big financial institutions serve no public purpose and they are dangerous. US should restore the protections that helped to secure safety under the 1933 Glass-Steagall Act.

One might make a couple of comments on these proposals. The obvious point is that the President's proposals would in effect restore the principles underlying the 1933 Glass-Steagall Act. It would also limit the size of banks so that their failure would not put the entire financial system into jeopardy. This is certainly the modern way forward as Paul Volcker argued in his written testimony to the Senate Banking committee on the 2nd of February 2010. He clarified this particular point and suggested that "The first line of defence ….. must be authority to regulate certain characteristics of systematically important non-bank financial institutions. The essential need is to guard against excessive leverage and to insist upon adequate capital and liquidity. It is critically important that those (non-financial) institutions ….. do not assume a public rescue that will be forthcoming in time of pressure" (Volcker, 2010, p. 1). It, thus, appears to be the case that the crude separation of commercial and investment banks of the 1933 Glass-Steagall Act, is replaced by an equally crude split of the banking business from proprietary trading, hedge funds and private equity. And that banning proprietary trading may well prove to be the modern equivalent of the 1933 Glass-Steagall division. Even so, the 'Volcker Rule' does not insist on complete banning of deposit-taking institutions from every conceivable type

[1] Proprietary trading refers to the amount of financial investments undertaken by banks with their own cash (and thus bearing the risk of trading losses), in addition to their traditional 'acceptance of deposits and provide loans' activity. Financial investments are held primarily because they provide more liquidity than loans since they could be readily sold if needed unlike loans. Over the last twenty years or so, however, this form of investment has increased substantially primarily because of their higher expected returns. This form of investment has also been used to create or invest in hedge funds. During the 'great recession' banks have suffered a great deal of losses in their proprietary investment and trading books.

of investment banking. Underwriting, for example, is thought to be an essential part of a bank's essential work.

Another point that might be added to these elements is that the US Federal Deposit Insurance Corporation (FDIC) should take the lead to audit all those bad mortgages and mortgage-backed securities at their value. And big banks should be made to shrink under FDIC supervision. It should be noted, though, that the 'Volcker Rule' is narrower than the 1933 Glass-Steagall Act. The latter did not allow retail banks to underwrite and distribute the securities of private companies. It limited retail banks' ability to invest in securities on their own account and they were not allowed to own brokerage houses. The 'Volcker Rule' aims to limit risky behaviour by not allowing retail banks to engage in proprietary trading. Retail banks are also prohibited from owning or indeed sponsoring hedge funds or private equity funds. It is also the case that the number of institutions in the 'Volcker Rule' is small, four or five have been suggested, and a couple of dozen worldwide. All these are institutions that generated significant revenues from proprietary trading.

Interestingly enough, the ban on proprietary trading presents a unique opportunity for trading revenues to the non-bank sector. Several banks are also active in trading actual shipments of oil, gas, industrial metals and other physical assets. Part of this trading is also speculative in terms of current and future prices. Unlike banks, commodity-trading companies face no rules in their operations. Consequently, the 'Volcker Rule' could present a chance for the trading houses to enlarge their market share in that banks are likely to cut back on this type of trade. However, it is the case that banks are the main dealers of derivatives used to hedge risks in specialised commodity markets. Cutbacks of this type are bound to restrict the liquidity provided by the banks, which is much needed by the trading houses.

The opponents, the Wall Street institutions lobby, are geared up to fight the President's plan. The Financial Services Forum (FSF) in particular, which represents 18 US top banks, has argued that the President's proposals misdiagnose the causes of the financial crisis; that the proposed separation of commercial banking from investment banking is too complicated and too costly to achieve; that the proposals put jobs at risk, damage US competitiveness and might even threaten growth in the US economy. It has also been proposed that proprietary trading should be limited to a percentage of overall assets or business. Tackling the 'too big to fail' institutions should be undertaken instead through more effective supervision. Establishing a new

authority able to wind down failing financial institutions, rather than forcing them to shrink, can achieve this objective. The most frequently used argument against the proposals is that they are by far too complicated. Surely though, they cannot be more complicated than the creation of the CDOs, as described and discussed in section 2.1 above. Indeed, compared to CDOs that caused the crisis, the new proposals are delightfully simple. No longer would the banks be able to blur the distinction between commercial and investment banks. In any case, ultimately there does not appear to be clear reasons why giant banks are important to the US economy.[1]

An interesting and relevant development is that the FDIC and the Bank of England have signed a memorandum of understanding, a cooperation agreement, on the 22nd of January 2010. The aim is to coordinate the unwinding of troubled financial firms and in the process to protect members of the public who rely on multinational financial companies.[2] This is the beginning of what is actually required, that is international cooperation to resolve the most complex financial institutions. In this context, the suggestion by King (2010), the Governor of the Bank of England, to merge the G20 and the IMF in an attempt to stop imbalances developing in the world economy is very relevant and apt. This could be achieved, according to King (op. cit), if the G20 were to metamorphose into Governing Council for the IMF. The ultimate aim is to endure coordination of economic policy so as to avoid unsustainable imbalances. The IMF and the FSF have proposed taxing large companies to create a global insurance fund. This would be used to rescue relevant institutions in serious difficulties. The counter argument is that such fund would encourage banks to undertake even riskier activities in the knowledge that they can be rescued. The Basle Committee on Bank Supervision has actually raised capital requirements for proprietary trading and is considering extending it further for the largest institutions.[3]

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[1] Another objection comes from the Association for Financial Marketrs in Europe and the Securities Industry and Financial Markets Association in the US. In a letter to the US Treasury Secretary and the EU Markets Commissioner, they are particularly worried about the 'Volcker Rule' and Europe's planned curbs on hedge funds (The Observer, 9 May 2010). The worry is that under such plans the financial sector would not be able to provide the products and services demanded by their customers. Indeed, such rules might create a new credit crunch if introduced without full consideration of these possibilities. Requiring banks to hold more capital could actually result in banks providing less lending than otherwise.

[2] The US Congress is debating as to whether FDIC should be given the authority to dismantle a wider range of troubled financial institutions – FDIC currently has the authority over depository banks only.

[3] The G20 at its London meeting on the 2nd of April 2009 took a number of relevant decisions worth summarising. They include: tighten financial regulations; the current Financial Stability Forum, an international group of regulators, which was launched about 10 years ago by the G7 governments, to be turned into a more pro-active global banking watchdog; it will be renamed the Financial Stability

Further and more recent proposals that intend to deal with the size of financial institutions come from the IMF (2010b). These proposals include more and higher capital requirements, as well more liquid assets, along with the adoption of legal regimes that provide for the orderly resolution of failing institutions. Strong and effective supervision, along with political support, is an essential part of any serious and lasting reform of the financial sector. A complement to these regulatory reforms is to tax the financial sector. This would discourage excessive size as well as wholesale financing, two serious problems in the 'great recession'. International agreement on such proposals is paramount. The IMF (2010b) bank tax proposals, for the G20 finance ministers, are relevant in this context and rely heavily on the need for a global approach. They are designed to ensure that financial institutions bear the direct costs of future failures or crises. In this way, future bailouts would be funded by the banks paying the costs of financial and economic rescue packages. These tax plans comprise of: (i) a financial stability tax, in the IMF language (Cottarelli, 2010) a `Financial Stability Contribution` (FSC) tax, would require banks and other financial institutions to pay a bank levy, initially at a flat rate. This would be later adjusted to reflect risk so that financial sector activities that pose a greater risk would pay a higher rate. This type of tax is designed to fund future Government support, and thereby avoid 'moral hazard' problems.[1] At a later stage, (ii) a financial activity tax (FAT) is proposed, which is a tax on the sum total of profits and remunerations paid by financial institutions. The sum would be a kind of Value-Added Tax (VAT), a tax from which financial institutions are currently exempt. So that imposing such a tax could make the tax treatment of the financial sector similar to other sectors. This would deter the financial sector from being too large on purely tax reasons. It would also contain the tendency of the financial sector for excessive risk-taking.[2]

It might be, though, that neither 'too big to fail' nor taxing the financial institutions should be considered in isolation. They are both necessary and should be treated as

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Board (FSB), and its membership will be broadened to include developing countries, such as China, Brazil and India. The FSB will monitor banks and financial houses, including credit rating agencies, on excessive risks, and inform national regulators. FSB is to bring large hedge funds and financial institutions into the global regulatory net; however, FSB lacks explicit powers to damp down excessively risk-taking institutions.

[1] The IMF´s preferred way to hold this tax is to create a special fund. In this way, the fund "could provide more assurance that the agency in charge of resolution has ready access to the resources it needs" (Cottarelli, 2010, p. 3).

[2] The Financial Transactions Tax idea has also been considered by the IMF (Cottarelli, 2010, pp. 3-4). The conclusion reached by the IMF, however, is that although FTT should not be excluded, FSC and FAT are thought to be more efficient ways of raising tax than FTT.

such. Objections to this proposal have been raised by the central banks of mainly Australia, Canada and Japan, the least affected countries by the 'great recession', who argue that taxing banks reduces in effect their capital thereby making them more, not less, vulnerable to financial crises. No doubt banks would argue, and have argued, that taxing liabilities and transactions to stave off future financial crises carry their own problems. Most important of which is that taxes would not reduce risk in the system; on the contrary, it might increase risk by implicitly building in insurance for the banks' risky behaviour. Interestingly enough, the Basel Committee of Banking Regulation have also argued that the reforms referred to above, especially those for a banking tax, would stifle bank lending and growth. As such they are 'premature'. Adopting instead plans to increase capital requirements and new liquidity rules for banks around the globe would be a better way forward. This would minimise the need for funding to rescue banks when necessary, and help to tackle the 'too big to fail' problem. Such a reform could lead to a reduction of GDP of about 1 percentage point. However, to the extent that these measures produce a more resilient banking system, this is a price worth paying for in the view of the committee (as reported in the Financial Times, 4 May 2010). The 'Volcker Rule' is not in favour of capital and liquidity rules by themselves. They would simply not be enough to avoid another serious financial crisis. They would only work if introduced along with the banning of banks from owning hedge funds and proprietary services.

3.2.2 Experience in Other Countries

Although a 1933 type of Glass-Steagall Act never existed in the UK, and until the liberalisation of finance in the 1980s, retail banks and building societies had been operating separately from the merchant banks. After the liberalisation they built up investment banking divisions. The light-touch style of financial regulation in the UK has failed its crucial test and everyone now agrees that a more heavy-handed approach is needed. A similar initiative to that of the US has been suggested in the case of the UK banking sector (King, 2009; Haldane, 2010). These proposals amount to splitting up banks into retail wings and the so-called casino banks able to engage in speculation. The interesting aspect of this proposal is that it emphasises the costs of 'banking pollution', "The $100 Billion Question" in Haldane's (2010, p. 1) words, closely related to the 'too-big-to-fail' conundrum. The evidence, however, on this score is that "larger banks, if anything, exhibit greater risk due to higher volatility

assets and activities" (Haldane, 2010, p. 13; see, also, De Nicolo, 2000). Indeed, "Economies of scale appear to operate among banks with assets less, perhaps much less, than $100 billion. But above that threshold, there is evidence, if anything, of diseconomies of scale" (Baldane, op. cit., p. 16).

The Chancellor of the Exchequer, the Governor of the Bank of England and the Chairman of the Financial Services Authority (FSA), all three of them have formed the Financial Stability Council (FSC). This grouping has been created to replace the less formal tripartite meetings, introduced in 1997, which stripped the Bank of England of its power to supervise banks.[1] The 'too-big-to-fail' agenda is a key focus for the FSC (Turner, 2010, p. 30). But of equal importance and focus for the FSC is the creation of a system of both 'micro- and macro-prudential' supervision, where the focus is for the regulators to monitor risks in the entire financial system and to try to curb lending excesses.[2] In this sense a more focused approach has been adopted, one that addresses the problems banks had faced in the period leading to the 'great recession', namely inadequate levels of capital and liquid funding.[3] Another relevant proposal by Tucker (2010) focuses on a debt/equity swap. In view of the banks' high leverage, converting debt into equity could improve the balance position of the banks quite substantially. All these proposals, though, lack the important international dimension. In this sense, the G20 along with the IMF, including Keynes's (1980) International Clearing Union suggestion, have an important role to play in enriching these proposals with a proper international dimension.

As just suggested, financial stability in the UK proposed framework incorporates both macroprudential and microprudential instruments. The macroprudential toolkit should account for the failures of the system: low levels of liquid assets; inadequate levels of capital with which to absorb losses; too big a financial sector; too leveraged a sector with high risks to the taxpayer and the economy. Thus, macroprudential financial instruments should be able to control and "prevent the size, leverage, fragility and risk of the financial system from becoming too great" (King, 2009, p. 6). Microprudential instruments relate to the structure and regulation of individual banks.

[1] In May 1997, the Bank of England was granted independence and assigned the role of setting the rate of interest to target inflation by the Monetary Policy Committee. The FSA was created at the same time to take over the role of bank supervision. See Angeriz and Arestis (2007) for further details.

[2] The European Union is planning a European Systemic Risk Board (ESRB) under the aegis of the European Central Bank (ECB).

[3] A similar approach has also been adopted by the international Basel Committee on Banking Supervision of the Bank for International Settlements.

Banks that are ‘too big to fail’ should be cut down in size; guarantees to retail depositors should be limited to banks with a narrower range of investments; risky banks to taxpayers and economy should face higher capital requirements; large and complex financial institutions can be wound down in an orderly manner; and large banks should not be allowed to combine retail banking with risky investment business. Possibly, combining all the elements just suggested. An important requirement of such a policy proposal is that both ‘micro- and macro-prudential’ instruments should be under the banner of the policy makers avoiding rules and employing judgement and thus discretion.

More generally speaking, most of the advanced nations have had to think seriously about bailing out their banks and think of the next step to avoid repetition of the recent experience. There are, however, two important exceptions in the case of Canada and Australia, whose banking systems are arguably the world’s soundest. No Canadian or Australian banks were required to be bailed out in 2008 or 2009. In Canada, this is due to the institutional setup that emphasises capital requirements, quantity of capital and leverage ratio (debt to equity), and in more general terms Canada’s uncomplicated and well-coordinated regulatory framework. It is also the case that Canada has a highly stable, be it restrictive, mortgage market. Banks in Canada hold the mortgages they originate; they have not adopted the securitised model that produced so much trouble as elsewhere. It is also the case that government intervention is extensive on this front. The Canada Mortgage and Housing Corporation is dominant in the domestic mortgage insurance market. 30 percent of outstanding mortgages are mortgaged-backed securities issued by Canadian banks and guaranteed by the government. These are important aspects that seem to be lacking in other financial environments.

The Australian case is another exception where the banking system remained strong throughout the current crisis. The Australian banking system is an oligopolistic entity, essentially dominated by four large banks. The ‘four pillars policy’ maintains the separation of these banks by disallowing their merger or acquisition. This legislation limits the size of Australian banks and reduces competition between these banks. It may be one factor that made Australian banks less inclined to accept larger risks and thinner margins than their US counterparts. Furthermore, no subprime mortgage market of the US type discussed earlier even existed in Australia. Australian banks typically limited direct exposures to securities such as CDOs and CMOs for

two reasons: (a) there is a relatively small number of rated companies in Australia, which makes it difficult to put together a pool of Australian credits that will support the issue of investment-grade securities (RBA, 2003); and (b) by international standards, the Australian Prudential Regulation Authority has tighter capital requirements on high-risk loans and stricter requirements for third party originated loans (e.g. banks must ensure that the originator applies the banks' own credit assessment standards). So, Australian banks have less incentive to securitize their debt than in the US. An important implication is that the Australian government could concentrate on a fiscal transfer that stimulated personal disposable income, estimated to be 4%, rather than using government resources to bail out Australian banks.

4. Summary and Conclusions

We have dealt with the origins of the current crisis along with its consequences in terms of economic policy. In so doing we have highlighted a number of implications. This analysis suggests that there are economic lessons that emanate from the recent crisis. We discuss these briefly along with their implications for the future conduct of economic policy. In doing so, though, we should not forget Minsky's (1986) dictum: "instability is determined by mechanisms within the system, not outside it; our economy is not unstable because it is shocked by oil, wars or monetary surprises, but because of its nature' (p. 172). As such, the markets in the system, especially financial markets from the point of view of our analysis, need supporting infrastructure of governance, laws and culture. Financial intervention and regulation is a key aspect of the system. This is an important message, which is the backbone of the analysis of this contribution.

We have discussed policies that direct attention to the banking sector as in the recent proposals of the US President, in the form of the 'Volcker Rule' as it has been labelled. Also examples from Australia and Canada are discussed, which clearly pinpoint to relevant economic policy prescriptions. It is hoped that failures to appreciate the beginnings of crises, such as the example of the statement by the IMF in April 2007, would be avoided in the future. The statement admits that "..... this *World Economic Outlook* sees global economic risks as having *declined* since ..... September 2006 ..... we actually see the continuation of strong global growth as the most likely scenario ..... the overall U.S. economy is holding up well ..... the signs elsewhere are very encouraging" (IMF, 2007, p. xii). Not merely did the IMF fail to

appreciate the looming crisis but other monetary authorities now acknowledge the degree and depth of the problem. Greenspan (2009) readily admits as much very clearly: "In the growing state of high euphoria, risk managers, the Federal Reserve, and other regulators failed to fully comprehend the underlying size, length, and impact of the negative tail of the distribution of risk outcomes that was about to be revealed as the post-Lehman crisis played out. For decades, with little, to no, data, most analysts, in my experience, had conjectured a far more limited tail risk. This is arguably the major source of the critical risk management system failures" (p. 12).

King (2009) puts it even in stronger terms: "The costs of this crisis are not to be measured simply in terms of its impact on public finances, the destruction of wealth, and the number of jobs lost. They are also to be seen in the lost trust in the financial sector among other parts of our economy. For a generation or more, businesses and families up and down the country were told, not least by the City, that the disciplines of the market economy were essential, even if painful in the short run, for greater prosperity in the longer term. That belief in the merits of a market economy was embraced and for many years was not misplaced. But out of the blue – in this case the financial sector – came a crisis ..... It has wreaked havoc on those same businesses and families. Unemployment ..... is rising sharply. And yet it is the banking system that has received financial support on an almost unimaginable scale. We who work in the financial sector have much to do to regain the trust of those who work outside it" (p. 8). It is, indeed, high time that banks, and financial institutions more generally, should operate along the more familiar, and healthy, lines: direct credit as needed and in the process support enterprise; and be part of the system that generates investment and innovation for a healthier and more prosperous economy. Big banks should be brought back to a healthier size and, of equal importance, limit their capacity to speculate. Of equal importance is the need to curb the power and influence of the credit rating agencies.

References

Angeriz, A. and Arestis, P. (2007), "Monetary Policy in the UK", *Cambridge Journal of Economics*, 31(6), 863-884.

Arestis, P. (2009), "New Consensus Macroeconomics and Keynesian Critique", in Hein, E., Niechoj, T. and Stockhammer, E. (eds.), *Macroeconomic Policies on Shaky Foundations – Whither Mainstream Economics?*, Marburg: Metropolis - Verlag.

Arestis, P. and Karakitsos, E. (2010a), "Subprime Mortgage Market and Current Financial Crisis", in P. Arestis, P. Mooslechner and K. Wagner (eds.), *Housing Market Challenges in Europe and the United States*, Houndmills, Basingstoke: Palgrave Macmillan.

Arestis, P. and Karakitsos, E. (2010b), *The Post 'Great Recession' US Economy: Implications for Financial Markets and the Economy*, Houndmills, Basingstoke: Palgrave Macmillan.

Bank for International Settlements (BIS) (2008), *Annual Report*, June, Basel, Switzerland: Bank for International Settlements.

Bank of England (2008), "The Development of the Bank of England's Market Operations", *A Consultative Paper by the Bank of England*, October, London: Bank of England. Available at: www.bankofengland.co.uk/markets/money/publications/condococt08.pdf.

Bank of England (2010), "Extending Eligible Collateral in the Discount Window Facility and Information Transparency for Asset-backed Securitisations", *A Consultative Paper by the Bank of England*, March, London: Bank of England. Available at: www.bankofengland.co.uk/markets/money/publications/condocmar10.pdf.

Bernanke, B. (2005), "The Global Saving Glutand the U.S. Current Account Deficit", *The Sandridge Lecture, Virginia Association of Economics*, Richmond, Virginia. Available at: www.federalreserve.gov/boarddocs/speeches/2005/200503102/default.htm.

Blanchard, O., Dell'Ariccia, G. and Mauro, P. (2010), "Rethinking Macroeconomic Policy", IMF Staff Position Note, SPN/10/03, Washington, USA: International Monetary Fund.

Bordo, M., Eichengreen, B., Klingebiel, D. and Martinez-Perio, M.S. (2001), "Is the Crisis Problem Going More Severe?", *Economic Policy*, 32, 51-82.

Borio, C. and Disyatat, P. (2009), "Unconventional Monetary Policies: An Appraisal", *BIS Working Paper No. 292,* Monetary and Economic Department, November, Basel, Switzerland: Bank for International Settlements.

Bruno, M. and Easterly, W. (1996), "Inflation and Growth: In Search of a Stable Relationship", *Federal Reserve Bank of St. Louis Review*, 78(3), 139-46.

Cottarelli, C. (2010), "Fair and Substantial – Taxing the Financial Sector", *IMF Direct*. Available at: blog-imfdirect.imf.org/2010/04/25/fair-and-substantial%E2%80%94taxing-the-financial-sector.

De Nicolo, G. (2000), "Size, Charter Value and`Risk in Banking: An International Perspective", *International Finance Discussion Paper, No. 689*, Washington D.C.: Board of Governors of the Federal Reserve System.

Ferguson, R. (2005), "Monetary Credibility, Inflation, and Economic Growth", Speech at the Cato Institute 23rd Annual Monetary Conference on *Monetary Institutions and Economic Development*, Washington, D.C. November 3.

Fischer, S. (1993), "The Role of Macroeconomic Factors in Growth," *Journal of Monetary Economics*, 32(3), 458-512.
Ghosh, A. and Phillips, S. (1998), "Warning: Inflation May be Harmful to Your Growth", IMF Staff Papers, 45(4), 672-710.
Goodhart, C.A.E. (2009), *The Regulatory Response to the Financial Crisis*, Cheltenham: Edward Elgar Publishing Limited.
Greenspan, A. (2010), "The Crisis". Available at: www.brookings.edu/~/media/Files /Programs/ES/BPEA/2010_spring_bpea_papers/spring2010_greenspan.pdf.
Haldane, A.G. (2010), "The $100 Billion Question", Speech at the Institute of Regulation & Risk, North Asia (IRRNA), Hong Kong, 30 March 2010. Available at: www.bankofengland.co.uk/publications/speeches/2010/speech433.pdf.
IMF (2007), *World Economic Outlook*, April 2007, Washington D.C.: International Monetary Fund.
IMF (2009), *World Economic Outlook*, October 2009, Washington D.C.: International Monetary Fund.
IMF (2010a), *World Economic Outlook*, April 2010, Washington D.C.: International Monetary Fund.
IMF (2010b), "A Fair and Substantial Contribution by the Financial Sector", *Interim Report for the Meeting of the G-20 Ministers, 16 April 2010*, Washington D.C.: International Monetary Fund.
Inside Mortgage Finance Publications (2009), *The 2009 Mortgage Market Statistical Annual*, Bethesda, Maryland: Inside Mortgage Finance Publications, Inc.
Karakitsos, E. (2010), "Bubbles Lead to Long-term Instability", Chapter in G. Fontana, J. McCombie and M. Sawyer (eds.), *Macroeconomics, Finance and Money: Essays in honour of Philip Arestis*, Houndmills, Basingstoke: Palgrave Macmillan.
Keynes, J.M. (1980), "Activities, 1940-1946: Shaping the Post-War World: The Clearing Union", *Collected Writings Vol. 25*, London: Macmillan.
Khan, M.S. and Senhadji, A.S. (2001), "Threshold Effects in the Relationship between Inflation and Growth", *IMF Staff Papers*, 48(1), 1-21.
King, M. (2009), Speech at the Lord Mayor's Banquet for Bankers and Merchants of the City of London at the Mansion House, 17 June 2009. Available at: www.bankofengland.co.uk/publications/speeches/2009/speech394.pdf.
King, M. (2010), Speech at the University of Exeter, 19 January 2010. Available at: www.telegraph.co.uk/finance/economics/7033318/Bank-of-England-Governor-Mervyn-Kings-speech-key-points.html.
Lansley, S. (2010), "Unfair to middling: How Middle Income Britain's Shrinking Wages Fuelled the Crash and Threaten Recovery", Available at:www.tuc.org.uk/ economy/tuc-f0.cfm?themeaa=touchstone
Levine, R. and Renelt, D. (1992), "A Sensitivity Analysis of Cross-Country Growth Regressions," *American Economic Review*, 82 (3), 942-63.
Minsky, H. P. (1982), *Can "It" Happen Again: Essays on Instability and Finance*, Armonk: M.E. Sharpe.
Minsky, H. P. (1986), *Stabilizing an Unstable Economy*, New Haven: Yale University Press.
Minsky, H.P. (1977), "The Financial Instability Hypothesis: an Interpretation of Keynes and Alternative to Standard Theory", *The Challenge Magazine*, March-April, 20-27.

Philippon, T. and Reshef, A. (2009), "Wages and Human Capital in the U.S. Financial Industry: 1909-2006", *NBER Working Paper No. 14644*, Washington D.C.: National Bureau of Economics Research.

Reinhart, C. and Rogoff, K.S. (2009), *This Time is Different: Eight Centuries of Financial Folly*, Princeton: Princeton University Press.

Reserve Bank of Australia (RBA) (2003), "Credit Risk Transfer: An Australian Perspective", *Reserve Bank of Australia Bulletin*, May, pp. 55-62. Available at: www.rba.gov.au/publications/bulletin/2003/may/pdf/bu-0503-2.pdf.

Schularick, M. and Taylor, A. (2009), "Credit Booms Gone Bust: Moneatry Policy, Leverage Cycles and Financial Crises, 1970-2008", *NBER Working Paper No. 15512*, Washington D.C.: National Bureau of Economics Research.

Securities and Exchange Commission (SEC) (2010), "Complaint", 16 April, 2010. Available at: www.sec.gov/litigation/complaints/2010/comp21489.pdf.

Tucker, P. (2010), **"**Resolution of Large and Complex Financial Institutions: the Big Issues", European Commission's Conference on Crisis Management, Brussels, Belgium, 19 March 2010. Available at: www.bankofengland.co.uk/publications/speeches/2010/speech431.pdf.

Turner, A. (2009), *The Turner Review: A Regulatory Response to the Global Banking Crisis*, London: Financial Services Authority.

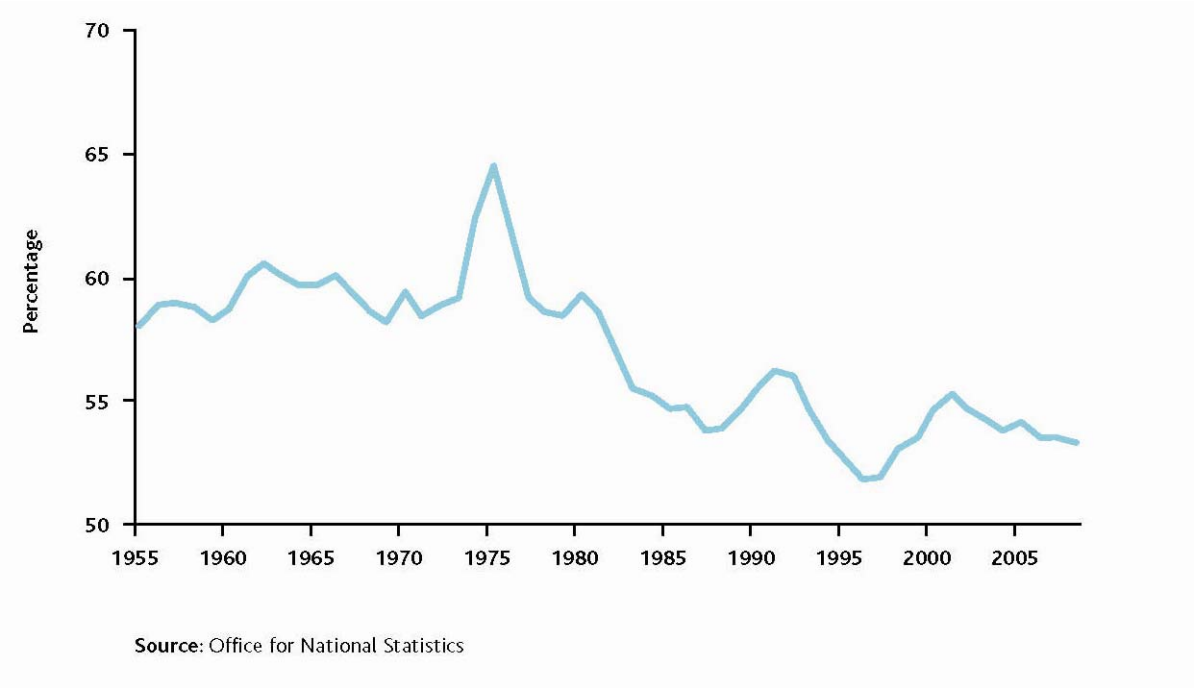
Turner, A. (2010), "What Do Banks Do? What Should They Do and What Public Policies are Needed to Ensure Best Results for the Real Economy?", Speech given at the CASS Business School, 17 March. Available at: www.fsa.gov.uk/pubs/speeches/at_17mar10.pdf.

Utzig, S. (2010), "The Financial crisis and the Regulation of Credit Rating Agencies: A European Banking Perspective", *ADBI Working Paper Series*, No. 188, January, Tokyo: Asian Development Bank Institute. Available at: papers.ssrn.com/sol3/papers.cfm?abstract_id=1592834.

Volcker, P. (2010), "Testimony to the Senate Banking Committee", *Written Testimony*, 2 February.

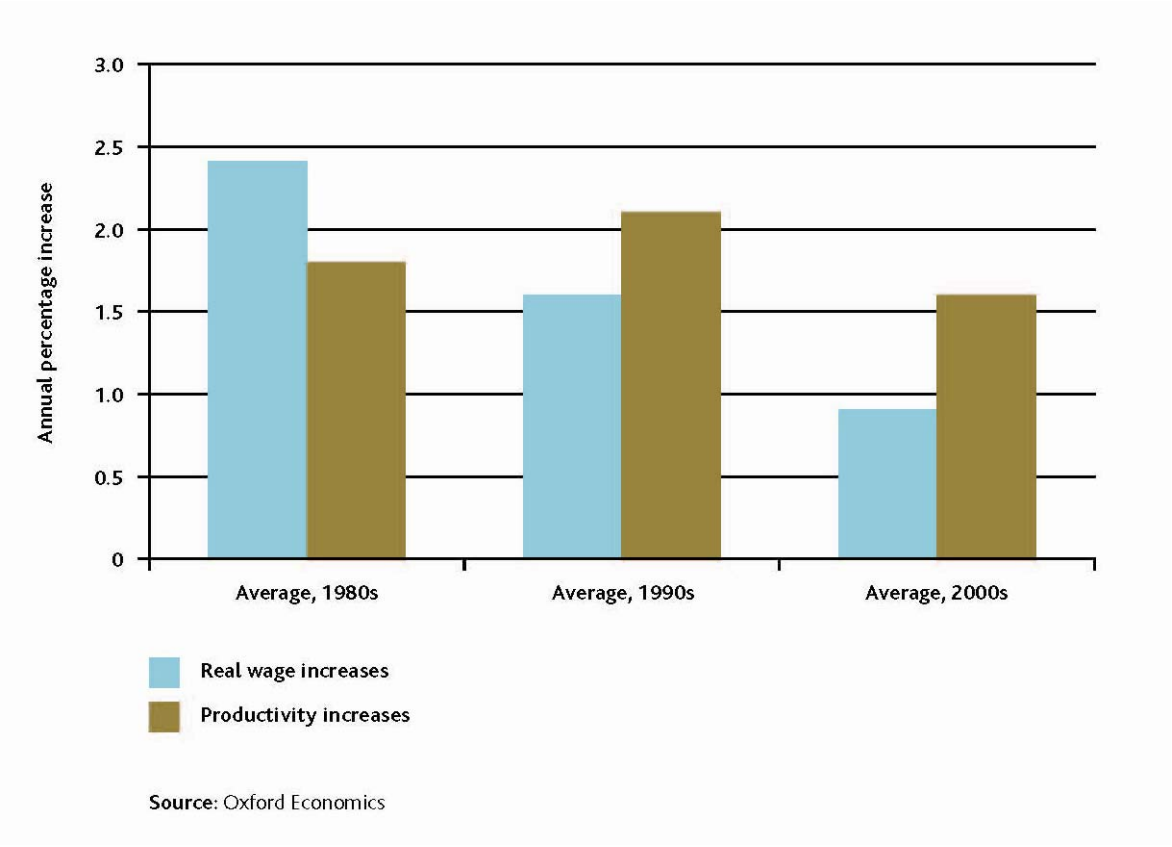
Appendix

Figure 1: UK Wages as Percentage of GDP



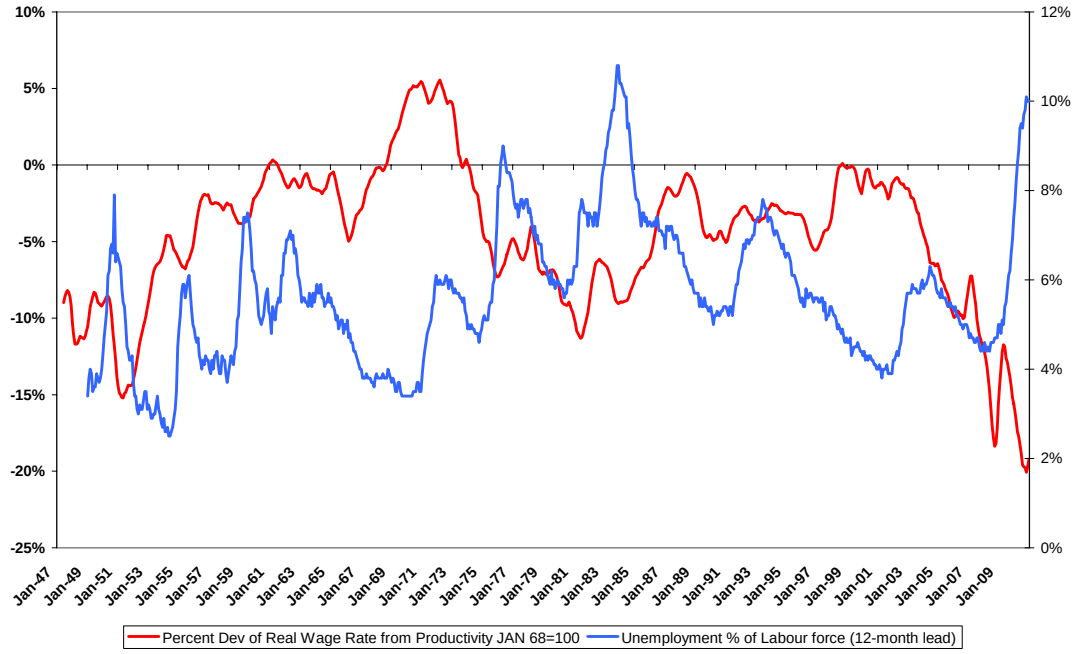
Source: Office for National Statistics

Figure 2: UK Wages Relative to Productivity



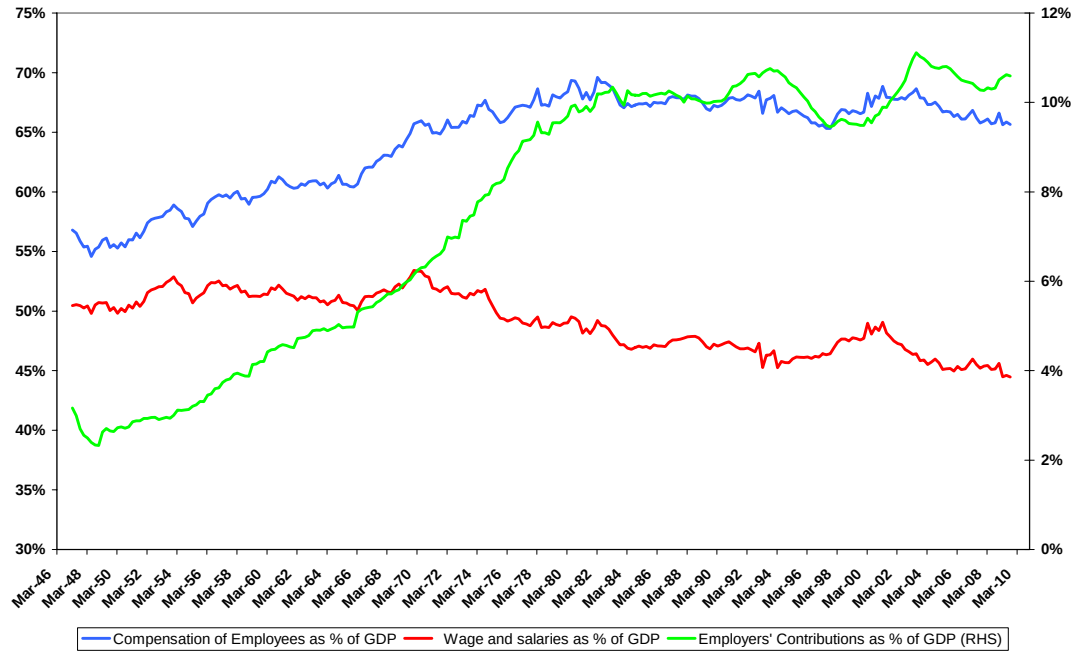
Source: Oxford Economics

Figure 3: Percentage Deviation of Real Wage Rate from Productivity (January 1968=100) and Unemployment



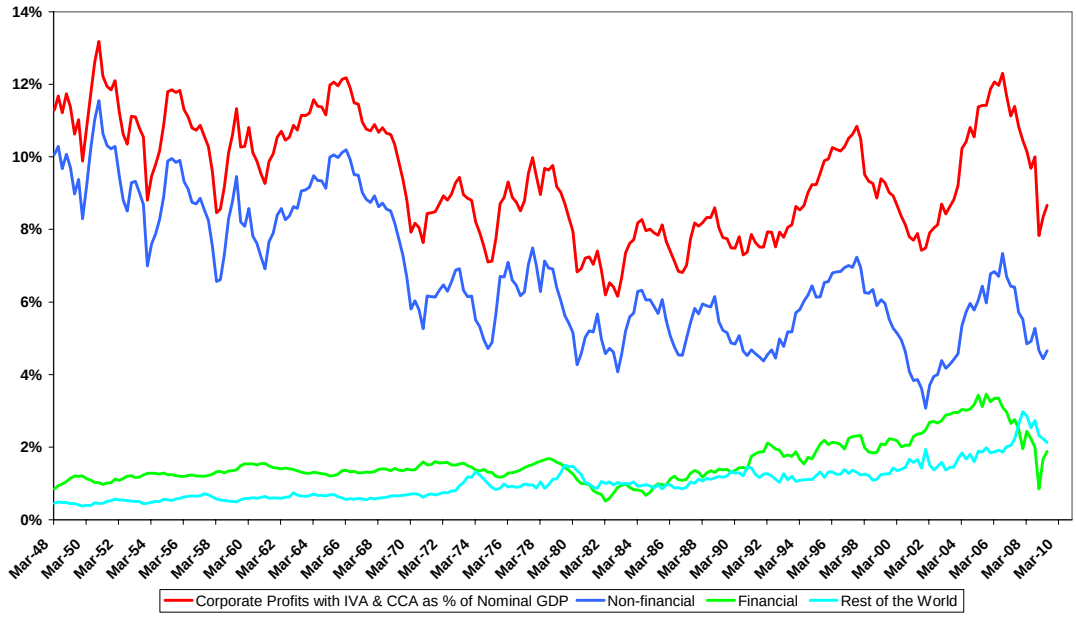
Source: Authors calculations based on the US National Income and Product Accounts (NIPA), Bureau of Economic Analysis, December 2009.

Figure 4: Compensation of Employees and its Components



Source: Authors calculations based on the US National Income and Product Accounts (NIPA), Bureau of Economic Analysis, December 2009.

Figure 5: Corporate Profits as % of Nominal GDP



Source: Arestis and Karakitsos (2010b).

Environmental policies and their economic implications

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1. Introduction

The relationship between environmental protection and economic development is by definition a difficult one. This is especially so in times of a financial and economic crisis which Greece (and unfortunately many other countries) is experiencing today.

At first blush, a simple economic logic seems to teach that measures of environmental protection always cost money to industry and that especially in times of financial and economic hardship, there would always be a risk that necessary investments in environmental protection would not be made.

There seems to be some intuitive support for this. The evidence does not so much prove that firms would stop caring about the environment in times of economic hardship. There is in fact quite a reverse relationship which is sometimes shown, being that as a result of economic and financial crisis like we experience today, many facilities may close down or those that still are in business could reduce their production. As a result of that, the total pollution in times of economic crisis could be reduced. This is by the way precisely what is experienced as far as greenhouse gases are concerned. In 2008, Europe was still struggling how via emissions trading and other mechanisms it could meet the targets of the Kyoto Protocol.[1] However, when the economic crisis led to a substantial reduction of productivity in 2009, a (positive) side-effect was also that emissions were substantially reduced as well. In that sense, one could cynically argue that a financial crisis is good for the environment since less economic activity simply leads to less pollution. That would of course be a rather silly reasoning for the simple reason that from a social welfare perspective, the economic crisis may lead to larger social losses than the gains in reduced environmental pollution and this could in total still lead to net losses. Moreover, the current emission reductions are obviously only a short-term effect that may be undone from the moment economic activity will (hopefully) start blossoming again.

[1] For details of the legal and policy measures see *inter alia* Peeters, M. and Deketelaere, K. (eds), *EU climate change policy. The challenge of new regulatory initiatives*, Cheltenham, Edward Elgar, 2006 as well as the contributions in Faure, M. and Peeters, M. (eds), *Climate change in European emissions trading. Lessons for theory and practice*, Cheltenham, Edward Elgar, 2008.

The more interesting question is therefore whether, also irrespective of crisis situations, environmental protection measures always necessarily lead to burdens for industry.

The relationship between environmental policy and economics is of course too broad to be addressed in one single talk. I will therefore necessarily have to choose and will focus on a few issues whereby I will try to combine two of my hobbies, being on the one hand environmental law and on the other hand economic analysis of law, also referred to as law and economics. This will allow me to focus generally on the question how law and legal instruments can stimulate an appropriate environmental policy, also in times of economic and financial crisis. In order to make this relationship more concrete in the remainder of my talk, I will focus on several aspects:

- First, I would like to mention some theoretical, but more importantly, also empirical literature on the relationship between economic development and environmental protection which may have important lessons, also for the current crisis;
- Next, I will say a few words on a simple lesson from economics on how environmental policy can promote economic efficiency through the use of cost-benefit analysis in environmental policy and I will discuss to what extent these economic lessons are followed in European environmental law in practice;
- Third, I think that probably the most important lesson from economics, also in times of crisis, is that the policy maker should look for what is often referred to as "smart regulation".[1] To some extent, this leads to arguments against the use of rigid regulatory environmental instruments sometimes referred to as "command and control" and in favour of more flexible, so-called market based environmental policy instruments. It has often been argued that the use of those instruments may promote environmental protection and at the same time economic growth, which seems an important lesson especially in times of crisis.

My focus will especially be on what economic theory teaches with respect to the efficiency of various environmental policy instruments. However, probably even more important than merely the lessons from theory, is what the empirical evidence is with respect to the effectiveness of those instruments in practice.

[1] See the well-known book with this title by Gunningham, N. and Grabosky, P., *Smart regulation. Designing environmental policy,* Oxford Clarendon Press, 1998.

2. Environmental quality and economic development

Starting at a very general level, it may be interesting to point at important economic studies that on the one hand address the question to what extent environmental policy does play a role in determining environmental quality. This type of research provides interesting insights on the relative importance of institutions like environmental law but also on the general ability to steer behaviour of industry.

This literature, which examines the relationship between economic development in a country and environmental protection may have important lessons, also for the role of environmental law and policy in the current times of economic crisis. This empirical research is based on the concept of the "Environmental Kuznets Curve". This concept is named after the Nobel prize winner Simon Kuznets on the relationship between income inequality and income level in a country.[1] Various scholars have shown empirically that in a first phase, economic development leads to environmental degradation. However, there is a certain turning point in economic development, logically related to the point where individual income levels increase and a demand for higher environmental quality emerges, where increased economic welfare goes hand in hand with environmental improvements. The interesting question is of course when a nation reaches that turning point and whether a country has already reached that point where a demand for environmental protection emerges.

The policy conclusion from these studies seems to be that the best way for a nation to promote environmental protection is to promote economic growth. Empirical evidence after all shows that higher income levels go hand in hand with increased environmental protection.[2] This leads at first blush to the for environmental lawyers' somewhat worrying conclusion that environmental law can only to a limited extent influence environmental quality since it is to a large extent dependent upon other factors such as economic welfare and income levels.

It has more particularly been the contribution of Dan Esty from Yale Law School who in many joint papers with Michael Porter examined empirically to what extent not only income levels, as suggested by the environmental Kuznets curve literature, but also a nation's regulatory regime influences environmental quality. The results of

[1] Kuznets, S., "Economic Growth and Income Inequality", *American Economic Review,* 1955, vol. 49, 1-28.

[2] See for example Esty, D.C. and Porter, M.E., "Industrial Ecology and Competitiveness", *Journal of Industrial Ecology,* 1998, vol. 2, 35-43 and Esty, D.C. and Porter, M.E., "Measuring National Environmental Performance and its Determinants", in Porter, M.E. and Sachs, J. (eds.), *The Global Competitiveness Report 2000*, New York, Oxford University Press, 2000.

this powerful research based on an examination of regulatory intensity and environmental quality in a great number of developed and developing countries is that economic development and environmental protection go hand in hand with the improvement of a country's institutions and more particularly the environmental regulatory regime.[1]

This empirical evidence may also have important consequences in the current times of economic crisis. In a way it provides an important warning against those who believe that in times of economic crisis environmental protection measures are no longer necessary. The empirical evidence, providing support for the "Porter hypothesis" can to the contrary be interpreted in such a way that investing in environmental protection and adopting environmental protection measures may precisely be instruments to speed up economic growth. There is, in other words, no reason to retard investments in environmental protection measures in times of economic recession.

3. Optimal standard setting and cost-benefit analysis

3.1 CBA in environmental law

Especially in times of economic crisis it is important that environmental policy is shaped in such a way that industry is not forced to invest in an inefficient manner in environmental abatement techniques. The way this should happen according to economic analysis is that after society has agreed on the environmental target it wishes to reach, the regulator will set emission standards in the public interest, taking into account marginal costs of more stringent environmental standards and balance these against marginal benefits in additional reduction of environmental harm. Applying cost-benefit analysis in this way will avoid that firms are forced to a reduction of environmental damage of which the marginal costs would be higher than the marginal benefits and which thus would be inefficient.

3.2 IPPC directive and BAT

This idea of using cost-benefit analysis in environmental policy has also been introduced in European environmental law in the Directive 96/61 concerning integrated pollution prevention and control, also referred to as the IPPC directive.[2]

[1] See Esty, D.C. and Porter, M., "National Environmental Performance: an Empirical Analysis of Policy Results and Determinants", *Environment and Development Economics,* 2005, vol. 10, 391-434.
[2] *Official Journal* 1996, L257/27.

This IPPC directive holds *inter alia* that emission standards, these are the standards that determine the quantity and quality of substances that can be brought into the environment, should be based on the best available techniques (also referred to as BAT). This is according to article 2(11) of the directive defined as:

> "the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole".

Reference to some sort of a cost-benefit test is made in the definition of "available": "available" techniques shall mean those developments on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably acceptable to the operator".

Here one can find a clear reference to the fact that costs and benefits should be taken into account where the availability of the technique has to be considered.

This seems to be a positive aspect since it shows that European law makers also realize that it is important to include economic notions like cost-benefit analysis when setting environmental standards.

3.3 Optimal differentiation of BAT

There is, however, also one worrisome aspect in this IPPC directive. Economic literature teaches that since location specific circumstances like hydro-geological conditions can be different in various Member States the emission standards necessary to reach a particular target will be different in the various Member States. Hence one can imagine that a Member State that is historically already heavily polluted will need more stringent emission standards than for example a Member State that is starting its industrial development and moreover may have a better regeneration capacity of its environment. As a result of different local circumstances these emission standards to reach a similar environmental quality may therefore vary.[1] As a consequence also the technology to reach the emission standard, being the best available techniques, we

[1] See Faure, M. and Lefevere, J., "Protecting drinking water quality against contamination by pesticides: an alternative regulatory framework", *Review of European Community and International Environmental Law* (RECIEL), 1995, 321-326.

referred to before (BAT), will depend upon local conditions as well. A technology which can be "best" in (member) state A, might not be "best" at all in (member) state B, simply because local environmental conditions differ.

3.4 The North versus the South

The question of course arises how this IPPC Directive relates to the economic notions developed above according to which emission standards should be differentiated taking into account optimal specificity and varying local conditions. This issue has given rise to a lot of debate between industry from Northern industrialized countries (like the Nordic countries and Germany) on the one hand and Southern countries, lead by Spain, on the other hand. It crucially had to do with the difference in approach between the Nordic countries who were in favour of a strict harmonization of emission standards at the European level and Southern countries who were strongly opposing this, holding that they would have to comply with an unreasonably stringent standard. Northern European countries were in favour of imposing strict emission standards (based on BAT), with which they presumably could already comply at the European level in order to create "a level playing field". At the other end of the spectrum less developed member states like Spain and Portugal were concerned over the potential cost to industry of having to use best available techniques (BAT) as a result of the Directive.[1] This history of the IPPC directive shows a potential conflict between environmental reasons for policy making and the "economic" idea of harmonizing marketing conditions for industry. If, at the policy level one would desire a harmonized environmental quality this would lead to differentiated emission limit values (and of course BAT on which these values are based) taking into account location specific circumstances. A consequence of this idea is that emission limit values in less polluted member states (Spain, Portugal) can be more lenient than in states which are more industrialized (and hence already more polluted).

3.5 Influence of lobbying by interest groups

The lesson from the history of the IPPC directive is that interest groups in areas which are already heavily regulated (and probably heavily polluted) may have incentives to extend their strict (national) regulations to the European level, thus forcing foreign competitors to follow the same regulation with which they already comply. The result is that industry will lobby to erect barriers to entry.

[1] Environment Watch: Western Europe, 3 March 1995, 8.

Interest groups in more heavily industrialized, and heavily regulated countries have generally prevailed at the European level, with the IPPC (and other European) Directives providing for the harmonisation of emission limit values rather than ambient environmental quality standards[1]. This was different for less developed countries like Spain and Portugal who also heavily opposed the imposition of EU-wide standards as "levelling the playing field".

In sum, although the IPPC Directive, regulating standard setting at the European level, has the advantage of referring to the economic notion of cost-benefit analysis in standard setting it also has the big problem of forcing uniform emission standards, based on a uniform notion of BAT upon European industry. For enterprises in the North, already having to comply with those stringent standards this may be welcomed, but for industries in the South, like for example in Greece, this may be highly problematic: they are forced towards compliance with too stringent environmental standards (in the sense that they do not need those given different environmental circumstances) and may hence be confronted with barriers to market entry resulting from these stringent standards. Especially given the fact that Southern countries are the primary victims of the economic crisis this perverse effect of European environmental policy should be seriously reconsidered. The current economic crisis may yet be another reason to pay more serious attention to the objections of industries in Southern Europe that they should not be exposed to the same stringent environmental standards as their Northern competitors.

4. Command and control versus market based instruments

So far, when referring to standard setting and the use of cost benefit analysis I was basically assuming the use of so-called traditional command and control approaches whereby the government sets *ex ante* standards via regulation and tells industry exactly what to do. Especially in times of economic crisis it may be important to look for so-called "smart regulation", being instruments that perhaps rely less on precise instructions by government and allow for more flexibility. These incentive based mechanisms, often referred to as economic or market based instruments may perhaps enable the promotion of environmental protection measures even in times of economic crisis.

[1] Faure, M. (1998), 'Harmonisation of Environmental Law and Market Integration: Harmonising for the WrongReasons?', *European Environmental Law Review*, 169-175.

Of course it would be wrong to sharply distinguish command and control approaches on the one hand from market based instruments on the other. Indeed, as long as command and control approaches are designed with at least one eye on cost saving, incentive based systems are not necessarily superior to command and control. It may, however, be interesting to point at a few success stories of market based instruments where empirical evidence exists that these so-called incentive based mechanisms proved to be effective in practice. A distinction can in that respect be made between the two probably most known market based instruments, being taxation on the hand and emission trading on the other.

4.1 Taxation

There is a long tradition with using the so-called pigovian taxes to provide incentives for emission reduction. Those interested in the details can have a look at recent literature providing detailed overviews[1] or can be referred to the global conferences on environmental taxation which are held on an annual basis as a result of which impressive volumes are produced, equally providing evidence of successes obtained with environmental taxation.[2] Just to mention a few success stories: in the Netherlands water pollution by 14 industries responsible for 90% of total water pollution decreased by 50% between 1969 and 1975 and by another 20% by 1980. Half of this reduction was, so the evidence shows, due to an effluent charge.[3] A similar success story comes from Germany where various scholars provided evidence that a system of charges on waste water led to a considerable reduction of emissions. Interestingly, most of these European legal systems had (and still have) a combination of effluent charges with emission standards.

One should, however, not immediately become overly enthusiastic, since there is equally evidence that the special interest groups, of which we mentioned before that they affect the quality of regulation, can also be active when it comes to designing a taxation system. It is for example remarkable that pollution permits are introduced on a large scale in the US, but that taxation systems were traditionally more popular in

[1] See for example the contributions in Harrington, W., Morgenstern, R.D. and Sterner, Th. (eds.), *Chosing environmental policy. Comparing instruments and outcomes in the United States and Europe*, Washington, Resources for the Future, 2004.

[2] The most recent volume (containing the papers presented at the 9th Global Conference on Environmental Taxation in Singapore in 2008 is Lye, L.H., Milne, J.E., Ashiabor, H., Kreiser, L. and Deketelaere, K. (eds.), *Critical issues in environmental taxation. International and comparative perspectives*, Vol. VII, Oxford, Oxford University Press, 2009.

[3] See Dewees, D., Duff, D. and Trebilcock, M., *Exploring the domain of accident law*, 326-327.

Europe than in the US. Nobel prize winner Buchanan has argued (together with Tullock) that this should not come as a surprise, since firms will prefer emission standards or emission trading (especially when emission rights are grandfathered) to taxes. Standards have the advantage that they can serve as barrier to entry to new firms, thus raising the profits of existing firms. Taxes on the other hand do not preclude entry by new firms and represent an additional cost to the existing firms on the market.[1] It should hence not come as a surprise that interest groups representing industry will oppose taxation and that as a result charges are rarely introduced "in the textbook form".[2]

As a result there is also a lot of evidence of inefficient environmental taxation and not surprisingly the likelihood of these inefficiencies increase the larger the power of the interest group involved is. For example a recent research showed that whereas a general tax to internalise externalities created by the power generating sector could create important welfare gains, a Belgian regulation is structured in such a way that independent power producers escape most of the air pollution regulation imposing the tax.[3] In the Netherlands a regulatory digressive energy tax was introduced in 1996. As a result the larger the energy use was, the lower the tax would be. This tax therefore only gives incentives to increase the use of energy rather than decreasing it. The main concern of the policy-maker was to increase competitiveness of Dutch industry rather than serving any ecological goal.[4] Similar problems arose in China. O'Connor reports on pollution charges on air emissions, waste water discharges, noise, solid waste and radio-active wastes introduced in China at the end of the last century. Charge rates were set slightly above average operating costs of pollution control facilities in order to provide incentives for compliance. However, in practice they were not indexed to inflation as a result of which their real value eroded over time, resulting of course in weak incentives for further pollution reduction. Efforts to raise the charge met, not

[1] See Buchanan, J. and Tullock, G., "Polluters' profits and political response: direct controls versus taxes", *American Economic Review*, 1975, Vol. 65, 139-147.
[2] See in that respect especially Hahn, R.W., "Economic prescriptions for environmental problems: how the patient followed the doctor's orders", *Journal of Economic Perspectives*, 1989, Vol. 3(2), 95-114.
[3] See Pigano, A., Prost, S. and Van Rompuy, J., "Alternative environmental regulation schemes for the Belgian power generation sector", *Environmental & Resource Economics*, 2000, Vol. 16, 121-160.
[4] Faure, M. and Ubachs, S., "Environmental taxation in the Netherlands: a Dutch treat?", in Kreiser, L.A. (ed.), *Critical issues ininternational environmental taxation. Insights and analyses for achieving environmental policy goals through tax policy*, Chicago, CCH, 2002, 301-329 and Faure, M. and Ubachs, S., "Harmful tax measures and greying of taxation in the Netherlands: what went wrong?", in Ashiabor, H., Deketelaere, K., Kreiser, L. and Milne, J. (eds.), *Critical issues in environmental taxation: international and comparative perspectives*, Vol. II, Richmond, Richmond Law and Tax, 2005, 521-532.

surprisingly, with strong opposition from industry.[1] Considerations of political acceptability may hence often limit the possibilities to introduce efficient taxation systems.[2]

Similar problems arise concerning the introduction of market based instruments and more particularly pollution charges in developing countries. Some have advocated that more particularly for developing countries market based instruments like taxation would be well suited. These would, at least on paper, be perfect instruments since they could be implemented at lower costs than command and control regulation.[3] However, others have argued that implementing market based instruments is only possible in a context were a decent institutional and administrative structure is available.[4] These conditions will often not be met in the case of developing countries. The empirical evidence largely seems to confirm this point: in those countries where at least some institutional structure is available e.g. to set and collect environmental taxes in the public interest they may work effectively. If these institutional conditions are not met it may become very hard to implement pollution charges. Hence, there is evidence that institutional inertia in the economic and political system led to a debacle of pollution charges in Russia.[5] However, in cases where a successful collection is possible and where environmental charges are moreover combined with other instruments, including traditional standards, they can lead to an overall improvement of environmental compliance, provided of course there is an effective enforcement. This was shown in a study by Kathuria with respect to three successful cases of reducing water pollution (Malaysia, Poland and Columbia).[6] A similar result was also found in a study of environmental policy instruments in eight developing countries by Jordon and others. They showed that even though many countries moved to the introduction of market based instruments, regulation still remained the dominant

[1] O'Connor, D., "Applying economic instruments in developing countries: from theory to implementation", *Environment and Development Economics,* 1998, Vol. 4, 96-97.
[2] O'Connor, D., Applying economic instruments in developing countries: from theory to implementation", *Environment and Development Economics,* 1998, Vol. 4, 108.
[3] Blackman, A., "Columbia's discharge fee programme: incentives for polluters or regulators?", *Journal of Environmental Management*, 2009, Vol. 90, 101.
[4] See e.g. Bell, R. and Russell, C., "Environmental policy for developing countries", *Issues in Science and Technology*, 2002, 63-70.
[5] See for example Söderholm, P., *Environmental policy in transition economies: the effectiveness of pollution charges*, University of Lulea, Sweden.
[6] See Kathuria, V., "Controlling water pollution in developing and transition countries – Lessons from three successful cases", *Journal of Environmental Management*, 2006, Vol. 78, 405-426.

instrument for pollution control.[1] Also Blackman showed in a study concerning Columbia's discharge fee programme that the reason why pollution loads dropped significantly after the programme was introduced was not so much because of incentives provided by the discharge fees, but rather as a result of incentives created through the programme for regulatory authorities to improve permitting, monitoring and enforcement.[2] Finally I should mention that although earlier research on environmental taxation in China was rather sceptical of its effectiveness, especially due to political pressure not to increase the tax rate, more recent research seems to indicate that China's discharge fee programmes have had a positive influence on pollution levels.[3]

4.2 Emission trading

4.2.1 US

As I mentioned earlier, whereas environmental taxes and charges on emissions were popular in Europe emission trading started in the US. Hence, already since the 1980s there is overwhelming American research to show the effectiveness of trading in pollution rights. Hahn and Hester claim that the trading programmes concerning the Clean Air Act have led to considerable cost savings.[4] The SO_2 cap and trade programme has recently been qualified as a "living legend" of market effectiveness and the total annual health benefits associated with the SO_2 emission reductions under the programme are estimated to be more than $ 50 million per year in 2010.[5] The enthusiasm concerning the trading system in the US Clean Air Act not only comes from its environmental effectiveness, but also from the cost-saving, at least when referring to compliance costs for industry.[6]

[1] Jordon, A., Wurztl, R.K.W. and Zito, A.R., "New instruments of environmental governance? National experiences and prospects", *Special Issue Environmental Politics*, 2003, Vol. 12(1).
[2] Blackman, A., "Columbia's discharge fee programme: incentives for polluters or regulators?", *Journal of Environmental Management*, 2009, Vol. 90, 101-119.
[3] See more particularly, Wang, H. and Wheeler, D., "Financial incentives and endogenous enforcement in China's pollution levy system", *Journal of Environmental Economics and Management*, 2005, Vol. 49(1), 174-196.
[4] Hahn, R.W. and Hester, G.L., "Where did all the markets go? An analysis of EPA's emissions trading programme", *Yale Journal on Regulation*, 1989, Vol. 6, 109-153.
[5] So Burtraw, D. and Palmer, K., "SO_2 cap – and – trade programme in the United States. A "living legend" of market effectiveness", in Harrington, W., Morgenstern, R.D. and Sterner, Th. (eds.), *Chosing environmental policy. Comparing instruments and outcomes in the United States and Europe*, Washington, Resources for the Future, 2004, 47.
[6] Burtraw, D. and Palmer, K., 2004, 59.

4.2.2 Europe

Recently the attention has for obvious reasons shifted from the US to Europe. The reason is of course that Europe chose emission trading as instrument to implement the Kyoto Protocol and the challenges posed by climate change.[1] Too many studies to be mentioned here have addressed the effectiveness of the EU emission trading scheme.[2] The case of the European ETS is an interesting one simply to show the difficulties in interpreting the results of empirical research. Europe chose with Directive 2003/87 of 13 October 2003 to give emissions rights basically for free to existing industry as a result of so-called grandfathering. Again, the private interest theory of regulation mentioned above can explain why emission trading with grandfathering was chosen instead of an environmental tax. This should not come as a surprise since grandfathering of course serves the interests of industry better[3] than costly taxation measures.

Also not surprising, at least at first sight is that grandfathering, in other words giving away allowances free of any charge, may lead to over-allocation of emission rights.[4] As a result of this over-allocation at some moment the price of allowances dramatically dropped below € 1,-. This low price for allowances obviously provides evidence of over-allocation by the European Member States.[5] However, it is more difficult to answer the question whether this necessarily makes the whole EU ETS ineffective in providing incentives for emissions reductions. At first sight one may be tempted to argue that this is the case: why would any company invest in emission abatement equipment if a ton of CO_2 emission rights could be purchased at a price of lower than € 1,-? Marginal cost of pollution abatement are undoubtedly higher. However, Kuik and Oosterhuis convincingly argue that the over-allocation could be partly the result of investments in technological and other innovations which precisely

[1] See as far as the costs of climate change are concerned the interesting recent overview by Tol, R.S.J., "The economic effects of climate change", *Journal of Economic Perspective*, 2009, Vol. 23(2), 29-51.
[2] See for example the contributions in Douma, W.Th., Massai, L. and Montini, M. (eds.), *The Kyoto Protocol and beyond. Legal and policy challenges of climate change*, The Hague, TMC Asser Press, 2007.
[3] See also Rodi, M., "Legal aspects of the European emission trading scheme", in Hansjürgens, B. (ed.), *Emissions trading for climate policy, US and European perspective*, Cambridge, Cambridge University Press, 2005, 199-221.
[4] See for example Baldwin, R., "Regulation lite: the raise of emissions trading", Law Society Economy Working Papers, 3/2008 (<www.lse.ac.uk/collection/law/wps/wps.htm>).
[5] See for example Woerdman, E., Clo, S. and Arcuri, A., "European emissions trading and the polluter pays principle: assessing grandfathering and over-allocation", in Faure, M. and Peeters, M. (eds.), *Climate change and European emissions trading. Lessons for theory and practice*, Cheltenham, Edward Elgar, 2008, 128-150.

caused the emissions reductions. They show that the EU ETS led to an additional abatement of between 50 and 200 million tons and equally showed that this emission trading scheme played a key role in long-term decisions of companies to develop innovative technologies, with more particularly a strong impact on the steel industry. Hence, the mere fact that the price of a ton CO_2 dropped below € 1,- (at the beginning of 2007) does not necessarily mean that this ETS had no incentive effect on innovation and would thus be ineffective. Quite the reverse may be true as well, being that the demand for emissions simply dropped since the introduction of the EU ETS precisely had the desired effect of reducing those emissions.[1]

4.3 Combining instruments

If there is one thing clear from some of the empirical studies I discussed then it is something which is also stressed in theoretical papers, being that there is not just one optimal instrument of environmental policy, but that the key issue is how one can find an optimal combination of various instruments to reach environmental goals at the lowest cost. The strength and weaknesses of particular institutional features of a particular legal system may play a large role in that respect.

5. Concluding remarks

There is an undeniable link between environmental policy and its economic implications. More economic development undoubtedly means in principle more environmental pollution. Hence those who are in favour of reduced emissions for example of greenhouse gasses should welcome the economic crisis since the reduced economic activity also reduced emission levels. The same was the case after the fall of the iron curtain in 1989: economic changes lead to the shut down of many polluting enterprises, thus reducing emissions.

However, empirical evidence shows that in reality the relationship between economic development and environmental pollution is slightly more complicated and nuanced: there seems to be strong empirical evidence for the so-called "Porter hypothesis" according to which countries that invest in environmental protection measures also benefit from those investments with increased economic growth. Taking this empirical research seriously would mean that also the current economic

[1] See Kuik, O. and Oosterhuis, F., "Economic impacts of the EU ETS: preliminary evidence", in Faure, M. and Peeters, M. (eds.), *Climate change and European emissions trading. Lessons for theory and practice*, Cheltenham, Edward Elgar, 2008, 208-222.

crises should not be a reason to reduce investments in environmental protection measures, but that to the contrary it may well pay off to invest in environmental protection since this will in the long term also lead to economic growth.

Economic theory has also important lessons for environmental policy. Using economic concepts like cost-benefit analysis can prove beneficial to show how for example through environmental standard setting social welfare can be increased. European environmental policy is to a large extent following these lessons from economic theory, prescribing for example that industry should use best available techniques but only those that do not entail excessive costs. However, other aspects of economic theory are not always followed at European level as a result of which a total harmonization of best available techniques and emission standards is strived for, also when this would not be needed to reach a uniform environmental quality in Europe. This desire for harmonization seems to be largely to the disadvantage of industry in Southern countries and merely protects industries in the North against Southern competition by creating artificial barriers to entry. Now that especially these Southern countries are strongly suffering from the economic crisis it may be worthwhile to reconsider the economic lessons concerning differentiation of emission standards when reforming European environmental policy.

Maybe one conclusion, looking at the many studies I discussed, could be that the empirical research does not necessarily point in the direction of strongly favouring either command and control or market-based instruments, but rather shows that the effectiveness of the instruments chosen depends to a large extent upon the particular design.

The studies equally showed that it may not be possible to argue that one particular instrument is “best” or “optimal”, but that in most cases, a combination of various instruments may be indicated. An important point for further research is hence to look for these “optimal mixes” of policy instruments, whereby these may also to a large extent depend upon country specific characteristics. It was therefore not surprising to notice that important differences exist for example between Europe and the US, but may be with Asia as well. To some extent, these differences (for example as far as instruments chosen but also enforcement styles) is concerned may be due to institutional characteristics or simply differences in environmental problems of the countries concerned. However, a lot of studies also showed that in practice, one may often notice that optimal instruments are not introduced simply because of lacking

political acceptability. Hence, the reason why the US had more emission trading and Europe more environmental taxation and why initially emission rights in Europe were allocated through grandfathering is often the result of the relative power of the various interest groups involved.

Of course this danger of industry lobby groups that affect the quality of legislation may play a serious role, especially in times of economic crisis. One can expect that industries in difficulty will call on government with a request not to enforce environmental policy too stringently in order not to impose additional costs upon an industry which can currently barely survive. Even though those calls may be understandable one has to remember the lessons from the "Porter hypothesis", being that by designing smart environmental regulation, incentives can be provided to industry to precisely innovate and gain a competitive advantage in this environmental market. Hence, investments in environmental abatement should, so the evidence shows, rather be considered as a way out of the crisis than as an additional burden.

I started this talk with a reference to the important research by Esty and Porter. They on the one hand showed that environmental quality does to a large extent depend upon economic growth. The most important lesson for those who want improvement of environmental quality therefore still remains: fight poverty and increase income levels. However, at the same time, their (and other) research equally showed that environmental quality is higher in those legal systems with a decent regulatory and institutional framework. Therefore it does pay, also in times of economic crisis, to examine, based on empirical research, which environmental instruments may in particular contexts be most effective in remedying environmental pollution. In other words: environmental law does matter!

Second Session

Chair

Stavros Thomadakis, University of Athens

Speakers

Douglas W. Diamond, University of Chicago and NBER

George Constantinides, University of Chicago

Gikas A. Hardouvelis, University of Piraeus and Eyrobank EFG

Charles A. E. Goodhart, London School of Economics and Morgan Stanley

Dimitrios P. Tsomocos, University of Oxford

Fear of fire sales, illiquidity seeking, and credit freezes [1]

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A financial crisis, especially one that embeds fears of a potential future liquidity shock, where highly-levered financial institutions will be forced to sell illiquid assets at fire sale prices, can lead to a variety of seemingly perverse behaviors, including a halt in the sale of illiquid assets by potentially impaired institutions, an increased concentration of these institutions in assets exposed to liquidity risk, an increase in their short-term leverage, and a reduction in lending by healthy financial institutions. Indeed, owners of the highly-levered institutions could hold on to illiquid assets, causing such institutions to fail conditional on the liquidity shock, even when early sales could prevent them failing. We argue that interventions may be helpful in avoiding the worst consequences of the financial crisis, as well as in increasing the level of lending, and discuss the costs and benefits of alternative methods.

Let us start with a quick description of our model. Let a set of financial institutions with substantial short-term liabilities (henceforth called "banks") have a significant quantity of assets that have a limited set of potential buyers. One example of such an asset is a mortgage-backed security which, in an environment where some mortgages have defaulted, can be valued accurately only by some specialized firms. Furthermore, let us assume that with some probability, the banks will need to realize cash quickly in the future. Such a need for liquidity may stem from unusual demands of the banks' customers, who draw on committed lines of credit or on their demandable deposits. It may also stem from panic, as depositors and customers, fearing a bank could fail, pull their deposits and accounts from the bank. Regardless of where the demand for liquidity comes from, it would force banks to sell assets or, equivalently, raise money, quickly. Given that the potential buyers for the bank's assets have limited resources, the asset would have to be sold at fire sale prices (as in Shleifer and Vishny (1992) and Allen and Gale (1994)).

One consequence of the fire sale is that it may depress asset values so much that the bank is insolvent. This may precipitate a run on the bank, which may cause more assets to be unloaded on the

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market, further depressing the price. Equally important, the returns to those who have liquid cash at such times can be extraordinarily high.

Folding back to today, the prospect of a future fire sale of the bank's asset can depress its current value – investors need to be enticed through a discount to buy the asset today, otherwise they have an incentive to hold back because of the prospect of buying the asset cheaper in the future. More generally, the high returns potentially available in the future to those who hold cash can cause them to demand a high return for parting with that cash today.

This is similar to standard dynamic asset pricing in financial markets and in markets with imperfect arbitrage such as Vayanos-Gromb (2002) or Kondor (2009), where future returns influence current required returns. But the elevated required rate of return now extends to the entire segment of the financial market that has the expertise to trade the security. If this segment also accounts for a significant fraction of the funding for potential new loans, the elevated required rate of return will be contagious and will depress lending. Moreover, the institutional overhang will affect lending not only by distressed banks but also by healthy potential lenders, a feature that distinguishes this explanation from those where the reluctance to lend is based on the poor health of either the bank or its potential borrowers. Note that the adverse effect of future illiquidity on current lending is absent in models where future asset values are low for other reasons, such as reduced future payoffs. In such cases, low asset values do not lead to an elevated rate of return to buyers.

More surprising though, the bank's management, knowing that the bank could fail in some states in the future, do not have strong incentives to sell the illiquid asset today, *even though such sales could save the bank*. The reason is simple. By selling the asset today, the bank will raise cash that will bolster the value of its outstanding debt by making it safer. But in doing so, the bank will sacrifice the returns that it would get if the currently depressed value of the asset recovers. Since the states in which the depressed asset value recovers are precisely the states in which the bank survives, bank management would much rather prefer holding on to the illiquid assets and risking a fire sale and insolvency than

selling the asset and ensuring its own stability in the future. Indeed, the bank would prefer to spend its cash to load up more on securities that are exposed to the liquidity risk because its private valuation for those securities exceeds the market's valuation. Banks become "illiquidity seekers".

The ingredients of our model are illiquidity and its effects on pricing combined with the unwillingness of the potentially insolvent owners of equity to take actions equivalent to buying costly insurance. The intuition here is clearly analogous to the risk shifting motive in Jensen and Meckling (1976) and the underinvestment motive in Myers (1977), though the bank "shifts" risk or under invests in our model by refusing to sell an illiquid asset than by taking on, or not taking on, a project.

What is particularly interesting, though, is that the price risk of the illiquid asset stems directly from the bank's liability structure, where demands for liquidity force a fire sale. This has two implications. First, unlike in earlier risk-shifting models, the risk is endogenous – different institutions holding the same asset would have different exposure to the risk of illiquidity depending on the maturity of their liabilities. Institutions with only long term liabilities would, for instance, have no risk exposure even while holding the same illiquid asset. Second, the risk associated with illiquidity is particularly attractive for a bank with high short-term leverage and limited liability, because when the adverse shock hits, the bank is likely to be insolvent. Put differently, illiquidity affects both asset and liability side in a bank, inducing a correlation that is absent in standard risk-shifting models. *Illiquidity seeking* is thus inherent in bank behavior. In addition, the resulting contagion in required rates of return, which could affect all kinds of activities requiring tying up cash, including lending, is a feature of the model that is not present in models of risk shifting stemming from reasons other than illiquidity.

Our point is very general. Any entity with illiquid assets and financed with short-term liabilities is exposed to liquidity risk. If the probability of an adverse shock to liquidity conditions, significant enough to cause it to become insolvent, goes up, limited liability gives it an incentive to expose itself more to the risk of illiquidity, either on the asset or liability side. Private and public interests diverge if a crisis becomes more probable. Since such decisions can alter overall liquidity conditions, multiple equilibria

are also possible here. Also, illiquid institutions not only act as an overhang over the market, elevating required rates of return, but will also risk future insolvency by holding on to the assets, further elevating required returns. Thus, there is an inherent source of adverse feedback in any financial crisis, which is why cleaning up the financial system ex post may be an important contributor to recovery. At the same time, ex ante regulation to prevent an excessive build up of exposure to liquidity risk may also be warranted.

To unfreeze asset and credit markets, the authorities will have to move potentially illiquid assets held by distressed levered institutions into safer hands. They could force their timely sale, which effectively make the distressed institutions purchase insurance against the risk of illiquidity. They could also increase the capacity of potential buyers to buy those assets or remove the overhang of distressed institutions by recapitalizing them. By stabilizing the financial system and eliminating the possibility of fire sales, the authorities can avoid inefficient runs, and also eliminate the potential for high returns to be made by preserving liquidity for the future, thus increasing lending today.

In section I, we present the model. In section II, we examine the sources of illiquidity; in section III we explore extensions to the model to show how the possibility of a market freeze is general. In section IV we explore the effects of several government interventions, especially forced sales. In section V, we relate the paper to the literature. We then conclude.

I. The Model

We will present the model in two steps: First, we will present a stripped down version which makes the basic point about the private incentive to retain exposure to liquidity risk. Later, we will present a more detailed extension that endogenizes prices.

A set of identical banks at date 0 each owns financial assets (for example, mortgage backed securities) that will be worth Z at date 2. The bank is financed with demand deposits (or overnight paper)

of face value D, with $Z > D$.[1] Therefore, the bank is solvent in the long run. For now assume each bank has a local monopoly on financing and can raise a fixed quantity of deposits if it pays an interest rate of 0 (we discuss other motivations for the bank's fixed cost of raising deposits, including deposit insurance or possible anticipated government bailouts of depositors in section II). Depositors can demand repayment at date 1 or date 2. Everyone is risk neutral, in the sense that all evaluate the future payoffs on their investments by their expected value. We ignore discounting of future cash flows. We assume until section III that Z is a constant, which means that the assets are not risky when held to maturity. The model's primary implications are clear in this simple setting.

At date 1, banks face a common liquidity shock with probability q, where a fraction f of their depositors withdraw. We will be more explicit about the sources of this shock later. Depositors demand cash (they cannot trade in the financial asset market and will not accept the asset in lieu of cash[2]). The bank will have to sell some of its asset for cash to meet this liquidity demand. The bank can raise money in anticipation of the shock by selling assets at date 0 for P_0 per unit of date-2 face value, or it can sell assets, after the shock has been realized at date 1, for P_1 per unit of date-2 face value. Note that if the liquidity shock does not hit at date 1, the bank will not part with the asset at that date for a per unit price less than 1.

Prices that buyers are willing to pay for the illiquid financial asset.

We will describe how the price that buyers are willing to pay at date 0 is determined, given the date-1 price. Let us assume there are buyers who are not subject to liquidity shocks (such as banks with

[1] Calomiris and Kahn (1991) offer a rationale for why firms may be financed with short term demandable debt and Diamond and Rajan (2001) argue why this may be an especially appropriate form of financing for a financial intermediary like a bank in a world where aggregate liquidity shocks are low probability (while being less appropriate for industrial firms).

[2] Depositors could be thought of as unsophisticated and hence unable to accept or trade mortgage backed securities or bank loans.

more liquid assets or longer term liabilities, private equity, or Warren Buffet) who can buy at either date paying cash. The buyer is indifferent between buying at either date if the price gives him the same expected date 2 payoff per dollar spent, so long as the return is greater than the return on cash (so $P_0 \leq 1$ and $P_1 \leq 1$). If he buys at date 0, he gets $\frac{1}{P_0}$ at date 2, while if he holds on to the dollar to buy the asset at date 1, he will get $\frac{1}{P_1}$ at date 2 if the liquidity shock hits at date 1, and 1 at date 2 if it does not. Therefore, the date-0 bid price of the buyer solves $\frac{1}{P_0} = q\frac{1}{P_1} + (1-q)$, or

$$P_0^{bid} = \frac{1}{q\frac{1}{P_1} + (1-q)} \tag{1.1}$$

We will now determine the price that banks are willing to sell for at date 0, given the date-1 price, first when the bank remains solvent when the liquidity shock hits and second, when it becomes insolvent upon the shock but has limited liability. We will show that trading can dry up at date 0 in the latter case.

Reservation prices when banks are solvent given the shock

Now consider the always solvent bank's decision on when to sell. If the bank postpones any sale until after the shock has hit at date 1, it will have to sell a fraction η_1 of the asset such that $\eta_1 Z P_1 = fD$, or $\eta_1 = \frac{fD}{ZP_1}$. If it is solvent, $\eta_1 \leq 1$, and it can raise the necessary amounts to pay withdrawing depositors and the depositors who stay till date 2. The date 0 expected value of the payoff from selling at date 1 with probability q is $q\left[(1-\eta_1)Z - (1-f)D\right] + (1-q)\left[Z - D\right]$, which on substituting for η_1 simplifies to $Z - D - qfD(\frac{1}{P_1} - 1)$.

In words, the bank foregoes an implicit return of $(\frac{1}{P_1}-1)$ for every dollar of asset it sells, and it sells fD dollars worth, so its expected "illiquidity" cost whenever it has to sell at date 1 for a price $P_1<1$, which happens with probability q, is $qfD(\frac{1}{P_1}-1)$. Alternatively, the bank can sell at date 0 for P_0 and hold cash from date 0 to 1, to cover the case where it needs liquidity. If it sells early at date 0, it must sell a fraction of the asset given by $\eta_0=\frac{fD}{ZP_0}$. The bank's payoff from selling just enough to meet the liquidity need is (note that with probability q the proceeds of sale of the fraction η_0 of the asset exactly pay off the fD of deposits) $q\left[(1-\eta_0)Z-(1-f)D\right]+(1-q)\left[(1-\eta_0)Z+\eta_0P_0Z-D\right]$, which on substituting $\eta_0=\frac{fD}{ZP_0}$ simplifies to $Z-D-fD(\frac{1}{P_0}-1)$. That is, by selling at date 0, the bank will forego the implicit return of $(\frac{1}{P_0}-1)$ on fD dollars of assets with certainty.

The bank is indifferent between selling at date 0 and date 1 when $fD(1-\frac{1}{P_0})=qfD(1-\frac{1}{P_1})$ or

$$P_0^{Ask}=\frac{1}{q\frac{1}{P_1}+(1-q)} \qquad (1.2)$$

This is also the bid price (see (1.1)), so both buyers and sellers are willing to trade on both dates so long as the date 0 price bears this relationship to the (yet-to-be-determined) date 1 price.

Note that we do not model any idiosyncratic reason for either buyer or seller to trade at date 0 as opposed to at date 1. If we did, there would be active trading on both dates.

Limited Liability, Fire sales, and No Trade

We assumed above that the bank was solvent when it had to sell to meet the liquidity shock. What if the bank becomes insolvent conditional on the liquidity shock at date 1, and the banker has limited liability? Clearly, the banker would never sell at date 0 if he would fail at date 1 conditional on the shock, even after selling. The intuition is simple. The banker, in maximizing the value of equity, will want to maximize the value of the bank's assets conditional on survival. Since the bank survives only in the state with no liquidity shock, and because the asset pays off most when the banker holds it to maturity rather than if he sells it prematurely for a discounted price $P_0 < 1$, the banker prefers to hold the asset rather than sell it.

Now consider the case where the bank survives conditional on the date-1 liquidity shock if it sells some assets at date 0 for P_0 but it fails at date 1 if it has not sold assets previously.[3] The bank is willing to sell at P_0^{ask} at date 0 if the price allows it to avoid failure and

if $Z - D - (\frac{1}{P^{ask}_0} - 1) fD \geq (1-q)(Z-D)$, where the right hand is the bank's expected payoff with no asset sales, given it fails conditional on the liquidity shock hitting. Simplifying, we get

$P_0^{Ask} \geq \frac{1}{1+q(\frac{Z-D}{fD})}$. We also know that given the price P_1, buyers are willing to pay

$P_0^{bid} = \frac{1}{1+q(\frac{1}{P_1}-1)}$. The bid price is less than the ask, that is, no asset is offered for sale at prevailing

prices at date 0 if $\frac{1}{P_1} - 1 > \frac{Z-D}{fD}$. Simplifying, this condition is $fD > P_1\left[Z - (1-f)D\right]$, which is

[3] We can allow the bank debt to be bailed out by the deposit insurance corporation, so long as the banker/equity is wiped out (see later).

satisfied if the bank has not sold assets at date 0 and is insolvent conditional on the liquidity shock at date 1. We have

Proposition 1: If the bank is insolvent at date 1 conditional on the liquidity shock and not having sold assets, it will never sell the asset at the bid price at date 0, even if by doing so it could remain solvent. No trade will take place for the asset at date 0.

In sum, so long as the "fire sale" price of the asset is so low at date 1 so as to drive the bank into insolvency, and the date 0 price reflects that future fire sale price, there will be no trade at date 0 – the market will freeze up. Intuitively, even if the banker could avoid failure at date 1 by selling at date 0, he will be making a transfer to the depositors in the state of the liquidity shock (from value he would have enjoyed if he held the asset to maturity in the state with no liquidity shock). Limited liability allows him to avoid having to make this transfer. Since the date-0 ask price when the bank is always solvent is exactly equal to the bid price, the date-0 ask price, if the bank is insolvent conditional on the shock and enjoys limited liability, has to be higher for the selling bank to be indifferent between selling and not. Hence no trade will occur.

The underlying intuition is a combination of an aggregate liquidity shortage leading to fire sale prices (Allen and Gale (2004), Diamond and Rajan (2005)), and risk shifting (Jensen and Meckling (1976)) or underinvestment (Myers (1977)). The banker focuses on the value he will get conditional on the bank surviving. Rather than selling at the date-0 illiquid value, which transfers some of the value of the proceeds to the depositors (akin to the Myers debt overhang problem), he would rather focus on preserving value in the survival states by holding the illiquid asset to maturity (akin to the Jensen and Meckling risk shifting problem). The banker is unwilling to sell the assets at date 0 because he will be giving up the option to put the assets to the debt holders at a low price conditional on the liquidity shock – or put differently, he will be paying for insurance against default in illiquid states without benefiting enormously from surviving in those states.

Interestingly, the price risk associated with the illiquid asset stems directly from the bank's liability structure, because demands from depositors for liquidity force a fire sale. Unlike in earlier risk-shifting models, therefore, the risk is endogenous – different institutions holding the same asset would have different exposure to risk depending on the maturity of their liabilities. Institutions with only long term liabilities would, for instance, have no risk of illiquidity even while holding the same illiquid asset. Moreover, a bank with high short-term leverage and limited liability will see unlevered institutions in the market as paying too low a price to take on liquidity risk (or, equivalently, willing to offload it too cheaply), because they do not have the put option banks have. Therefore, highly levered banks will be unwilling to sell assets exposed to the risk. Put differently, illiquidity affects both asset and liability side in a bank, inducing a correlation that is absent in standard risk-shifting models. Indeed, if any bank is levered enough, far from selling illiquid assets, it will want to use any cash it has to buy illiquid assets from unlevered entities, so as to "double-up" on its bets.

Note that from the banker's perspective, when the bank holds a single asset, a sale of assets is equivalent to a sale of stock for cash. For the same reason that the bank will not sell assets for cash, it will not sell stock for cash given the prevailing prices in the market place. This is a form of underinvestment (Myers (1977), Ivashina and Scharfstein (2008)) whereby the bank will not issue stock because of the value transfer that goes to debt in states of insolvency, but it stems not from uncertain fundamental values but from the potentially low future (and low current) fire sale prices at which illiquid assets will have to be sold.[4]

In sum then, as expectations of date-1 liquidity fall so that the bank is insolvent conditional on the future shock, date-0 trading spontaneously dries up. Our model suggests then that distressed banks hold

[4] An oft mentioned rationale for why banks hold on to illiquid assets rather than selling them is the notion that their prices will go up in expectation. Indeed, it is easily shown that the price of the asset does rise in expectation so that $P_0 < qP_1 + (1-q)$. However, this is merely an artifact of Jensen's inequality and the need for returns to equalize over different horizons.

on to illiquid assets instead of selling them because they believe the price of the asset will be much higher in the future, conditional on their own survival. Indeed, they would want to buy more of the illiquid asset from unlevered entities if they had spare cash.

II. The Sources of Illiquidity

Thus far, we have not described how the price P_1 is determined Clearly, this is critical to our analysis, for without a low P_1 there would be no illiquidity or potential insolvency at date 1, and no market freeze at date 0. Let the weight of the potentially "illiquid" banks we have described so far be normalized to 1. We will now distinguish between securities that can be sold and loans on the bank's portfolio that can be recalled but not sold. This will add more detail to our analysis, and will not qualitatively affect our previous analysis.

Let fraction β of each bank's assets be composed of the financial security we have described so far. Let fraction $(1-\beta)$ of its assets be loans with face value Z maturing at date 2. We will assume these loans can be recalled by the bank at date 1 – borrowers will then have to liquidate projects to repay the bank, so as a short hand, we will say that banks liquidate loans. The bank's loan portfolio has differing liquidation values, with the range uniformly distributed between 0 and Z, that is, loans can be liquidated for values ranging from nothing to full face value. The possibility of liquidating loans gives the bank an alternative source of cash, in addition to selling financial assets to buyers. We assume loans cannot be sold (they have little value in another lender's hands, because he has little ability to collect repayment).

Liquid buyers (private equity, hedge funds, and liquid banks) can purchase the financial asset at either date, and start with θ in cash at date 0. Assume for simplicity that they are equity financed. Let these buyers also have the possibility of making term loans to industrial firms. If R is the date-2 return on a dollar lent at date 0, let the available volume of loans returning greater than or equal to R be $I(R)$, with

$I(1) = \overline{I}$, $I'(R) < 0$, $I''(R) > 0$ when $R > 1$. Loans made by liquid banks return nothing at date 1, though at the cost of additional unneeded complexity, we could assume a somewhat higher date 1 return. Liquid buyers can store any excess funds at date 0 at a rate of 1. The timeline is

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Date 0	Date 1	Date 2
Illiquid bank sells securities (or not). Liquid buyers buy securities, make loans, and hold cash.	Liquidity shock hits (or not) and depositors withdraw from banks. Banks decide loans they want to liquidate. Banks sell securities and buyers buy with cash.	Loans and securities pay off. Banker consumes proceeds after paying deposits. Buyers consume.

Fire Sales and Lending

Let us now derive prices. If $\theta - \overline{I} \geq fD$, then liquidity is plentiful. All industrial projects are funded, and no loans are liquidated. The asset will trade for full face value Z, so $P_0 = P_1 = 1$.

But if $\theta - \overline{I} < fD$, the asset will trade at a discount to face value. At date 0, the implied interest rate on risk free term loans has to match the return from buying the financial asset, that is, $\frac{1}{P_0}$. This means the amount lent by potential buyers at date 0 is $I(\frac{1}{P_0})$. Intuitively, the long-term effective interest rate, and thus the extent of long-term lending, is determined by the discounted price of illiquid financial assets in the market – that reflects the opportunity cost of locking up cash in loans. I' also therefore reflects how the supply curve of liquidity provided by buyers varies with the effective interest rate.

Similarly, conditional on the liquidity shock at date 1, the illiquid bank will liquidate any loan at date 1 with liquidation value greater than $P_1 Z$ before it sells any securities for P_1. Provided the bank does not have to sell all its securities to meet the demand from depositors (it is at an interior), the implied

interest rate the bank will use to judge whether to continue loans at date 1 is $\frac{1}{P_1}$, so the date-1 price of securities, through the bank's first order condition, effectively determines the amount of date-1 loans recalled. The total value of cash generated from recalled loans is $\frac{(1-\beta)}{Z}\int_{P_1 Z}^{Z} x dx = (1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right)$.

If the financial asset trades at a discount to face value conditional on the liquidity shock (so the interest rate is positive), only withdrawing depositors will hold cash (all who have expertise in the financial asset will want to hold it instead of cash). Therefore, cash supplied from loan liquidation and from buyers will equal cash demanded by depositors so that

$$(1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right)+\left[\theta - I(\frac{1}{P_0})\right] = fD \tag{1.3}$$

Also, we know that in equilibrium, $P_0 = \frac{1}{q\frac{1}{P_1}+(1-q)}$. Substituting in (1.3), we can solve for the single unknown, P_1, which is determined by the bank's need to recall enough loans to meet the aggregate demand for liquidity. The necessary condition for (1.3) to be the equation determining P_1 is that the bank be solvent, that is, it have enough value after date-1 withdrawals to pay out depositors who stay till date 2. This requires that $\beta(1-\eta_1)Z + (1-\beta)P_1 Z \geq (1-f)D$. If withdrawals are met,

$fD = (1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right)+\beta\eta_1 Z P_1$. Using this to substitute for η_1, the solvency condition is

$$P_1\left[\beta Z + (1-\beta)P_1 Z - (1-f)D\right]+\left[(1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right) - fD\right] \geq 0 \tag{1.4}$$

The terms in the first set of square brackets on the left hand side of (1.4) sum up to the difference between the value of long term assets and un-withdrawn deposits, which are discounted to date 1 at price P_1, while

the term in the second set of square brackets is the difference between cash realized from liquidated loans and cash withdrawn, a liquidity shortfall that will have to be made up by selling financial assets. So long as (1.4) is met, the bank will be solvent even if it sells more securities at date 0 (because $P_0 > P_1$).

As P_1 falls, it becomes harder to meet the solvency constraint – asset illiquidity leads to insolvency as in Diamond and Rajan (2005). If the potential liquidity demand f and bank debt D are very high or the available cash liquidity net of industrial demand, $\theta - I$, low, so that (1.4) is not met, then the bank will be insolvent when the illiquidity shock hits and securities trading will cease at date 0.

Lemma 1: (i) An increase in potential liquidity demand, f, or bank debt, D, as well as a decrease in the relative size of liquid entities, θ, will lead to a lower current and future expected price of the long dated asset Z. (ii) An increase in the probability of the liquidity shock, q, will lead to a decrease in the date 0 price P_0 and an increase in the date 1 price P_1. (iii) If there is a $f = f^R$ at which all sales of the long dated asset Z cease at date 0, then ceteris paribus, there will be no sales for any $f > f^R$. If there is a $D = D^R$ at which all sales of the long dated asset Z cease at date 0, then ceteris paribus, there will be no sales for any $D > D^R$. If there is a $\theta = \theta^R$ at which all sales of the long dated asset Z cease at date 0, then ceteris paribus, there will be no sales for any $\theta < \theta^R$.

Proof: See Appendix.

The intuition behind Lemma 1 (i) is straightforward. Turning to lemma 1 (ii), an increase in the probability of the liquidity shock will make the returns to holding cash to buy assets at date 1 higher, so the date 0 price of the asset has to fall. In turn, however, this implies less lending, so more cash will be available to meet the liquidity demand, and the date 1 price of the asset will rise. Therefore the higher the probability of the liquidity shock, the greater the precautions the system takes against it, and less the chance of individual failure conditional on the shock. Lemma 1 (iii) suggests that as liquidity demand

increases or supply decreases, there will eventually be a "sudden stop" in date 0 trading as banks become insolvent conditional on the liquidity shock.

Proposition 2: An increase in potential liquidity demand, f, the face value of bank deposits, D, or the probability of the liquidity shock, q, as well as a decrease in the relative size of liquid entities, θ, will lead to a reduction in date-0 lending.

Proof: Lending increases in P_0. P_0 decreases in $f, D,$ and q and increases in θ from lemma 1. Hence the proposition. Q.E.D.

As the returns to buying illiquid assets increases, date-0 lending shrinks. Indeed, if date-0 trading in the financial asset halts completely, liquid buyers may have plenty of cash on their balance sheet which they do not lend, in anticipation of buying assets cheaply at a date-1 fire sale (also see Acharya, Shin, and Yorulmazer (2009)). To the outsider politician, this may seem excessive caution; after all, the liquid buyers have no fear of liquidity shocks. Politicians may want to mandate more date-0 lending for the liquid buyer. However, the behavior of potential buyers could well be a rational choice as they demand a premium for locking up their money in term loans.

Illiquid Banks

We assumed thus far that the price of securities is high enough that the bank sells only some fraction of the securities it holds to attract all the available cash in the market, that is, $P_1 \beta Z > \left[\theta - I(\frac{1}{P_0})\right]$. The demand for liquidity could be so high that even if the bank sells all the securities it has for all the cash

buyers have (so that the security price P_1^C is such that $P_1^C \beta Z = \left[\theta - I(\frac{1}{P_0})\right]$), the amount obtained from liquidating loans (down to those with liquidation value P_1^C) falls short of the amount demanded by depositors, that is, $\left[\theta - I(\frac{1}{P_0})\right] + (1-\beta)\frac{Z}{2}\left(1-\left(P_1^C\right)^2\right) < fD$.

If the bank continued to hold all its securities to date 1, it will now have to recall loans whose liquidation value per unit of face value liquidated is lower than P_1^C so as to meet withdrawals.[5] If P_1 solves (1.3), the solvent bank is now better off selling some of its securities at date 0 rather than waiting till date 1 and liquidating loans.[6] Indeed, all banks will have this incentive, until the price of date-1 securities is pushed down to the P_1 that solves (1.3). Note that while individually banks will have the incentive to sell earlier, collectively they will not be better off since the cash in the market limits what they can get for securities. Indeed, by attempting to sell securities at date-0 for what the market will pay, the banks could collectively reduce their value considerably, perhaps even to the point of insolvency. We will not explore such adverse attempts to corner liquidity in what follows, leaving them to future research.

Bank Runs and Inefficiency

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[5] If banks could accept deposits from liquid buyers at this point, (1.3) would continue to hold even without date-0 sales. We assume deposit markets are segmented and such deposits do not take place only to explore the situation where the security price is set purely by the cash available in the market, recognizing that there typically are other margins that also adjust.

[6] Intuitively, the bank's date-0 ask price when no securities are sold at date 0 is $P_0^{Ask} = \frac{1}{q\frac{1}{P_1}+(1-q)}$, reflecting the date-1 opportunity cost of not having liquidity, while the buyer bid price is larger at $P_0^{Bid} = \frac{1}{q\frac{1}{P_1^C}+(1-q)}$, reflecting the price of date-1 securities. So the bank will sell at date 0 until prices are equalized.

Our focus thus far has been on explaining why the market for specialized financial assets can freeze and how this affects other lending. We have ignored any efficiency consequences of bank insolvencies, fire sales, or credit contractions. Provided there are no externalities from lending (that is, no surplus generated by a borrower that the lender does not internalize), fire sales when banks are solvent do not produce inefficient outcomes.[7] They are simply a way liquidity is obtained from buyers and transferred to those claimants on the bank who need liquidity.

However, insolvency will precipitate a run on the bank. This will cause the bank to sell all its securities for the available cash in the market (thus reducing their price, as well as date-0 lending), and to recall all its date-1 loans regardless of their liquidation value, a source of significant inefficiency.

An Example

Let the base case be Z=2, θ=0.3, f=0.58, $q=0.2$, β=0.5, $I(1/P_0) = 0.3*1.2^{1-\left(\frac{1}{P_0}\right)}$. Given these parameters, P_0=0.354, P_1=0.0988 and the amount of date 0 lending is 0.215. The bank could sell just 24% of its securities holdings at date 0, not sell any securities at date 1, and be solvent. Early sales therefore are a way to purchase liquidity insurance. However, if it does not sell any at date 0, it will find it has to sell 86 percent of its securities portfolio at the depressed price conditional on just selling enough to meet the liquidity shock. It will become insolvent, be run, and will need to sell all its assets. Yet it prefers not to sell at date 0 because the expected value of equity is higher conditional on no sale than conditional on the date-0 sale, for reasons we have explained.

In Figure 1, we plot date 0 and date 1 security prices as we vary the amount of available cash with liquid buyers, θ. At levels of θ below 0.32, the banks will fail conditional on the liquidity shock, and

[7] Our model has no such externalities, but they are present in Diamond and Rajan (2005).

will be run. Securities prices are low and lending even lower. Interestingly, an increase in liquidity from 0.29 to 0.3 makes little difference in prices or lending because it does not alter the fact that the bank will be run, and that the date-1 fire sale prices conditional on the shock will be very low, so date-0 prices will be low. However, if enough liquidity is infused into the system so that the bank is not insolvent at date1, securities prices are considerably higher at date 1 and date 0, and consequently, date-0 lending (see Figure 2) jumps.

Key Assumptions of the Basic Model

It may be useful to discuss our key assumptions. They include the assumptions that lead to illiquidity, the liquidity shock, deposits not re-pricing, and the contagion to term lending.

1) Sources of Illiquidity

The key contractual element that exposes the financial institution to illiquidity is that short-term debt can be withdrawn (or committed lines of credit can be drawn down – see Kashyap, Rajan, and Stein (2002)) before the assets mature. If there was no possibility of needing to sell assets before date 2, then the market values of the assets would not be depressed by forced fire sales and as a result there would be no risk of insolvency. With no insolvency, banks would not seek illiquidity nor would the market freeze.

The assets are illiquid in our model because the set of (equally) informed buyers is limited and they have finite borrowing capacity (as in Shleifer and Vishny (1992)).[8] Hence buying capacity, rather than asymmetry of information between buyers and sellers of assets, drives our results. Implicit here is the idea that potential buyers cannot raise funds and increase scale instantly. Of course, over time we would expect that if there were substantial quantities of illiquid assets, existing skilled buyers would raise more

[8] One reason is that any buyers outside the set of the skilled would find it hard to tell the few bad securities from the majority of good ones, and could well face a substantial lemons problem if they tried to buy. Another is that the asset requires active management that only the skilled can provide.

funds and more entities would acquire the necessary skills. So illiquidity of this kind would, at best, be a medium term phenomenon.

2) The Liquidity Shock

We have referred to the bank's required need at date 1 of fD of cash as a liquidity shock, without specifying the source. It could be a need by depositors for working capital for their own businesses during a period of limited liquidity, or represent a fear-based withdrawal by some (uninsured) depositors or other short-term creditors who come to doubt the bank's viability or the government's ability or willingness to protect bank creditors. One example is the loss of access to interbank loan markets where other banks anticipate future problems with the bank and prefer to collect before the bank fails or is closed (as in Smith (1991)). Diamond and Rajan (2005) provides a general equilibrium model of this type of run-based withdrawals stemming from a shortage of liquidity, stressing the two-way causality between illiquidity and insolvency.

3) Deposits and Re-pricing

We have assumed the bank's cost of funding does not vary with the market interest rate implied in the illiquid asset's price. Underlying this assumption is that bank depositors do not have the expertise to trade the illiquid asset, and as a result changes in the expected return offered in the illiquid secondary market do not necessarily force banks to increase the interest rates offered to depositors. We could relax this assumption without qualitatively affecting the basic results.

More important, we assume that when a bank subject to liquidity shocks sells assets early and reduces the default risk to depositors, the deposit rate does not fall. We justify this arguing banks have a local monopoly over deposits and depositors inelastically supply a fixed quantity of deposits at date 0 at the offered interest rate (normalized to 0) and do not demand additional compensation for greater default risk.

A cost of debt capital that is relatively insensitive to default risk is an important driving force of the model.

More concretely, the lack of full adjustment of the bank's cost of funding to asset sales arises when one portion of bank debt (such as existing long-term debt as in Myers (1977), insured deposits, or short-term debt which might, ex-post, end up being insured) is relatively insensitive to bank actions, while another portion of debt (such as overnight borrowing, uninsured demand deposits, and cash in brokerage accounts) is sensitive to the bank's health and susceptible to run.[9] So, for example, if at least fraction f of the deposits is short term debt, and there is enough value to pay off the short term debt, then the short term debt is potentially safe. Withdrawing depositors could obtain full face value when they withdraw at date 1. However, if liquidity is in short supply (that is, $\theta - I < fD$), the value of the bank's assets may be so depleted at date 1 that the remaining short term debt also withdraws – if it renews, it will have to share firm value with the long term debt maturing at date 2, and there may not be enough to make it better off relative to withdrawing. Thus short term debt may be largely risk free at date 0, yet precipitate insolvency at date 1 through its demand for liquidity.[10]

A final related motivation for the incomplete adjustment of a bank's cost of short-term funding to its default risk is if lenders think there is a possibility, but not the certainty, of a bail out. In this case, the bank's upfront cost of funding will not adjust fully to its true risk, but at a later date, lenders may run for their money (the liquidity shock) if they feel the government will not come through with support.

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[9] The search for illiquidity and the resulting unwillingness to sell occurs even if all deposits are insured, as long as the bank's equity value is wiped out when the liquidity shock makes it insolvent.

[10] We say "largely risk free" because if short term debt were fully paid off, the bank would never fail at date 1 (though it might be insolvent when long term debt matures at date 2). We need some default on the short term debt so that payment on long term debt is accelerated and the bank is run at date 1. The notion that short term debt could make itself whole through contingent actions thus precipitating wider consequences is in Diamond (1991) and Rajan and Winton (1995), as well as Brunnermeier and Oehmke (2009).

4) Initial conditions

We have assumed that banks start out with no cash. In a situation where there is potentially severe illiquidity at date 1, banks do want to "double-up" on their illiquidity risk by spending all their cash acquiring illiquid securities. So one could imagine a stage of the game before the one we analyze where, as anticipation of the severity of the liquidity shock increases, banks spend their cash buying potentially illiquid securities. The more general point is there are "tipping" points, where once the anticipated price of the illiquid security is low enough conditional on the shock, banks will be willing to pay more for these securities than they are worth to unlevered market participants, and will attract them from the rest of the market, even while potentially reducing the market price further.[11]

We have assumed a two-period model, with no further bank "franchise value" (value earned by the bank after date 2, but only if it remains solvent). Clearly, future franchise value would increase the implied equity stake the banker has, and thus reduce the risk of insolvency and the associated incentives, but it does not change the fundamental character of the problem. If banks differ greatly in franchise value, then other things equal, those with a sufficiently high franchise value would sell assets at date 0 (to "de-lever") and those with low franchise values would be willing buyers (and would be willing to pay more than the unlevered buyers that we describe in the model).

Finally, it is not surprising that some banks become so levered that they will be insolvent conditional on a liquidity shock. If liquidity crises are rare, financing with short-term debt will usually be quite safe. If the probability of such a crisis increases rapidly, banks will find themselves in the overhang position described in our model, and at such a time will become illiquidity seekers. Because illiquidity becomes pervasive across the spectrum of assets with a limited set of buyers, bank debt overhang due to

[11] This depends on whether the cash banks pay leaves the set of potential buyers into other uses or stays in that set.

prospective illiquidity may be more likely than the more traditional debt overhang caused by heightened borrower credit risk.

5) Contagion to Term Lending

Term lending (as opposed to overnight lending) would be curtailed so long as such lending is done by *either* the illiquid banks or the potential buyers of their assets. In other words, it is because of the future high potential implied rate of return on illiquid assets that today's required rate of return on those assets is high, as is the required rate of return on any other activity such as lending that is undertaken by any financial firm that has access to this market. The spike in the required rate of return can spread even to institutions that have no capacity to buy the illiquid asset. For instance, some large banks may cut off client firms from borrowing, because they see better value in holding illiquid securities. These client firms may then approach smaller banks that do not operate in the illiquid asset market. These banks may nevertheless raise the interest rate they charge because of higher demand for their loans.

6) Smoother trade

In our model, banks refuse to sell at date 0 as soon as there is any possibility they might default. If there were some frictional reasons for trade (for example, some buyers are willing to buy at a slightly higher price than the bid price we calculate), then there would be some selling at date 0 if banks have a very low probability of insolvency (the benefits of trade would exceed the small value of the put foregone), but not if the probability becomes higher. If the chance of receiving a liquidity shock that causes insolvency varies across otherwise identical banks, we would see the extent of asset trade varying with the probability of the liquidity shock in a more continuous way. Consider the following extension.

Extension 1: Heterogeneity in Exposure to the Shock

Suppose the probability of the aggregate liquidity shock is q as before, but conditional on a liquidity shock, each bank i has a probability $\delta^i \leq 1$ of getting the shock. Assume further that the fraction of banks that get a shock, conditional on the shock occurring, is constant – there is no aggregate uncertainty conditional on the shock.

One might expect that banks with a lower anticipated exposure to the shock might require a higher price to sell at date 0 – after all, they are less likely to need liquidity. Simple algebra suggests (see web appendix), however, that if banks remain solvent given the shock, the probability of the shock does not affect the price they ask for the asset. As before, therefore, the bid and ask prices are identical when there is no insolvency. The intuition is interesting. The ask price at date 0 that we computed earlier in (1.2) fully compensated banks for the cost of selling early and having spare liquidity if the aggregate shock does not hit. In addition, the ability to reinvest spare date-0 cash at the low security price P_1, if the aggregate shock hits but the individual shock does not, fully compensates a bank for having spare liquidity at date 0. Intuitively, they can reverse the date-0 sale at date 1 by buying securities at the distressed price P_1 at no expected cost. This is why the size of the idiosyncratic shock does not matter if banks are solvent. But if banks are insolvent if the idiosyncratic shock hits, δ^i does determine the size of the put option.

Proposition 3: If banks have differing exposure δ^i to the aggregate liquidity shock, the ask price does not vary with δ^i if banks are solvent conditional on the liquidity shock hitting them, but increases in δ^i if they are insolvent conditional on the shock hitting them.

Proof: See appendix.

If there are reasons to trade at date 0, as mentioned at the end of the previous section, then the banks with the lowest probability of receiving a liquidity shock will be the most willing to trade at date 0. This has implications for government actions to eliminate a market freeze. We discuss this in section IV.

Extension 2: Risky vs Illiquid Assets

Thus far, we have assumed that the illiquid assets have a value Z with certainty. It is hard to imagine then why the asset is illiquid, since anyone with cash could buy the asset and hold it to maturity. In particular, there would be no cost to the authorities of liquidity intervention, as long as the market price per unit of face value is less than one.

One reason why the authorities could be reluctant to intervene is that the asset might require management (as with a bank loan), and the authorities may not have the capability. But this is not a plausible explanation for arm's length mortgage backed securities. Another reason, and one we have relied on so far, is that only the specialist knows the value of the security or, equivalently, a fraction of the illiquid assets could be very poor in quality, so any casual buyer will end up with an adversely selected lot of securities (unless he buys the whole portfolio, which even the government may not have the funds to do). But a third reason, is possible fundamental uncertainty about the asset's value, which overlays (and is partly responsible) for its illiquidity. Consider now an asset whose value is uncertain, but is not illiquid.

Suppose the date 2 value is not Z with certainty, but is Z with probability $1-\pi$ and $P_1^Z < Z$ with probably π. The uncertainty about Z is resolved on date 1, implying that the date 1 value, P_1^Z, is now low because date 2 payments are expected to be low. In other words, we replace the liquidity shock with a shock to fundamentals. In this case, the asset is liquid and the gross rate of return from buying it at the low value at date 1 is the normal expected rate of return (one each period). Of course, because the asset is risky, a bank that would fail if and only if the lower asset value were realized at date 1 might still ask for a price at date 0 that exceeds the fundamental value of the asset, because it values the option to

shift risk to lenders, as in Allen and Gale (2000b). This would cause a similar trading freeze, especially pronounced for liquid assets with values that are highly correlated with bank solvency.

The ask price required by the risky bank would be the same as derived for the base case earlier if the probability of the low cash flow is the same as that of the liquidity shock. The bid price would be somewhat higher than the bid price we found earlier (because buyers require a gross rate of return of only 1 in the future, implying their bid would be the fundamental value of the asset, that is $\pi P_1^L Z + (1-\pi)Z$). Because the hurdle rate for new date-0 lending would not be elevated by expectations of future fire sales, lending by potential buyers is normal, that is $\theta - \overline{I}$ (and promises of injecting future liquidity would have no effect on current or future asset prices). To explain both a general credit freeze, including few new loans by healthy unlevered buyers, and a freeze in securities markets, the fear of fire sales rather than fundamental uncertainty is, we believe, a more relevant model. Moreover, a fluctuating demand for liquidity generates a high correlation between an illiquid asset's value and the bank's solvency, which causes both illiquidity seeking and a trading freeze. By contrast, a bank with risky but liquid assets would not be deterred from selling a risky asset that is not very correlated with the value of its total portfolio.

III. Interventions

Government authorities (the Treasury, regulators, or central banks) might consider intervening to eliminate the market freeze and even influence the market price of illiquid assets for several reasons.

(i) An intervention that reduces the fire sale pricing and runs can increase the flow of credit from potential buyers and sellers, both at date 0 (new loans) and at date 1 (reduce unnecessary liquidation of old loans).

(ii) The authorities may need a market price to help determine if the banks are solvent. When the long run value Z of the asset is random, banks and expert buyers may know the value but

regulators may not. In addition, regulators may not know the amount of available liquidity, θ. Therefore, useful valuation information can be obtained about both fundamental values and expected liquidity conditions by unfreezing the market.[12]

Possible interventions include forcing some distressed institutions to sell, paying enough to induce voluntary sales to the authorities, increasing the capacity and incentive of potential buyers to buy distressed assets, providing liquidity directly to banks, or removing the overhang of distressed institutions by recapitalizing or closing them. In any intervention, the authorities may be handicapped by not knowing the fundamental value of assets themselves. The authorities may be willing to overpay (relative to the private market) because they internalize the economy-wide positive spillovers from having a healthy, functioning, financial sector, or because they have offered guarantees to depositors.[13] In what follows, we examine various interventions, ranked somewhat loosely on their cost to the authorities. We begin with a case where it is possible that authorities can save banks without involving any taxpayer funds by forcing banks to sell some securities at date 0 (though regulators need legal authority to compel these sales). We follow with voluntary purchases and liquidity interventions, both of which require government taxation authority to inject liquidity, but which may possibly avoid taxpayer losses. Finally we consider subsidized injections of capital, which require taxation authority and involve expected taxpayer losses. Diamond and Rajan (2005) analyze the costs of liquidity and capital interventions, in a related setting.

Forced Date-0 Asset Sales

[12] Note that illiquidity would depress the bid price below fundamentals, while the put option, stemming from both illiquidity and risky fundamentals, could elevate the ask price, even above fundamental value if the prime driver of the value of the put option is risk about fundamentals.

[13] The overpayment could take the form of rents needed to ensure incentive-compatibility for buyers that can acquire the asset on the regulators' behalf, subsidies to induce banks to sell and partly reveal the value of assets, or losses made in buying claims on the illiquid assets (that the authorities do not have great expertise in).

The bank may be insolvent conditional on the shock if it holds on to the security and sells only at date 1. If, however, it sold the security at date 0, it would get a higher price and perhaps avoid default. To the extent that this reduces the number of banks that are run at date 1 and therefore dump all their securities into the market, it could also push up prices for the securities, and thus increase lending at both dates. Since banks that expect to fail conditional on the liquidity shock do not have an incentive to sell assets at date 0 at the price buyers are willing to pay, sales will have to be forced by the authorities.

Proposition 4: Let the bank be insolvent if it retains all its securities till date 1 so that (1.4) is violated.

(i) *If there is an* η_0 *with* $\eta_0 \in (0,1]$ *such that*

$$(1-\beta)P_1 Z.P_1 + (1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right) + \beta Z(\eta_0 P_0 + (1-\eta_0)P_1) \geq (1-f')DP_1 + fD \qquad (1.5)$$

$$\beta Z \eta_0 P_0 \leq \left[\theta - I(\frac{1}{P_0})\right] \qquad (1.6)$$

then all the banks can be made fail-safe by requiring them to sell η_0 *of their securities at date 0.*

Now let $|I'|$ *be small.*

(ii) *If there is no* η_0 *with* $\eta_0 \in (0,1]$ *such that (1.5) and (1.6) are satisfied, then not all the banks can be saved through forced date-0 sales. The maximum fraction of banks that can be saved is given by* γ*, where* γ*,* P_1*, and* η_0 *solve*

$$\gamma\beta Z \eta_0 P_0 = \left[\theta - I(\frac{1}{P_0})\right] \qquad (1.7)$$

$$(1-\gamma)\beta Z P_1 + \gamma\left(fD - (1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right)\right) = \left[\theta - I(\frac{1}{P_0})\right] \qquad (1.8)$$

$$(1-\beta)P_1 Z.P_1 + (1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right) + \beta Z(\eta_0 P_0 + (1-\eta_0)P_1) = (1-f')DP_1 + fD \qquad (1.9)$$

(iii) *If no feasible solution exists to (ii), then the banking system cannot be prevented from failing through securities sales at date 0.*

(iv) *If some banks can be saved from failing through securities sales at date 0, both P_0 and P_1 are higher (relative to the situation where all banks fail conditional on the shock), as are date 0 and date 1 lending.*

Proof: See appendix.

The reason a forced sale at date 0 could contribute to bank solvency conditional on the liquidity shock is that the sales price pools the value of the security across future states (buyers essentially provide the bank insurance). So the bank is worth more conditional on the liquidity shock if it sells at date 0 than it would be worth if it did not sell and got hit by the liquidity shock. Indeed, if banks are forced to sell the appropriate amount at date 0, the price of the security conditional on the shock will also be higher because, with fewer failed banks, fewer securities are dumped on the market (recall that failing banks dump all their securities and liquidate all loans). This implies that the sale at date 0 also fetches a higher price. Of course, forced asset sales will not work if securities prices are so low that solvency cannot be assured or if the probability of the liquidity shock is high (so selling at date 0 does not add much insurance to the value).

Note that once forced sales at date 0 exhaust all the cash buyers have set aside to buy securities, further forced sales will reduce the price of the security. If $|I'|$ is small, buyers will not set aside more

funds to buy securities at date 0, even when they see the date-0 price of forcibly sold securities falling. If so, forcing security sales at date 0 beyond the point that buyer cash is fully absorbed by securities, will reduce the value of banks and hurt their solvency. In such cases, the authorities will be better advised to focus on saving a subset of banks as in Proposition 4 (ii). Of course, if $|I'|$ is high, forcing security sales at date 0 beyond the point that buyer cash is fully absorbed by securities will depress the date-0 price of securities and make the date-0 returns to buying these securities much higher, thereby diverting liquidity from other parts of the system, including term lending. This may help banks but at a cost to lending.

In sum then, the authorities have to tread carefully when forcing sales. If there is plenty of cash θ available with buyers, or if the size of the anticipated liquidity shock fD is small, forced date-0 sales can avert bank runs contingent on the liquidity shock and the associated adverse spillovers. If cash is limited relative to the size of the shock, however, forced date-0 sales can precipitate date-0 bank failures even when there were none before.

Voluntary Sales to the Authorities

The authorities can force sales only when they have some legal or regulatory ability to coerce the bank. If a bank has to sell voluntarily, it will demand at least the ask price, which is above the private buyer's bid price. The authorities can offer to buy securities through a reverse auction so as to establish securities prices, keep the securities off market in an entity like the Resolution Trust Corporation, and prevent some bank failures. A reverse auction will provide a price, but if authorities are unsure of why banks do not sell (and do not know $q, \delta^l,$ or f), it will not reveal the long-run value of the security, Z, to them. Four additional features of the reverse auction are clear.

(i) Unlike with a forced sale, the authorities will have to pay for the put option banks have, making this a costlier intervention. In addition to paying a higher price, the authorities must have the resources to make the purchase or subsidize private purchases.

(ii) As Proposition 3 indicates, the banks with the lowest value of the put option (that is, the lowest exposure to the liquidity shock, and hence the safest) would agree to sell at the lowest price. Thus a substantial amount of money could be spent in cleaning up banks that do not provide much reduction in future fire sales, while the banks most in need of being cleaned up may not sell at the auction clearing price.

(iii) Conditional on agreeing to sell, a bank would want to sell all its securities, since at any price over the bid price, selling and reinvesting conditional on the liquidity shock beats holding to maturity.[14] If these selling banks were banned from repurchasing the illiquid security if they did not receive a liquidity shock on date 1, they would demand a higher price for parting with it at date 0.

(iv) The price at which banks will sell will increase with the amount of money the authorities puts into purchasing assets – because the fewer the assets left with the banks after the reverse auction, the higher the date-1 price conditional on the liquidity shock (this is assuming that the cash the authorities put into purchasing is additional to that in the hands of private buyers). At the same time, the selling price will also approach the price private buyers will pay because a higher date-1 price will eliminate the possibility of failure and hence the seller's put option. Interestingly, therefore, government purchases can restart an illiquid private market at a higher price. Note that if date-1 illiquidity is not the problem but the problem is low fundamentals, the price will not move regardless of the amount the government puts in.

[14] To see this, the value of selling at the date 0 bid price and reinvesting conditional on the liquidity shock at date 1 is $\frac{P_0}{P_1}q + P_0(1-q) = 1$ when $P_0 = P_0^{bid} = \frac{1}{\frac{q}{P_1} + (1-q)}$

Liquidity infusion 1: Lend to liquid buyers at date 0 or date 1.

An alternative to the government buying directly is for it to lend to liquid buyers at date 0 or date 1, thus augmenting θ and boosting prices (see lemma 1). Buyers certainly have the expertise to value the assets, the real issue being whether they have the incentives to use government financing in a reasonable way. Some rents/subsidies may have to be offered to them to get them to use their expertise on behalf of the government. To the extent that buyers get these subsidies only if they purchase assets, they may have an incentive to pay for the put options banks have, and get them to sell assets. The cost to the authorities here is augmented by the rents they have to pay the buyers. Depending on the details, which are beyond the scope of this paper, this cost could be above or below the costs of the reverse auction discussed above.

Liquidity infusion 2: Lend to the banks at date 1

Yet another alternative is for the authorities to lend freely at date 1 to the banks experiencing liquidity withdrawals. If the government could commit to do this on a sufficiently large scale, the date-1 fire sale would be eliminated as would be the date 0 market freeze. The taxpayer costs may well be very similar to those of purchasing directly in a reverse auction, or to providing loans to private purchasers to help them buy the illiquid asset. However, if regulators are unsure about the asset values, they would not know if they were providing liquidity or participating in a bail out. If the public believed, rightly or wrongly, that lending was a bail out, it might be unwilling to support it. As a result, it might be difficult for the authorities to commit to unconditional date-1 liquidity support at date 0, preventing them from ending the freeze. Also, unconditional support could increase the incentive to become illiquid in the first place as in Diamond and Rajan (2009) and Fahri and Tirole (2009).

Close Some Banks at Date 0

If there is insufficient liquidity for all banks to survive the liquidity shock, then all will be run and all will fail if each waits until date 1 to sell assets. There might be sufficient liquidity for some to survive if the others are closed and their assets taken "off market" (as in Proposition 4 (ii))

If banks are insolvent, the authorities can close them (if the banks are not "too big to fail"). To use solvency as a basis to close banks, the authorities will have to determine the value of assets, for which they will either need to generate a market price or they will have to hire experts to value the assets.[15] They will also have to hold the illiquid assets in some holding entity (similar to the Resolution Trust Corporation) and sell them over time once the likelihood of the liquidity shock falls. Closure thus allows the authorities to remove the overhang of illiquid assets, and bring down required rates of return, but it does not absolve them of the need to value assets or inject subsidized liquidity at the costs described above (to finance the holding entity).

Difficulties arise when the banks appear solvent today and thus cannot be failed, but could become insolvent in the future – as in our model. Closure may not be an option for the "walking wounded". It may also not be an option for the banks that are difficult to fail for a variety of reasons.

Recapitalization if the shock occurs

If the authorities are willing to infuse capital at the time the liquidity shock actually occurs, they could help when the problem is primarily one of fire sales leading to insolvency. Indeed, this is the situation in our numerical example. If, for instance, the authorities were committed to use taxpayer funds

[15] A market price will be sufficient to value assets held on the books so long as there are easily observable and verifiable characteristics that put the traded assets in the same equivalence class as the book assets – e.g., mortgage backed securities based on sub-prime mortgages originated by developer A in new development B in city C. If, however, there are still intrinsic differences between assets that require expertise (mortgages originated in the south-side of the development have different default characteristics than those originated in the north side, and only south side mortgages are traded), then there is no alternative to hiring experts.

to give the bank a gift of bonds of value 0.018 at date 1 that would pay off at date 2, they could save the bank from being run. This would increase the date-1 security price above the "run" price, and increase lending at date 0. Such an infusion could be thought of as "capital insurance."

A commitment to provide capital insurance which would inject just enough capital to allow the bank to survive will not induce the banker to sell securities early (because the banker knows his stake wil be severely diluted even if the bank is bailed out, and thus his down side payoff will be very low, much a the situation where he is run). It does keep some assets off the market by preventing a run, and hence boosts securities prices, and thus lending. Indeed, the stress tests conducted by the U.S. authorities on 19 large banks in May 2009 might have been interpreted as a signal that the government would stand behind the banks regardless of their eventual loss levels. This eliminated the possibility of a large bank failure, and began the process of raising the prices of illiquid assets.

Capital Requirements and Liquidity Requirements

Thus far, we have examined ex-post interventions. A moderately capitalized bank holding illiqui assets can quickly become an undercapitalized bank if the risk of a liquidity shock increases rapidly. Of course, authorities could prevent levered illiquidity seeking banks from emerging in the first place by implementing very strict capital and liquidity regulations. As Diamond and Rajan (2001) argue, this could impose serious constraints on financial intermediation if carried too far. The appropriate level of e ante regulations is clearly an important issue for further study.

IV. Related Literature, Alternative Explanations, and Evidence

Some recent work has explained market freezes by appeals to asymmetric information, along the lines of the original insight of Akerlof (1970). Bolton, Santos and Scheinkman (2008) and Heider, Hoerova and Holthausen (2009) present interesting models of securities sales based on private

information of existing banks about the value of their assets. For example, in Bolton, Santos, and Scheinkman (2008), long horizon investors cannot tell whether short horizon investors sell because they need liquidity or because they have adverse information about asset quality. This leads to a price discount, which deepens over time because the potential seller gets to know more about the asset. The seller thus has to decide whether to sell now in response to a liquidity need, or to attempt to ride out the crisis with the possibility of selling in the future at a much greater discount. There are both immediate trading equilibria and late trading equilibria, with the latter resembling our trading freeze. The clear difference in our model is the assumption of no information asymmetry within the set of buyers and sellers (and thus no increase in information asymmetry over time).

Acharya, Gale, and Yorulmazer (2009) show that borrowing freezes can arise when the information structure in the market shifts from one where the arrival of no news is good news (and the asset price goes up) to one where the arrival of no news is bad news (and the asset price goes down). In the latter situation, the borrowing capacity of a bank may be very low when it intends to roll over its borrowing repeatedly. The shift in information structure in the market can, therefore, cause lending to banks to dry up. Our paper explains, by contrast, why long term lending to industry, where there is no rollover risk, can also dry up.

Allen, Carletti and Gale (2009) present a model of freezes without asymmetric information, with limited liquidity as we assume, but without any risk of default. The market freezes there when there is ample liquidity but most of the liquidity risk is systematic rather than bank specific. The interbank market freezes because each bank wants to hold liquidity on its balance sheet rather than to borrow or lend it when nearly all banks will borrow or lend (rather than take offsetting positions).

The model of illiquid asset markets where prices are set by the quantity of liquidity in the market is closely related to that used in Bhatacharya and Gale (1987) and Allen and Gale (1998, 2003). This is

related, yet somewhat different from the model of liquidity in Holmstrom and Tirole (1998), which relies on collateral value as the limit to liquidity of an asset, rather than limited purchasing power.

Our paper is closely related to Diamond and Rajan (2005), who model contagious bank failures due to limited aggregate liquidity. In their model, there is both individual bank risk about the proportion of their loans that generate liquid repayments quickly and aggregate uncertainty about the supply of liquidity. The potential failure of enough banks forces banks to call in bank-specific loans. Banks choose to increase interest rates to attempt to attract deposits from other banks, and this can bring down all other banks when liquidity is too low. The model assumes that the deposit market is competitive and that all assets, including bank deposits and short-term debt, must offer the same return as the loans that banks make. The model we present in this paper has similar features, but the limited liquidity influences banks only through prices of the financial security, rather than through the rates needed to attract scarce deposits. The effect of limited liquidity on the price of banks' financial security affects the rate of return anticipated in the market over time, and thus lending.

Our paper is also related to Shleifer and Vishny (2009), where banks expand and contract lending based on their ability to securitize loans in a sentiment-driven market. In their model, parameters are assumed such that banks would not want to hoard cash in order to buy assets when market sentiment falls. This then drives the pro-cyclicality of lending. However, banks would hoard securities and not sell them at such times, in anticipation of a recovery in prices. Our rationale for why banks hoard securities is different, since there are buyers in our market who are not infected by negative sentiment. The reason in our model is that banks prefer the higher return they get conditional on survival by holding on to the asset, to the lower unconditional return they get from selling. While sentiment in their model is analogous to liquidity in ours, the primary difference in implication is that in our framework, the authorities could make a difference by various forms of liquidity infusion. Of course, to the extent that liquidity infusion affects sentiment in un-modeled ways, this difference would diminish.

Finally, our paper is related to Phillipon and Schnabl (2009). Unlike our paper, they treat the problem of credit contraction in a crisis as primarily due to a traditional long-term debt overhang caused by risky bank debt as in Myers (1977). Our focus on the institutional overhang of illiquid assets held by short-term debt financed institutions and implied illiquidity seeking is quite different from traditional overhang.

Our paper has implications for the world financial crisis of 2008-2009. Anecdotal evidence does seem to suggest that trading slowed in mortgage-backed securities as the possibility of liquidity shocks increased. Of course, bank lending also slowed, even to highly rated borrowers (Ivashina and Scharfstein (2009)).

The most obvious alternative explanation is one related to bank regulatory capital – that banks were trying to preserve book capital, and they would have been reluctant to sell securities that were heavily discounted in the market relative to what they were carried on the books for. According to the book capital explanation, the securities that had the greatest divergence between their book value and their market value would be the ones that banks would be reluctant to sell (and that they would move to the "held-to-maturity" account). Our model, by contrast, would suggest that the securities most exposed to liquidity risk would be the ones that the weak banks would be most reluctant to sell. Empirically, though, the securities whose market value diverges most from book value in a liquidity crisis may be the ones most exposed to liquidity risk, so these explanations are not easy to tell apart.

The book capital explanation would, however, suggest weak banks would not have strong incentives to add to their existing holdings of illiquid assets. Our model, by contrast, would suggest they would have an incentive to "double-up", including by increasing leverage. There is some anecdotal evidence consistent with this. The Economist (February 27th, 2010) cites an ABN Amro executive who claims that the giant U.K. bank, Royal Bank of Scotland (RBS), got into trouble after its acquisition of Dutch bank ABN Amro because "RBS, desperate for profit and capital, insisted ABN's risky credit

trading positions be kept open—and some be increased. "RBS decided to take a massive punt," he says." More systematically, He, Khang, and Krishnamurthy (2010) show that over the period they examine, even while hedge funds and broker-dealers (typically investment banks) were reducing their holding of (illiquid) securitized assets by approximately $800 billion, insured commercial banks were increasing their holdings by close to $550 billion. At the same time, even while the rest of the industry appeared to be reducing leverage, banks increased leverage from 10 to between 20 and 32. He, Khang, and Krishnamurthy argue that the likely explanation is commercial banks had easier access to funding because of help from the government – though absent the debt overhang incentives, it is less clear why banks would increase their holdings of illiquid assets rather than increasing lending substantially. Moreover, Huizinga and Laeven (2009) suggest mortgage-backed securities as a share of bank assets were increasing even before the panic-induced expansion in government lending support. Our model offers a reason why illiquid assets were more attractive, even without government aid.

Conclusion

Our paper explains why potentially distressed levered institutions may want to take large bets on illiquid assets simply because they see the marginal cost of the additional illiquidity as small. In this, our paper offers a rational explanation for why some institutions may largely ignore the probability of a liquidity crisis (see Gennaioli, Shleifer, and Vishny (2010)). Credit is unlikely to flow freely unless the problem of institutional overhang is dealt with – unless the solvency of illiquid institutions is assured, or the illiquid assets they hold are moved to entities that will not unload them quickly. The task of the authorities is to facilitate such a clean-up at minimum cost to the taxpayer. We have suggested some possible interventions that could be effective. More work is clearly needed to understand the links between solvency, liquidity, and lending better.

References

Ackerlof, George, (1970), "The Market for Lemons: Quality Uncertainty and the Market Mechanism," Quarterly Journal of Economics, 84 (3):488-500.

Acharya, Viral, Douglas Gale, and Tanju Yorulmazer (2009), "Rollover Risk and Market Freezes", working paper, Federal Reserve Bank of New York.

Acharya, Viral, Hyun Shin, and Tanju Yorulmazer (2009), "Endogenous choice of bank liquidity: the role of fire sales," Bank of England working papers 376, Bank of England.

Adrian, Tobias and Hyun Shin (2008), "Financial Intermediary Leverage and Value at Risk", *Federal Reserve Bank Staff Reports* 338.

Allen, Franklin and Elena Carletti, 2008, "The Role of Liquidity in Financial Crises", 2008 Jackson Hole Conference Proceedings, Federal Reserve Bank of Kansas City, 379-412.

Allen, Franklin, Elena Carletti and Douglas Gale, 2009, "Interbank Market Liquidity and Central Bank Intervention," working paper, Wharton School.

Allen, Franklin and Douglas Gale (1998), "Optimal Financial Crises," Journal of Finance 1245-1284.

Allen, F. and D. Gale (2000a). "Financial Contagion," Journal of Political Economy. 108, 1-33.

Allen, F. and D. Gale (2000b). "Bubbles and Crises, *The Economic Journal*, 110, No. 460: 236-255.

Allen, F. and D. Gale (2003). "Financial Intermediaries and Markets." Econometrica, 72, 1023-1061.

Bhattacharya, S. and D. Gale (1987), Preference Shocks, Liquidity, and Central Bank Policy, in W. Barnett and K. Singleton eds., *New Approaches to Monetary Policy*, Cambridge University Press, 69-88.

Bolton, Patrick, Tano Santos and Jose Scheinkman, Inside and Outside Liquidity, working paper, Princeton University, November 2008.

Brunnermeier, Markus (2008), "Deciphering the Liquidity and Credit Crunch 2007-2008", forthcoming, *Journal of Economic Perspectives*.

Brunnermeier, Markus and Martin Oehmke (2009), "The Maturity Rat Race", working paper, Princeton University.

Caballero, Ricardo, and Arvind Krishnamurthy, 2009, "Global Imbalances and Financial Fragility", NBER working paper 14688.

Diamond, Douglas W. (1991), "Debt Maturity Structure and Liquidity Risk," *Quarterly Journal of Econoimcs*, vol pp:.

Diamond Douglas W. and Raghuram Rajan, "Liquidity Risk, Liquidity Creation and Financial Fragility: A Theory of Banking", 2001, *Journal of Political Economy* , vol 109, 2, 287-327.

Diamond Douglas W. and Raghuram Rajan "Liquidity Shortages and Banking Crises." *Journal of Finance*, 2005, 60, (2), 615-647.

Diamond, Douglas W., and Raghuram G. Rajan. 2009. "The Credit Crisis: Conjectures about Causes and Remedies." *American Economic Review*, 99(2): 606–10.

Diamond Douglas W. and Raghuram Rajan, 2009. "Illiquidity and Interest Rate Policy," NBER Working Paper 15197, National Bureau of Economic Research, Inc.

Farhi, Emmanuel and Jean Tirole (2009) "Collective Moral Hazard, Maturity Mismatch and Systemic Bailouts" NBER Working Paper 15138, National Bureau of Economic Research, Inc.

Gorton, Gary, 2009, "Information, Liquidity, and the (ongoing) panic of 2007", NBER working paper 14649.

Gromb, Denis, and Dimitri Vayanos, 2002, Equilibrium and welfare in markets with financially constrained arbitrageurs, *Journal of Financial Economics* 66, 361–407.

He, Zhiguo, In Gu Khang, and Arvind Krishnamurthy, 2010, "Balance Sheet Adjustments in the 2008 Crisis", working paper, Booth School, University of Chicago.

Heider, Florian, Marie Hoerova and Cornelia Holthausen, 2009, "Liquidity Hoarding and Interbank Market Spreads: The Role of Counterparty Risk," European Central Bank working paper, February 2009.

Holmstrom, B. and J. Tirole, "Public and Private Supply of Liquidity," Journal of Political Economy 106 (1998), 1- 40.

Huizinga, Harry and Luc Laeven (2009), "Accounting Discretion of Banks during a Financial Crisis", IMF Working Paper, WP 09/207, International Monetary Fund.

Ivashina, Victoria and David Scharfstein, Bank Lending During the Financial Crisis of 2008, working paper, Harvard Business School.

Jensen, M.C. and W. Meckling, 1976, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics* 3, 305-360.

Kashyap, A., R.G. Rajan, and J.C. Stein, 2002, "Banks as Providers of Liquidity: An Explanation for the Co-Existence of Lending and Deposit-Taking", *Journal of Finance*. 57 (1): 33-73.

Kondor, Péter, 2009, "Risk in Dynamic Arbitrage: The Price Effects of Convergence Trading," *Journal of Finance* 64: 631-655.

Myers, S., 1977, The determinants of corporate borrowing, *Journal of Financial Economics* 5, 147-175.

Gennaioli, Nicolai, Andrei Shleifer, and Robert Vishny, 2010, Financial Innovation and Financial Fragility, mimeo, University of Chicago.

Phillipon, Thomas, and Philipp Schnabl, 2009, Efficient Recapitalizations, working paper, NYU.

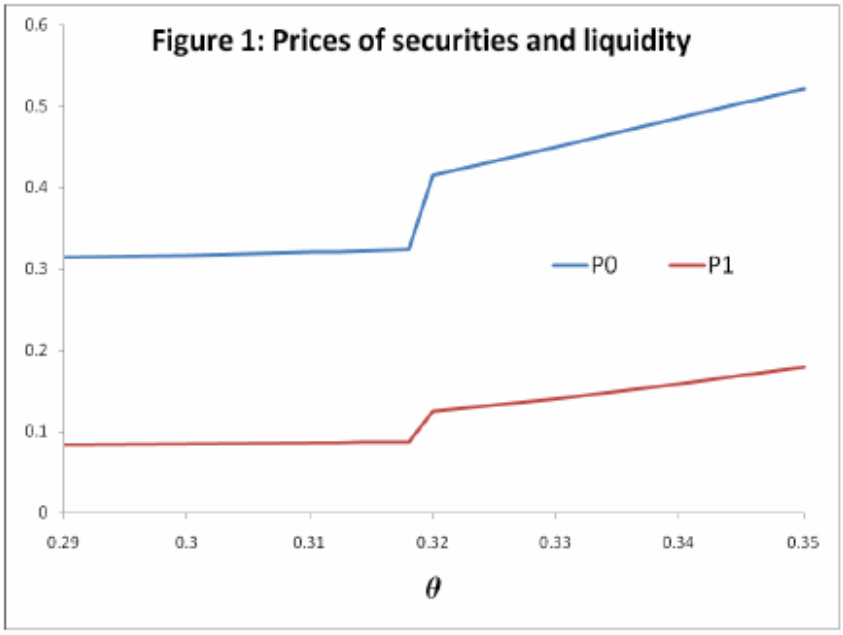
Shleifer, A. and R. Vishny, 1992, Liquidation value and debt capacity: A market equilibrium approach, *Journal of Finance* 47, 1343-1366.

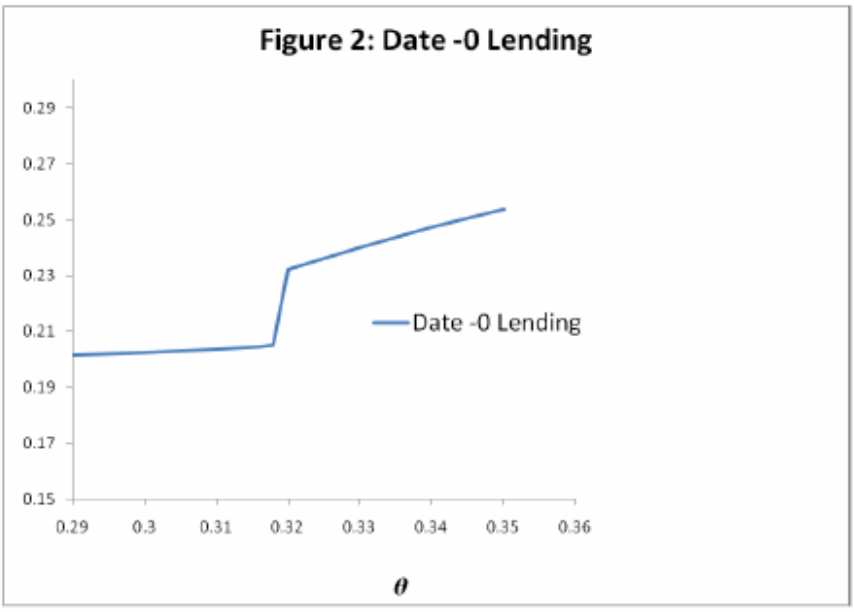
Shleifer, Andrei and Robert Vishny (2009), Unstable Banking, working paper, University of Chicago.

Smith, Bruce, (1991)) "Bank panics, suspension and geography: Some notes on the 'contagion of fear' in banking," Economic Inquiry, 24: 230-248.

Stein, Jeremy (2009), "Presidential Address: Sophisticated Investors and Market Efficiency," *Journal of Finance*, Volume 64 Issue 4, Pages 1517 - 1548

Appendix





Proof of Lemma 1;

We sketch the proof when the change in parameters does not cause a change in whether the bank defaults or not. Incorporating such a change is straightforward. (i) Totally differentiating (1.3), we get

$\frac{dP_1}{df} = \frac{D}{-(1-\beta)ZP_1 + I'\left(\frac{1}{P_0^2}\right)\frac{\partial P_0}{\partial P_1}}$ which is negative since the denominator is negative. Similarly, we can show $\frac{dP_1}{dD} < 0$ and $\frac{dP_1}{d\theta} > 0$. Since $P_0 = \frac{1}{q\frac{1}{P_1} + (1-q)}$, lemma 1 (i) follows. (ii) Ceteris paribus, an increase in q leads to a decrease in P_0. From (1.3), this must imply that P_1 will increase in equilibrium, since liquid buyers will lend less and store more cash. (iii) The condition for all sales to cease is that the bank ceases to be solvent. The solvency condition is given by (1.4), which on simplifying is $P_1\left[(1-\beta)\left(\frac{Z}{2}\right)P_1 + \beta Z - D\right] > fD(1-P_1) - (1-\beta)\left(\frac{Z}{2}\right)$. This is clearly satisfied if $P_1 = 1$, so long as $D < Z$. As f increases, P_1 falls, from lemma 1 (i). So the right hand side of the inequality increases, while the left hand side falls. Hence provided the bank fails for some f^R, it should fail for all $f > f^R$. The other conditions follow similarly. Q.E.D.

Proof of Proposition 3

The bank will take prices as given. If the bank is solvent, the expected value it gets from selling fraction η_0 of securities at date 0 to meet the liquidity demand at date 1 is

$$q\delta'\left[\beta(1-\eta_0)Z + (1-\beta)P_1Z - (1-f')D\right] + q(1-\delta')\left[\frac{\beta\eta_0 ZP_0 + (1-\beta)\left(\frac{Z}{2}\right)(1-P_1^2)}{P_1} + \beta(1-\eta_0)Z + (1-\beta)P_1Z - D\right]$$
$$+(1-q)[\beta\eta_0 ZP_0 + \beta(1-\eta_0)Z + (1-\beta)Z - D]$$

where $\beta\eta_0 ZP_0 + (1-\beta)\left(\frac{Z}{2}\right)(1-P_1^2) = fD$

The term in the first square brackets is the value of the bank conditional on the aggregate liquidity shock occurring and the bank also getting it, the term in the second set of square brackets is the value of the bank conditional on the aggregate liquidity shock occurring and the bank escaping being hit. – in which case it reinvests any cash, raised at date 0 from the sale of securities and at date 1 from the liquidation of loans, in securities at date 1 at the prevailing price, P_1. The term in the third set of square brackets is the value of the bank if the aggregate liquidity shock does not occur.

Similarly, we can write down the expected value of the bank if it does not sell securities at date 0 but instead sells securities at date 1 only if it faces the demand from depositors. This is

$$q\delta^i\left[\beta(1-\eta_1)Z + (1-\beta)P_1 Z - (1-f)D\right] + q(1-\delta^i)\left[\frac{(1-\beta)\left(\frac{Z}{2}\right)(1-P_1^2)}{P_1} + \beta Z + (1-\beta)P_1 Z - D\right]$$

$$+(1-q)[\beta Z + (1-\beta)Z - D] \text{ where } \beta\eta_1 ZP_1 + (1-\beta)\left(\frac{Z}{2}\right)(1-P_1^2) = fD$$

If the bank is indifferent between selling at the two dates, it must be the two expected values are equal. Equating the two expected values and recognizing that if the demand for liquidity has to be met on both dates so that $\eta_0 P_0 = \eta_1 P_1$, we obtain on simplifying that $P_0 = \frac{1}{q\frac{1}{P_1} + (1-q)}$. This means the date zero price the bank is willing to sell for, given an anticipated date 1 price, is independent of the bank's exposure to the shock, δ^i.

But if banks are insolvent conditional on the shock hitting (that is, if $\beta Z P_1 + (1-\beta)\left(\frac{Z}{2}\right)(1-P_1^2) - fD + \left[(1-\beta)P_1 Z - (1-f)D\right]P_1 < 0$), δ^l does determine the size of the put option. Note that in this case, because its value conditional on experiencing the liquidity shock is limited to zero, the bank's expected value if it waits to date 1 to sell is

$$q(1-\delta^l)\left[\frac{(1-\beta)\left(\frac{Z}{2}\right)(1-P_1^2)}{P_1} + \beta Z + (1-\beta)P_1 Z - D\right] + (1-q)[\beta Z + (1-\beta)Z - D]$$

We want to find the value P_0^{Ask} such that the bank's value if it sells enough at date 0 to meet the liquidity demand equals its value if it waits till date 1 to sell and enjoys the limited liability put. Equating, substituting $\beta \eta_0 Z P_0^{Ask} = fD - (1-\beta)\left(\frac{Z}{2}\right)(1-P_1^2)$, and simplifying, we get

$$P_0^{Ask} = \frac{1}{\frac{q\delta^l[\beta Z + (1-\beta)P_1 Z - (1-f)D]}{fD - (1-\beta)\left(\frac{Z}{2}\right)(1-P_1^2)} + \frac{q(1-\delta^l)}{P_1} + (1-q)} \qquad (1.10)$$

If the bank is insolvent conditional on the liquidity shock, we know $P_1\left[\beta Z + (1-\beta)P_1 Z - (1-f)D\right] + \left[(1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right) - fD\right] < 0$ (see (1.4)). So the denominator on the right hand side of (1.10) decreases in δ^l, and P_0^{Ask} increases in δ^l. Q.E.D.

Proof of Proposition 4:

(i)The date-1 interest rate, $\frac{1}{P_1}$, is determined by the condition that there be enough liquidity, after liquidating loans, to meet depositors needs. Provided the bank is solvent, the liquidity condition is

$$(1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right)+\left[\theta-I(\frac{1}{P_0})\right]=fD \qquad (1.11)$$

Note that there is a unique P_1 that solves this, and P_1 is independent of how many securities are sold at date 0, provided all buyer cash is not exhausted. This also means that regardless of how many securities are sold at date 0, the date-1 price of securities will be P_1 for that is the value of the marginal loan that the bank can avoid liquidating if it sells a security at date 1 instead. This means the date-0 price of securities is $P_0=\frac{1}{q\frac{1}{P_1}+(1-q)}$, so long as

$$\beta Z\eta_0 P_0<\left[\theta-I(\frac{1}{P_0})\right] \qquad (1.12)$$

It is then clear that the bank's solvency can be improved by forcing it to sell more securities at date 0. The solvency condition is

$$(1-\beta)P_1Z.P_1+(1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right)+\beta Z(\eta_0P_0+(1-\eta_0)P_1)\geq(1-f)DP_1+fD \qquad (1.13)$$

and the left hand side clearly increases in η_0 (because $P_0>P_1$). Hence (i).

(ii) Once, however, the date-0 sales account for all the cash with buyers, additional sales will come at a reduced price. We need to see how $\beta Z(\eta_0P_0+(1-\eta_0)P_1)$ varies with η_0 when

depositors (net of what solvent banks can raise by liquidating loans) and buy securities from failing banks. This implies

$$(1-\gamma)\beta Z P_1 + \gamma\left(fD - (1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right)\right) = \left[\theta - I(\frac{1}{P_0})\right] \qquad (1.15)$$

Finally, the solvency condition for the solvent banks is unchanged and is

$$(1-\beta)P_1 Z.P_1 + (1-\beta)\frac{Z}{2}\left(1-(P_1)^2\right) + \beta Z(\eta_0 P_0 + (1-\eta_0)P_1) = (1-f)DP_1 + fD \qquad (1.16)$$

Clearly, the maximum number of banks can be saved if the date-0 liquidity is fully and equally divided amongst the saved banks such that the solvency constraint is just met. Hence conditions (1.15) and (1.16) are equalities. (iii) follows immediately.

(iv)Failed banks sell all their securities while solvent banks sell only a fraction of their securities. Therefore, given the fixed supply of buyer cash, increasing the fraction of solvent banks will raise the date-1 price, and by buyer arbitrage, the date-0 price.

Discussion

Douglas Diamond:
It is a great honor to be here and I want to express my thanks to the *Onassis Foundation*, the organizers, and the *Scholars' Association* for letting me share my views on this important topic. I do the study of private financial crises for a living. Essentially, in all of my career it is all I have worked on, the role of short-term debt financial crisis; that is largely what the talk is about. I don't have much special expertise in sovereign debt crises, which is very much what the current euro and Greek crisis is about, but I will try to draw some lessons from the study of private prices to at least the timing of sovereign prices. The world private financial crisis, the "private" I put to make clear that not all crises are about private firms, had a fairly standard start. There were some losses, some change in value on some assets, and the losses turned into a crisis, largely because these assets that went down in value had their location in some financial intermediaries, some banks and non-banks that were very highly levered with short-term debt. So, my diagnosis is somewhat similar to Professor Arestis', but actually I am not a person who thinks that it is all about the Glass-Steagall Act going away in the United States; in part because a lot of the assets that got us into such trouble were on the books of very non-traditional financial institutions: the CDOs, the SIVs, and the investment banks.

I agree that financial regulation was not in a very good shape […] and has been misguided in the past. It has been all about avoiding default by a particular institution. It should be focused on avoiding the excessive use of short-term debt or other activities, which have bad externalities on others. And in addition, if central banks lower interest rates to provide liquidity during any financial crisis, that will give the banks the incentives to load up with too many illiquid assets and finance them with short-term debt. And if you look at this huge run up of short-term debt that was financing Morgan's backed securities that I showed you in the beginning of the asset backed commercial paper, if you try to use monetary policy for financial stability, you got to get it just right. Because if you just have the Greenspan put in and come in and clean up after the fact, you will have a lot to clean up after. There will be way too much illiquidity in the system. So we need to refocus regulation. Let me just briefly mention a couple of regulations that are part of a group. There is a group called "The Squam Lake Group on Financial Regulation;" Fourteen financial economists, a couple of macro-economists mixed in there. We had a conference last Wednesday, on the release of our book, "The Squam Lake Report" that came out from Princeton Press, and we have a bunch of regulations. Increased disclosure, to make sure if there is a shadowy financial system developing somewhere, the regulators can know about it or at least the markets can know about it. I will talk about capital regulation, reforming the way bank capital is set, and improved failure mechanisms with a type of debt that conversed equity. If you don't want to buy our book, it is fine with me, we don't get any royalties on it and you can get all our recommendations from www.squamlakegroup.org.

So let me just talk quickly about our capital regulations. Our capital regulations' proposals are bank capital requirements that percentage of assets that have to be in capital should be increased for larger banks. That is a little along the lines of saying "Don't allow any large banks," but we are not so much bright-line saying "The Volcker rule, no big banks; the Volcker rule, proprietary trading." We are saying larger banks, even though they are more diversified and safer, should have much higher capital requirements. They are more likely to get bailed out if they get into trouble, so you want to internalize that.Banks that have more illiquid asset should have higher capital requirements. And banks that are financed with a

higher fraction of short-term debt should have higher capital requirements. So this is not just having a liquidity requirement for banks, but linking the capital requirement to the liquidity requirement. If they are not very liquid, then they need extra capital to make sure that if there is a system-wide drop in prices due to a run that they have enough capital to survive through it, rather than add to it. So if you are going to be taking an illiquidity risk, you better have a bigger than average capital buffer. And our version of the Volcker rule is not the bright line, but activities that have hard-to-measure risks, like proprietary trading or assets that don't have a market price, so you can't figure out if the bank is insolvent; those should have higher capital requirements. And we also have a security called the "regulatory hybrid security." It is a kind of debt that converts to equity and it is a form of contingent capital and it is a way of dealing with the too big to fail problem; so that the banks, if it is debt converted to equity, would no longer be over-levered, unless the losses are astronomically big. This has to obviously be long-term debt and it converts to equity based on two criteria. One, if this bank becomes undercapitalized on some blend of marketing book measures, and in addition, there is low aggregate capital in the banking sector. I think bad things happen when your whole financial sector is undercapitalized. And even if there is not low bank capital, if the regulators see a systemic crisis occurring, they could announce in addition that there might be a systemic crisis and that would cause the debt to convert to equity. You need the bank capital as an automatic trigger, because regulators are going to be reluctant to do that kind of stuff. So you want the double trigger to avoid a death spiral. It is sort of like a speculative attack, where the banks are going down, so the debt converts because the banks are going down, and there is a sort of short attack. So you don't want to base it just on the stock price; and you also want to have some limit to regulatory discretion when bank capital is low. So contingent capital, this stuff has a way of raising capital in good times, when nobody is worrying about anything, instead of waiting to ask banks to raise capitals in bad times, when everybody thinks things are about to melt down. It allows a sort of pre-funding of the bailout fund from the private sector.

So the world financial crisis is like all others. Let me say a little about sovereign debt crisis and try to relate that to the current situation. I am not really an expert on sovereign debt crises. There was something very similar to a run risk in the days of fixed exchange rates without a common currency. So there, if you try to keep a fixed exchange rate, you could have what is called "speculative attack" and as long as you can keep trying to push down the exchange rate long enough to have the central bank that was trying to defend the exchange rate run out of foreign currency, you can then have a speculative attack on the exchange rate. That is almost exactly the same thing as a bank robbery. So the nice thing about having a common currency, so you have a fixed exchange rate relative to others in the euro zone, but not trying to fix it compared to the dollar or the yen or something like that, is that in principle, the European Central Bank can provide liquidity to prevent a speculative attack on its exchange rate; because the only thing that is fixed is within the system, not outside the system. But that then says that adjustment isn't going to occur because of devaluation, and that is the good thing about a common currency. The bad thing is the adjustment has to occur either by default on debt or raising sufficient revenues to not default on debt, and the current crisis in the euro zone isn't about short-term rollover risk. The Greek government, the Spanish government they don't rollover all of their debt over night. They have three or four years, before they have significant refinancing risk; so that allows three or four years to try to work out a situation, either to convince the market that tax revenues and deficits will be such that they will be enough to pay off the debt, or, if that doesn't happen, to find some kind of non-default restructuring, which is sort of a sanitized version of default. But that is about expectations of

stuff way in the future. So if you get a crisis today, it is because people are concerned that in the reasonably distant three or four year from now future, there will not be a resolution that pays off the debt in full; and it's all expectations about stuff in the future.

So then the question is why doesn't the crisis occur when it does? Why is it occurring today? So why are the spreads, say, over German bonds, going up today? They could occur at any time, because there is a lot of time to deal with the deficit. Other countries could increase their deficits. Spain and Greece could reduce their. So obviously, one thing that was a key trigger was – I guess the politically correct way to say this is – revelations about deficit measurement. That is like saying that some people, the new government said that they didn't quite like the accounting treatment of how their deficits were measured in the past. So that is kind of a trigger; but that doesn't have to cause a run today, because the debt doesn't have to be rolled over today. I think one reason this became such a high risk time to have fears about whether your deficit numbers are accurate or not is that because – this is a consequence of the world financial crisis – because the rest of the world is running deficits for macro reasons, for stimulus reasons, other countries are starting to run up their deficits. And as a result, everybody is thinking, "Well, maybe the United Kingdom is going to default on their debt. Well, before the United Kingdom, it will be…" And then you start thinking, ok, it is a very salient thing and we can start to see fear of fear itself. Thank you very much.

Person in the audience:
What about the United States and China? I think you related very well things that go to us and in fact, Professor Arestis before you, mentioned a number of issues, main factors and contributory factors about the current crisis. What about the United States, what about Japan and what about China? I know you said you are in private crisis, not in sovereign state crisis, but I would ask your views on the possibility of private financial crisis in these three countries. I mean, obviously, not about Lehman or Bear Stearns or AIG in the United States. About forthcoming possibilities.

Douglas Diamond:
I will start with the US, which I know the best. I think the risk for another private crisis in the US is probably relatively low right now. I think, among the commercial banks we have had very good success with our stress tests and disclosing the methodology of the stress tests. So I think there is a general belief that the balance sheets of the large financial institutions in the United States are in a pretty good state. Most of the small banks in the United States are sort of insolvent right now, because they own lots of commercial real estate depended transactions and they are being closed in a too small to be bailed out way. China is a very interesting question. The separation between the state and the banks there is relatively limited. And I think their banks are never tremendously well capitalized coming in. So I don't think that it is likely to be any financial institution crisis in China. I think the most interesting thing actually about China is their former exchange rate policy was a piece of the global savings glut that allowed the central banks around the world to keep interest rates so low in the mid-2000 period. As China seems now to be changing their monetary policy toward more closer to a balance in payments and equal exchange rate, I think they will tending to push up interest rates around the world, which will require a period of adjustment to financial institutions. The Japanese banks, I have never understood the Japanese banks. I was a consultant in the Bank of Japan for a year, in 1999-2000, and (I think I won't tell that story) and it was a very illuminating period; and I think the Japanese have bigger deficits than essentially certainly any euro zone country. And it is a bit interesting that no one is particularly concerned to say

about sovereign default in Japan. And then, the question is you think in the future would the Japanese ever default or would they just do a fiscal adjustment? I think most people, for some reason, think the Japanese would do the fiscal adjustment. And I think the goal in the euro zone is to make credible somehow that the countries that have big deficits right now will over the relative period make the fiscal adjustment.

Person in the audience:
Until now, the tax payer has paid the cost of the financial sector crisis, both in the US and in the European Union. Therefore, nowadays, in the European Union there is some talk about creating funds, which would be funded by the banking sector itself, which would undertake the cost of bankruptcies of sovereign crises in the future. I wonder what is the thinking on that question in the US. Thank you.
Douglas Diamond:
I can not speak for the country; I will speak for myself that I think that there is some notion that there should be a tax right now exposed to recover some of the losses for bailing out the banks recently. I personally don't think it is a good idea to set up a fund for bailouts. Because I think it is better to try to design institutions to resolve insolvencies without bailouts, and make sure there is a way to impose losses on creditors, without encouraging runs. So I think setting up a fund for bailouts, without doing the later, would be the absolute worst case. It would sort of be similar to introducing something like federal deposit insurance for the liabilities of any financial institution could manage to get itself into big enough trouble with enough other financial institutions at the same time. So I think actually establishing a fund is a bad idea. I am sympathetic to the notion that we provided exposed deposit insurance to Goldman Sacks, to Lehman Brothers, and it is too late to collect from, to Morgan Stanley. Imposing a tax now to recover some of those losses, I think certainly makes sense politically and I think it is not tremendously a bad idea. Obviously, when you put the tax after the fact, you can only tax the well behaving firms who have stayed solvent. So doing it in advance is at least good; you could have collected some of it from Lehman Brothers or some of it from Bear Stearns. But once you've got this pool of money for bailouts around, I think to the extent the regulators were bailing everybody out anyway without such a pool, I suggest it wouldn't be a good idea.

Person in the audience:
I am very interested about your ideas on hybrid securities; and if I understood you properly well, actually you introduce converted share equities. Does it have to do something with the Darrell Duffy discussion paper on distress-convertible bond theory? Does it have to do something? I have read a paper on that topic.

Douglas Diamond:
Ours is a little different than the proposal. The first proposal of this type I am aware of was from a fellow named Mark Flannery, from the University of Florida. And he had his debt converting to equity, purely as a function of the stock price of the bank. So if the bank stock price got below 3 dollars a share, 2 dollars a share, the debt would convert to equity. I see some technical problems with that. You can sort of do a speculative attack on the bank and get the stock price down and then the stuff would convert. There are also possibilities, even without a speculative attack, just of multiple equilibriums. If everybody thinks the stock price stays high, it is high; if everybody thinks it is low, it is low and they are both right: a certain amount of indeterminacy. This indeterminacy will happen whenever at the point when the

debt converts to equity, if there is going to be a discontinuous jump up and down of the stock price, you have this possibility of indeterminacy. So that is the reason we use a blend of market and book; you have to have the trigger, it is not just a function of market and if there is market there, it is lagged to some extent. But I also think it is important that they have this second trigger, based on the capital in the system as a whole. Because I think debt is an important discipline device for firms and for banks. So if only one bank is in trouble and their debt would convert to equity, I think no, no, don't have it convert; let that single bank that is in trouble go down, or alternatively, let that single bank that gets in trouble realize that it will go down and fail, unless it raises more capital on its own. I think that would be good for the incentives of banks. So that is the individual punishment. The reason we want to consider aggregate capital as well, so if there is aggregate capital, then if you are undercapitalized all your debt converts to equity, that is to avoid the group punishment, when everybody is having a hard time refinancing themselves. So I think ours is a nuance, compared to Mark Flannery's, but I think the devil is in the details, as an old saying goes. The getting it right in the details is very important to make sure it doesn't make bad matters worse.

Chair:
One little question I had about your Squam Lake proposal. Does that take any position on the issue of market value, accounting rules, banks?

Douglas Diamond:
I will tell you two seconds on the Squam Lake. There are fourteen of us and all of our proposals require unanimous consent. The issues on mark-to-market accounting are somewhat complicated. I think mark-to-market accounting is one of the best inventions ever, in that it doesn't have as much discretion in it and the regulators can't hide losses. So I think mark-to-market accounting should be used, but it shouldn't be used in an automatic way that if the market value goes down, the bank gets closed. So I would like to use mark-to-market accounting as an indicator, as an input to regulatory policy. For example, if at market value a bank's asset is undercapitalized at market value, either looking at the bank's price or looking at the value of the loans, that should not trigger bank failure. That should trigger something like a stress test, to have the regulators not try to use the market to tell them their job for them, but use the market as a wake-up call to tell regulators they should go in and use their own expertise to figure out if this bank is in good shape or not. I was sort of skeptical if stress tests would work in the United States; and I think there is now pretty good belief that they actually were somewhat accurate and they did find where the areas of potential losses were. So mark-to-market accounting is a good thing, but not as a hard wire.

The financial crisis of 2007-2009: Lessons for risk management

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The 2007-2009 crisis is the most severe financial crisis to have hit the U.S. since the Great Depression. Early signs of the crisis appeared in February 2007 when several subprime mortgage lenders began reporting losses. In July of the same year credit spreads started widening. In August PNB Paribas temporarily halted redemptions from three of its funds and in September there was a bank run on Northern Rock. By the end of November the crisis was in full swing, with several financial institutions reporting large losses.[1]

The underlying cause of the crisis is the breakdown of the risk management systems of financial institutions for detecting, assessing, and effectively dealing with financial risk. The particular risk that triggered the recent crisis is the bursting of the housing price bubble, the default of subprime mortgages, and the collapse of the prices of mortgage-related financial products. We analyze the chain of events that occurred during this crisis and learn invaluable lessons on how to build a sound risk management system.

Whereas the recent financial crisis stemmed from the housing sector, a future financial crisis may well stem from a different sector. If we are to be prepared to avert the next financial crisis, we need to look beyond the housing sector and understand how to build better risk management systems that cover the entire spectrum of risks.

The events that led to the present financial crisis are fairly well understood.[2] They stem from the sub-prime mortgage lending spree and the resulting housing price bubble. The lending spree and the housing bubble were fueled by the convergence of several economic conditions during the period 2003-2006: low U.S. interest rates; a surge of savings, including foreign savings in search of high-yield investments, such as sub-prime mortgages and their derivatives; the creative but poorly-understood securitization of mortgages; and the mistaken perception that the risks are low and diversifiable. The risk management systems employed by financial institutions failed

[1] Cecchetti (2009) documents the early stages of the crisis and the response of the Federal Reserve.
[2] Brunnermeier (2009) and Diamond and Rajan (2008) provide insightful analyses of the crisis.

to anticipate the bursting of the housing bubble and proved totally inadequate to provide protection from the fallout.[1]

The bundling of mortgages by the originating banks as Mortgage-Backed Securities (MBS) and the sale of these securities allowed the originating banks to off-load the risk and provided them with the capital to originate additional mortgages which were again securitized and sold off in an unending cycle.

The bundled mortgages were further securitized into tranches with different credit ratings. The AAA-rated tranches were primarily sold to international investors who demanded the high credit rating. The lower-rated tranches were bundled and additional AAA-rated structure finance securities, such as Collateralized Debt Obligations (CDO), were carved out of these bundled mortgages.[2] Just like the proverbial Mulligan stew prepared by hobos from food scraps garnered from trash cans that far exceeded in taste its humble ingredients… What was left behind was the lowest-rated tranches or "toxic waste" which was happily bought up by hedge funds and other institutions chasing high yields. Further complicating the picture, contracts by the name of Credit Default Swaps (CDS) were introduced that insure against the default of a particular CDO or corporate bond.

What went wrong with the risk management systems in this chain of events? First, let us look at the originating banks. These banks were happy to receive the fees as originators of the mortgages. They had no incentive to closely monitor the credit worthiness of borrowers whose mortgages they would resell a few days later. This is a classic "moral hazard" problem and one of the causes of the breakdown of the risk management system.

The banks faced a second moral hazard problem as well. The bonuses paid to executives and traders were based on year-end performance and led the banks to adopt a short-term perspective. Naturally, their risk management systems adopted a short-term perspective as well and were oblivious to long run risks.

The originating banks' mistaken belief (or rather hubris) that the mortgages were reasonably safe and provided an attractive risk-return tradeoff led them to hold on their books large leveraged positions of the mortgages which they originated. Their risk management systems failed to properly assess the risk of mortgage default. The

[1] Mayer, Pence and Sherlund (2009) document the deterioration of the mortgage lending practices as banks were offering mortgages with small down payments and scant documentation of the borrowers' income or assets.

[2] Coval, Jurek and Stafford (2009) describe the securitization process.

systems employed by banks, insurance companies, such as AIG, and other institutions, failed to provide for scenarios where the housing prices would drop by more than 20%. In reality, housing prices dropped on average by 33%, while the low end of the housing market dropped by 45%. This example illustrates another classic problem: a risk management system is no more imaginative than its creator.

A related factor that distorted the originating banks' assessment of the default risk of borrowers is the gradual elimination of "soft' information regarding the borrowers as the degree of securitization increased and investors in MBSs relied primarily on hard information about the borrowers. This had the effect of underpredicting defaults by borrowers, leading to lower interest rates on new loans, and further fuelling the demand for loans.[1]

The above problems that plagued the originating banks also plagued the risk management systems of the other intermediaries higher up in the food chain of mortgage-backed securities and their derivatives.

One factor that exacerbated these problems was another moral hazard problem: the blind reliance of these intermediaries on credit ratings provided by agencies which had a conflict of interest with the corporations which hired them to rate their bonds and other financial claims. The risk management systems failed in part because the credit-rating agencies provided faulty inputs to appease the firms which hired them to provide the ratings. They also failed because credit-rating agencies erroneously viewed structure finance products and corporate bonds as essentially similar financial instruments.

We can go all the way up in this chain of intermediaries and ask why the hedge funds that held the toxic waste did not have better risk management systems. Sadly the answer is the same that we gave for all the other intermediaries: moral hazard, hubris, and lack of supervision by their investors who blindly trusted them and failed to demand disclosure of the activities of the hedge-fund managers.

Our description of the financial crisis so far can only be part of the story. The deterioration of subprime mortgages at the beginning of 2007 cannot explain the financial crisis which reached panic proportions with a delayed reaction only later on that year. Furthermore, the total value of subprime mortgages in 2007 was about $1.2 trillion which represents only 6% of the value of the traditional and parallel banking

[1] Rajan, Seru, and Vig (2008) discuss this issue.

system. How can subprime mortgages pull down the entire banking system? As we shall see, the answer boils down to lack of transparency and luck of accurate and timely information.

Traditionally, banks have relied on short term deposits to fund their long term liabilities. The mismatch between the maturity of the banks' liabilities and the banks' assets exposes them to funding illiquidity and the classic problem of bank runs. With the introduction of deposit insurance in the US in 1934 it was generally understood that this problem was effectively addressed.

However, a key structural shift in the banking sector over the last 25 years has rendered deposit insurance ineffectual in preventing bank runs.[1] This is the banks' shift in borrowing through very short-term (typically overnight) repurchase agreements as opposed to bank deposits which have assumed a secondary role. Repurchase agreements are not covered by deposit insurance and the lending institution obtains protection through collateral. This makes the banking system vulnerable to bank runs and this is what happened in 2007. The deterioration of subprime mortgages triggered a bank run by lending institutions which demanded ever increasing protection in the form haircuts from the banks.

Why could the lending institutions not figure out the credit worthiness of banks and selectively demand higher haircuts from financially troubled banks? Again the answer boils down to lack of transparency and luck of accurate and timely information.

From this brief anatomy of the crisis we draw several lessons for designing the risk management systems of the future.

The first lesson is that a necessary condition for a risk management system to operate effectively is to have available accurate and timely information.

Banks and other financial institutions should be required to disclose their financial holdings in a transparent and disaggregated format and do so in a timely fashion. Each player is better able to assess their own risk if they understand the risks and vulnerabilities of their counterparties. Furthermore, they can better distinguish between systemic risks and diversifiable idiosyncratic risks if the exposure of all players to these risks is understood by all parties. Some regulation along these lines is already under way.

[1] Gorton (2010) makes the case about the role of this structural shift on the financial crisis of 2007-2009.

Hedge funds should be required to disclose their positions and trades, a procedure which is currently non-existent. Some regulation along these lines is already under way.

As I pointed out earlier, Collateralized Debt Obligations (CDO), Credit Default Swaps (CDS) and other financial instruments proliferated in the years leading up to the financial crisis. In principle, CDO's can play a positive role in the financial system by securitizing and diversifying financial risk amongst many classes of investors; and Credit Default Swaps can play a positive role by diversifying the risk of insuring against default of a particular CDO or corporate bond. Their volume of trade and the concentration of their ownership is opaque because they are currently being traded over-the-counter and little information is available about them. Further complicating the picture, as many as 80% of the CDS's are held naked, meaning that the buyers of insurance do not hold the underlying CDO or bond but rather hold these CDS's for speculation. Regulation is currently being proposed to require the trading of these securities in organized exchanges with designated clearing houses and also curtail the naked trading of CDS's. These proposals may go a long way in facilitating the smooth operation of risk management systems by providing accurate and timely information. The CFTC (Commodity Futures Trading Commission), under the direction of its new head Gary Gensler, is aggressively moving to regulate credit derivatives and all other over-the-counter derivatives.

However, even if all the above information does become available, we should recognize our limitations and the limitations of our tools to assess the probabilities of rare but catastrophic events. The Value at Risk measure (VaR) informs us that there is a (say) 99% probability that the loss over a certain future period (day or quarter) cannot exceed a certain value, say, $100 million. What it does not inform us is how big the loss can be in that 1% case where the loss exceeds the $100 million. It is unproductive to try to build a forecasting model to predict how big the loss can be in that 1% case where the loss exceeds the $100 million because these are rare events, information is sparse, and economic conditions are shifting over time. Therefore, we should recognize the limitations of our forecasting systems and focus, instead, on scenario analysis: what will happen if one of these catastrophic events does occur and how we should best prepare to address such a catastrophe. For example, whereas AIG could not have forecasted with any degree of precision the probability that the housing prices would drop by 30% or 40% or 50%, it could have spelled out carefully

prepared responses to such disasters. Just allowing for the existence of such scenarios might well have concentrated the mind of the board of directors of AIG and their response might have been different.

The second lesson is that the current financial system is plagued with moral hazard problems in every step of the way.

Executive and trader compensation should be based on long-term performance. This will shift the focus of the currently myopic risk management systems to the long run. Greater accountability imposed on executives and their boards will induce them to pay more attention to the design, inputs, and output of risk management systems.

Furthermore, banks should be required to hold a certain fraction of the mortgages which they originate so that they have the right incentives to screen potential borrowers, generate hard and soft information about these mortgages, and disseminate this information.

The third lesson is that credit-rating agencies should recognize that structure finance products are essentially different than corporate bonds and should develop the tools to assess their risks accordingly. Furthermore, the method of compensation of these agencies should be changed to eliminate the current conflict of interest between the agencies and the firms that originate the rated structure finance products. Finally, banks and other financial institutions should tighten the risk tolerance of their risk management systems. This will raise the banks' capital requirements and induce them to raise equity and long-term debt and lengthen the maturity of their short-term debt.

References

Brunnermeier, K. M., 2009, "Deciphering the Liquidity and Credit Crunch 2007-2009," *Journal of Economic Perspectives* 23, 77-100.

Cecchetti, S. G., 2009, "Crisis and Responses: The Federal Reserve in the Early Stages of the Financial Crisis," *Journal of Economic Perspectives* 23, 51-75.

Coval, J., J. Jurek, and E. Stafford, 2009, "The Economics of Structured Finance," *Journal of Economic Perspectives* 23, 3-25.

Diamond, D. W. and R. G. Rajan, 2008, "The Credit Crisis: Conjectures about Causes and Remedies," working paper, University of Chicago.

Gorton, G., 2010, Slapped by the Invisible Hand: The Panic of 2007, Oxford University Press.

Mayer, C., K. Pence, and S. M. Sherlund, 2009, "The Rise in Mortgage Defaults," *Journal of Economic Perspectives* 23, 27-50.

Rajan, U., A. Seru, and V. Vig, 2008, "The Failure of Models that Predict Failure: Distance, Incentives, and Defaults," working paper, University of Chicago.

Shin, H. S., 2009, "Reflections on Northern Rock: The Bank Run that Heralded the Global Financial Crisis," *Journal of Economic Perspectives* 23, 101-119.

Discussion

Person in the audience:
I am just wondering. Say, for example, that someone wanted to protect himself against such a catastrophic event. However, as you say, they cannot assign a probability to that event. So what he can do? Say he is in the stock market and wants to buy puts. How long-term puts do you buy? You buy three-month puts? One year puts? How long do you do this for? How much money can you spend, before this event of very low probability suddenly materializes or it doesn't? Because, if you keep on paying money, you keep paying this insurance premium, maybe at some point the speculators definitely will not remain profitable, if this was the trade. Of course, there are other hedge funds that make a lot of money betting on such events, because these events actually did happen. But before that, if you were during the good years of euphoria, then it would be very hard to predict this event and to take the necessary course of action. The question is how feasible it is to plan against these events and to realistically think that we should start doing this again? How much money are we going to spend hedging against these events, if there isn't any probability for them? Because we can do the expected value …

George Constantinides:
I agree with you. I will try to answer the easy part of your question, "Would you buy a two-month put option or a one-year?" Well, ideally that is a trade off, these are long-run risks; you buy the longer one. Because the problem is only the closest to maturity and the next one that are liquid. The further out you go, these are more illiquid. The second question about the pricing, "If we cannot assess the probabilities, what you do about it?" First of all, let me tell you that I have done a lot of research on the most liquid and the most watched options, the SNP 500 options. And we find that both the deep part of the money puts, but also the deep part of the money cost are generally overpriced. So, even for those most highly liquid ones, there is a difficulty. What would you do about it? Here you would have to recognize that it is a situation of Knightian uncertainty, there is a question of risk versus uncertainty. Risk is we can assign probabilities to this event. But this is a situation where you throw your hands up and say: "I don't quite know." The point is in 2004-2005, whatever you assessed the probability of the Greek current situation, you would have made money. Because people were just assuming that that event was nonexistent. So even if you assigned a very small probability for that, you could have made some money then. Now, whether you would have exposed the price correctly, I don't think you can. As I said, even for these most highly traded options, you cannot. But I guess the basic lesson I am saying is if you cannot assign a probability to this rare event, trading in the zero probability you know is definitely wrong. So you can do better than zero. If you say one per million or one per one thousand, it may not be correct; but it may be closer to reality than exactly zero.

Person in the audience:
I would like to ask, since we cannot really comprehend uncertainty, the Knightian uncertainty, is it logical, in terms at least of capital requirements, to always have an uncertainty factor built in? For example, let's say we have a mechanism to say how much capital banks need, and let's say this is 10%. Shouldn't the regulators say: "Ok, since this is based on some kind of model that clearly the past has shown that we cannot really foresee any catastrophic event or

any other kind of risk, we should put an additional 2%," for example; just to cover this fact that we cannot really forecast.

George Constantinides:
Yes, definitely. I am not going to repeat it, because my colleague Doug Diamond talked at great length about particular requirements for the banks too big to be allowed to fail having more strict requirements and how this short-term debt turns into equity automatically.These are all conditions; and these conditions should take into account scenarios which may be too exotic to be able to assign probabilities, but partly take them into account. Now, I am not advocating that we should allow for zero risk; because then we will do nothing. There are some risks that we will be exposed too, we will not be able to cover ourselves from all the risks. But particularly for AIG, they looked at what was the historic average in the whole country, the greatest loss of 20%, and maybe it would be very-very hard to envision a drop of 50%. But if 20% happened, it is not that exotic to think that the housing market could drop by 25%. We are carried very much by a current period, which everybody could see that it was a bubble, it was fueled by the low mortgage rates; because the Chinese at that time, before they became more sophisticated, could do nothing better than park their surpluses in treasury bonds, so that fueled the market. So, looking back to it, it was obvious that it was a bubble. When you are going through this, you are optimistic, but let the real estate agents be fooled by that; why couldn't the banks and AIG recognize that if 20% happened, there is some scenario they had to worry about for the market dropping by 30%? So I think that all the stuff that Doug talked about should take into account scenarios that may have never been realized in the last 100 years, but may happen.

Actions for a less procyclical financial system •

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1. Introduction

When studying an economy, it is often helpful to separate the real from the financial sector and explore in greater detail their separate behaviors. Yet, the two sectors are intimately related with bidirectional feedback from one to the other. This feedback is clearly displayed in their common procyclicality. As the Bank for International Settlements puts it in its 2009 annual report, "*A procyclical financial system refers to the notion that its dynamics and the dynamics of the real economy reinforce each other, increasing the amplitude of booms and busts and undermining stability of both the financial sector and the real economy*." More precisely, in good times, there is excessive risk taking and excessive financial activity, whereas in bad times there is insufficient risk taking and very little financial activity. This behavior can create a vicious cycle, expanding the cyclical fluctuations of the real economy, which can then feed back negatively to the financial sector itself, and so forth.

For decades, many economists – perhaps the majority - have argued that rational agents do forecast the long term, hence, they see through the cycle: Rational agents cannot be easily confused by the ups and downs of the business cycle. Yet, in the last ten years some economists have managed to create equilibrium models in which a strong macroeconomic cycle and a majority of short-sighted agents may force behavioral conformity even on other agents who see through the cycle, i.e. even on the ones who have different expectations from the prevailing majority. For example, it pays to ride a bubble for a while rather than take a

• I would like to thank Theodosios Sampaniotis and Theodore Stamatiou for their useful comments.

position against it (Abreu & Brunnermeier (2003)). Or, regarding the behavior of bankers, Chuck Prince, the former chairman and chief executive of Citigroup, one month before the recent financial crisis erupted, on July 10, 2007, was quoted in the Financial Times, saying: *"When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing,…"* This conformity in behavior can exacerbate procyclicality and was apparently a predominant behavior prior to the international crisis of 2007-2009. [1]

Following the international financial crisis of 2007-2009, procyclicality has come to the attention of policy makers. The crisis has left the global financial system vulnerable to future adverse shocks as many economies levered up through drastic fiscal expansions aimed at avoiding the worst consequences of the recession and as monetary policies have correspondingly brought nominal interest rates close to zero and flushed the system with abundant liquidity. In a fragile financial environment with private and public sector leverage and abundant central bank liquidity, procyclicality becomes an even more important issue, as it can exacerbate economic fluctuations and lead to suboptimal behavior.

Since procyclicality characterizes both the real and financial sectors of the economy and their bidirectional interaction, economic policies intended to counteract it, cannot be purely financial or economic, but mixed. Those policies are analyzed in detail in the article. Naturally, there is no clear unanimity among economists on the types of policies needed. Some have warned not to rush too quickly with extra regulations in order to reduce procyclicality or, at least, try to frame the regulations in a manner which is not too costly for financial intermediation (Kashyap, Rajan and Stein (2008)). Others provide arguments for strong restrictions, which in their view reduce risk substantially and have a minimum cost on financial intermediation (Admati, DeMarzo, Hellwig, and Pfleiderer (2010)).

[1] The literature on the international financial crisis of 2007-2009 is growing. See, for example, Borio (2008), Bordo (2008) Brunnermeier (2009), Gorton (2008, 2009, 2010), Metrick and Gorton (2010), Reinhart and Rogoff (2009) or Geanakoplos (2010).

Overall, there is a growing consensus among economists and policy makers today that new regulations are needed even if they turn out to be costly.

The article begins in Section 2 with a brief description of the procyclicality of the financial sector. Subsequently, in Section 3 it discusses issues of policy design and analyzes twenty factors that exacerbate procyclicality, suggesting ways to mitigate them. Section 4 discusses the state of current regulatory efforts over the issue of procyclicality. Section 5 concludes.

2. Procyclicality: A feature of modern economies

This section describes the main features of procyclicality. In order to clarify the relationship between the ups and downs of the real and the financial sector of an economy, it begins by examining boom periods.

2.A Boom periods

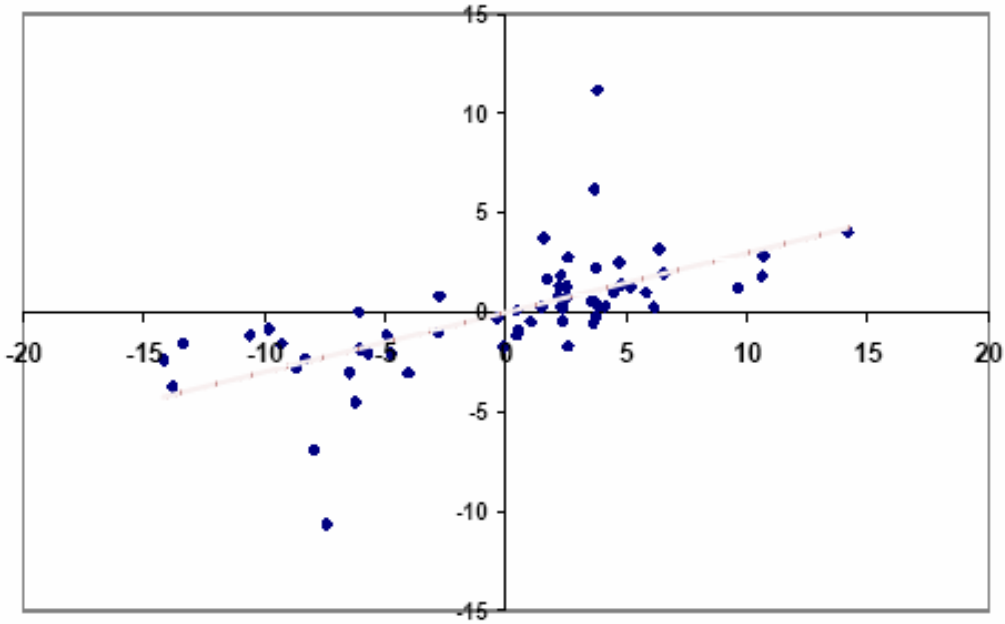
During output booms, risk premia decline and the quantity of risk taking increases. Specifically, firms and households become optimistic and take large investment and employment risks (Borio, Furfine and Lowe (2001), Borio and Lowe (2002)).

At the international macro level, an output boom in a major developed region like the US, Europe, or Japan, is typically followed by increased exports of emerging countries to the booming developed region as well as increased flows of financial and physical capital to emerging countries, both of which exacerbate the cycle. Emerging economies grow faster and a common global upturn materializes. Then financial behavior in the emerging countries becomes itself procyclical as well. Households in emerging countries expand their borrowing and, moreover, they typically increase their share of foreign currency borrowing, since foreign interest

rates in developed markets are usually lower; hence foreign exchange risk in emerging countries rises as well (Kindleberger (2005), McKinnon and Pill (1999)).

Figure 1 presents some recent evidence consistent with the above procyclicality story in emerging economies. It reveals a positive correlation between FDI inflows and economic growth in emerging European countries. The figure presents a scatter-plot diagram for 19 SEE, CIS and Baltic countries plus Turkey in the years 2007, 2008 and 2009. The vertical axis presents the FDI as a percent of domestic GDP and the horizontal axis the country's GDP growth. Observe that years of a high FDI inflow are also years of high GDP growth.

Figure 1.
The ebbs & flows of net FDI
in emerging European economies



Note: GDP Growth in horizontal axis, deviation from country mean. Net FDI (%GDP) in vertical axis, deviation from country mean. Sample: 19 SEE, CIS, CEE & Baltic countries plus Turkey in years 2007, 2008, 2009. Regression slope = 0.30, R^2 = 0.41
Source: Eurobank EFG

Turning to the behavior of domestic financial intermediaries, during an economic expansion commercial banks accelerate their credit extension,

bank competition for customers becomes acute and bank interest rate margins (the differences between lending and deposit rates) decline, leading to a loosening of credit standards: Down payments or other types of required collateral diminish, loan-to-value ratios increase and profit margins get squeezed (Gorton (2008)). The upward cycle also improves asset prices, hence collateral values increase, leading to even more lending activity.

On their part, investment banks also exacerbate the cycle. They seek more deals as margins-per-deal decline, trading on their own-account rises, leverage increases, financial innovation becomes routine and perhaps creates hidden and under-priced risk (Borio (2006, 2010)).

Other financial intermediaries also behave in a procyclical fashion. As asset prices rise, hedge fund managers become more aggressive in trying to find new investment opportunities and increase their leverage (Chan et. al. (2007)). At the same time, herd behavior reinforces the asset price boom across different classes of assets and different countries; hence the correlation among returns becomes more positive not just due to the increased correlation of fundamentals but also due to the fact that diversification gets destroyed (Lo (2009)).

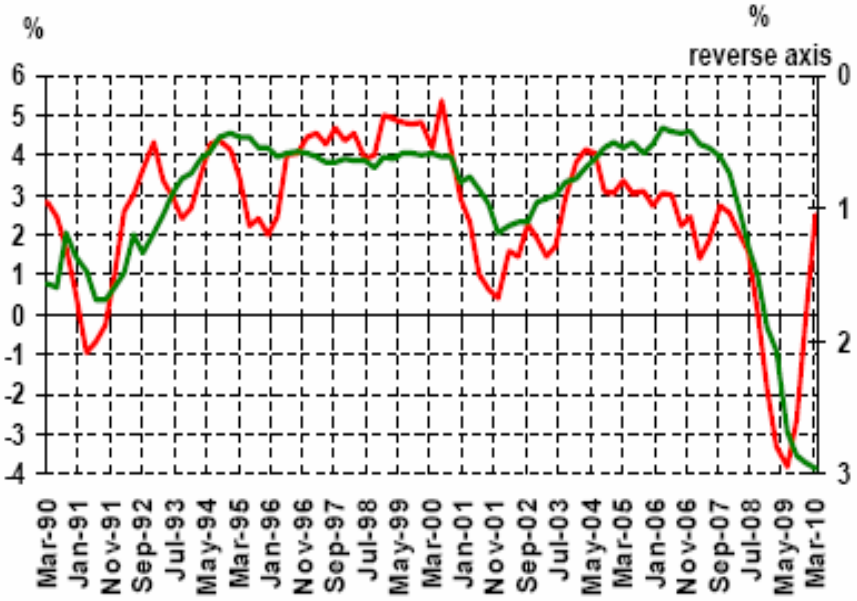
In this euphoric environment, regulators become less strict as they easily confuse the boom for a new virtuous steady state. Capital regulation formulas do not react to the heightened risks, since they are procyclical rather than countercyclical by construction (Amato and Furfine (2003)), an item we analyze later. All this accelerates the economic boom and feeds the process in the same upward direction, hence tail risks increase.

With heightened tail risks, the process can stop abruptly, perhaps due to defaults in one area that quickly spread throughout the financial system, which has become vulnerable due to the earlier excessive leverage & insufficient liquidity. It is then possible to observe the opposite cycle, namely a bust in financial markets which would lead to a bust in real activity, as it happened in the 2007-2009 crisis.

2.B Bust periods

During bad times, there is insufficient risk taking & low financial activity. Specifically, during output busts, risk premia increase and the quantity of risk taking declines. Non-performing loans rise, provisions increase, and commercial bank credit extension declines both from demand and supply factors, as banks apply stricter credit standards: Required down payments or other type of collateral rise and loan-to-value ratios decline. Bank profitability declines, thus retained earnings decline, leading to lower capital reserves relative to assets and to a contraction in the growth of the balance sheet. Asset prices decline due to fundamentals and sometimes further due to forced selling, thus collateral values decline, leading to a further contraction in lending.

Figure 2.
The countercyclical nature of bank losses

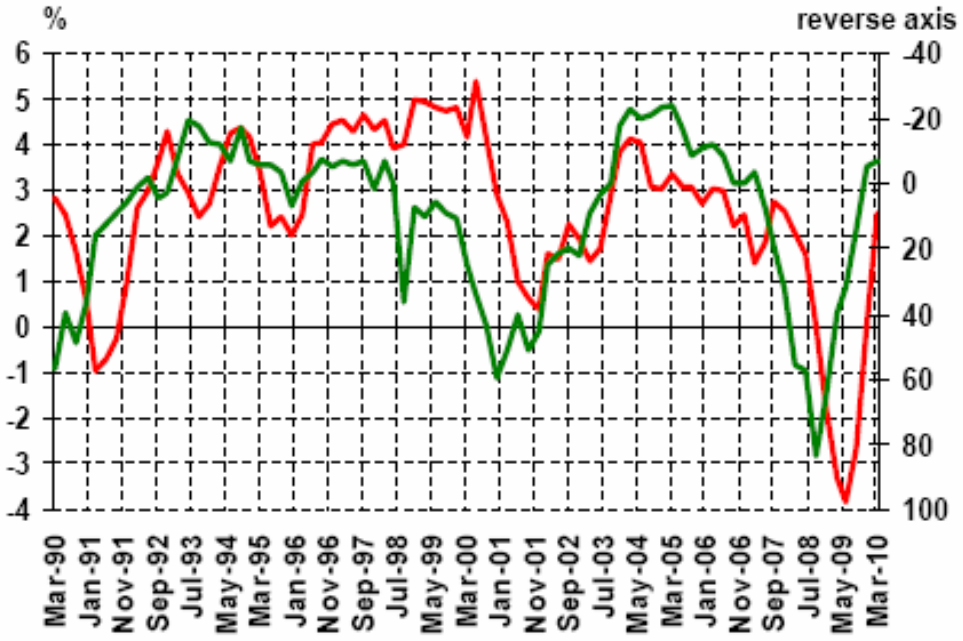


Note: Real GDP growth on the left axis; Charge-offs as a percent of total loans on the right axis, in reverse.
Source: Federal Reserve

as a percentage of total bank loans. The figure shows that charge-offs decline in booms and increase in busts.

Next, Figure 3 shows the procyclicality of the supply response of banks. It is not only demand for loans which is procyclical, but supply as well, stemming from the way banks apply their credit standards. The figure presents the growth rate of US real GDP from 1990:Q1 to 2010:Q1 together with the results of a quarterly banking survey, conducted by the Federal Reserve. The survey asks banks whether they tightened or loosened their credit standards during the last 3 months. Figure 3 reports the difference between the percentage of banks that claim they restricted their lending standards and those which loosed credit standards. Observe that the ups and downs in the tightening of credit standards moves opposite from the ups and downs of economic growth.

Figure 3.
Bank degree of tightening of credit standards across the cycle in USA



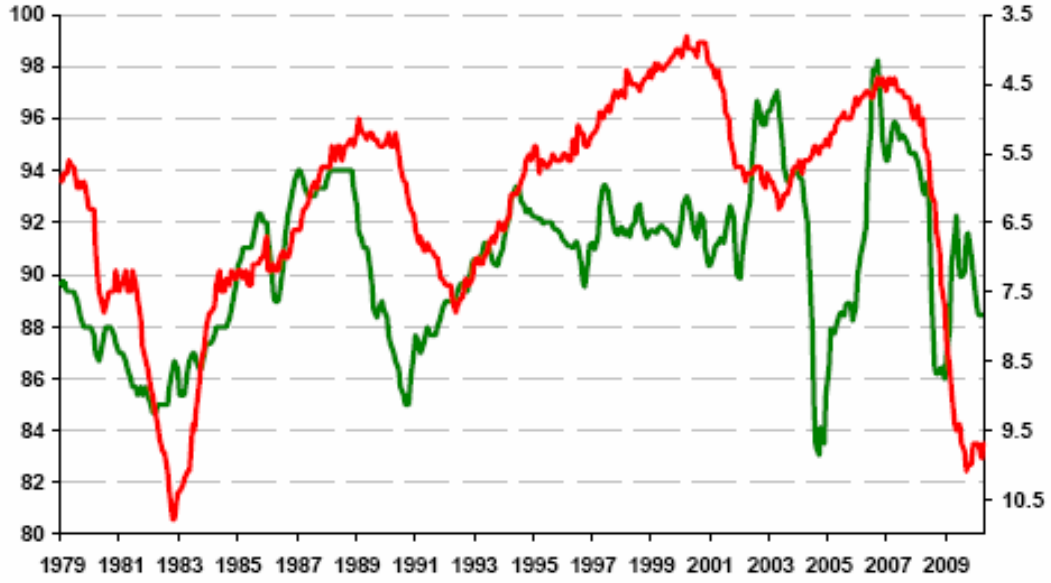
Note: Real GDP growth (yoy) depicted on the left axis in red color. On the right axis and in reverse order is the net percentage of banks reporting a tightening of credit standards in consumer & industrial loans tp large and medium sized firms.

Source: Federal Reserve, "The senior loan officer opinion survey on bank lending practices," April 2010

Figure 4 presents a similar procyclicality story about the behavior of finance companies, when they finance the purchase of a car. The figure presents the monthly loan-to-value ratio for new car loans and the US unemployment rate (in reverse axis). The loan-to-value ratio rises and falls together with the rate of unemployment. Finance companies become strict when unemployment rises and loosen up during good times, when unemployment falls.

Figure 4.

Loan-to-Value ratio for new car loans in the US



Note: Loan to value ratio for new car loans on the left axis. Unemployment rate in reverse order on the right axis. The data are monthly.
Source: Federal Reserve, Bureau of Labor Statistics

Turning now to the international macro level, which we discussed in the earlier subsection, capital flows to emerging countries shrink or stop abruptly, straining investment activity and growth in emerging economies and leading to a common downward global business cycle. Households in emerging countries face problems with their previous foreign exchange loans as local currencies depreciate and their disposable incomes shrink.

As the bust mushrooms, the downward spiral accelerates and contagion may take place across markets and countries, with the correlation among

asset returns approaching unity, hence diversification getting destroyed. Regulators become strict and watchful.

3. Can procyclicality be averted?

This section describes factors which exacerbate the real and financial cycle and discusses ways to mitigate them. For ease of exposition, a lengthy list of twenty different factors is grouped into four major categories: the economic environment, the financial environment, the policy making environment, and the institutional features of the financial system. The section concludes with a detailed analysis of policy design issues.

3.A Factors related to the economic environment

I describe four factors related to the economic environment: Globalization, technological improvements, "short-termism," and inertia in household and business sentiment.

(I). A major factor reinforcing procyclicality is the advent of globalization, as the interconnectedness of countries allows shocks to move quickly from one to another and synchronizes the business cycles across the globe. Artis and Okuhbo (2008) show that the similarity in cyclical movements has increased since the early 1960s, an era coined as "the second wave of globalization."[2]

This cross-country feedback among business cycles is hard to counteract and does appear beneficial to do so either. Yet, emerging countries often impose restrictions on speculative capital inflows and/or on the FX exposure of domestic firms and households. These types of restrictions, if

[2] The amplitude of fluctuations is reduced in the last 30 years (Zarnowitz (1998), Dalsgaard, Elmeskov, Park (2002), Cotis and Coppel (2005)) but for reasons other than the co-movement created by globalization.

not pushed to extreme, can often help avoid some of the worst excesses of the global financial markets (Kose et al. (2006)).

(II). A second factor reinforcing procyclicality are the technological improvements in information dissemination across the globe, which imply similar inputs to decision making. Yet, one cannot and should not restrict the dissemination of information.

(III). A third factor is "short-termism" in the behavior of firm managers, who cannot see beyond the current cycle and seek short-term profits. This behavior is often blamed on their salary/bonus structure, which is usually based on a short-term performance evaluation and, very frequently, on the stock price of the company they work for. Since stock prices are procyclical, bonuses become procyclical as well, leading to myopic behavior (Stiglitz (2008), De Larosiére (2009)). Myopic decisions, in turn, exacerbate the cycle.

The De Larosiére *(2009)* report suggests bonuses should be set in a multi-year framework, thus spreading them over the cycle. Bonuses should also reflect actual performance and not be guaranteed in advance. More recently, a study by Wei and Yermack (2010) attempts to differentiate the bonus mechanism in the financial sector from the rest of the corporate sectors, taking into account not only equity but debt.

(IV). A fourth factor is the inertia in household and business sentiment, as individuals tend to think that the future will be similar to the present, and thus take decisions that prolong a cycle (Goodhart and Lim (2010)). Lack of full rationality among private agents is a contestable topic in Economics for a long time. In any case, it would be difficult to alter human behavior in democracies, apart from providing education.

3.B Factors related to the financial environment

In this subsection, I group four factors, which are more specific to the practice of banking and finance.

(I). One obvious such factor is the similarity of techniques and input data used to assess banking risk. For example, the Value at Risk methodology, largely unknown in the early and mid 90s, has practically dominated the field of risk management during the last ten years. Since everyone uses the same technique and the same data, most risk managers are bound to reach similar conclusions and, hence, behave in a similar fashion. This similarity in behavior exacerbates fluctuations.

The VaR methodology is also criticized for a number of shortcomings of its own. One such shortcoming is the use of current market prices to assess riskiness. Another is the overwhelming utilization of only recent historical experience as a guide to replicate the set of all possible eventualities. These shortcomings add to the short-slightness of the methodology and the aggravation of cyclical fluctuations.

It is difficult to impose variety on the techniques and data used by private financial institutions in order to assess risk. Private enterprises will do what fits them best. Perhaps regulators ought to be extra careful about techniques that utilize current market measures of price of risk. And they ought to be extra careful when interpreting results from VAR models.[3]

(II). A second factor which reinforces continuity in past behavior and prolongs the cycle originates from the distribution of power among managers of financial institutions. Risk management is not truly independent from the money making business units and the CEO. The risk management units are often pushed over and are obliged to "sail with the wind," namely, to water down their risk assessments in order not to spoil the party of money making units. The recent famous example of how the risk manager of Merrill Lynch got fired a year before the crisis because

[3] The procyclical feature of VaR methods have been mentioned as a source of procyclicality and research already started in order to improve the VaR framework. For example, Adrian and Brunnermeier (2009) propose CoVaR as an alternative measure to "traditional" VaR. This measure captures the contribution of a financial institution to the systemic risk of the whole financial sector. It is calculated as the difference of the VaR of the financial sector conditional on the VaR of an individual financial institution minus the (unconditional) VaR of the financial sector.

he was doing his job to warn about the risk exposure of the company is only a drop in the bucket. This issue is particularly important in smaller economies with few specialized job opportunities, forcing the risk managers to follow the demands of money-seeking units, as losing their job implies lack of alternative opportunities.

Basel II insists that the risk management unit is independent and reports to the Board of Directors. In practice, this regulation gets bypassed, especially by smaller financial institutions.

(III). A third factor is the similarity of behavior of fund managers, who herd because they are often evaluated against each other;[4] hence they worry about relative performance in addition to absolute performance and the time horizon of returns. This behavior leads to a prolongation of the cycle. Of course, herding by fund managers cannot be ruled out by regulators, neither can the exchange of views among them be considered illegal.

(IV). A fourth factor is the behavior of rating agencies. These agencies tend to be more lenient on the upside of the cycle and stricter on the downside (Feri, Liu and Stiglitz (1999), Lowe (2002), Amato and Furfine (2003)). This bias prolongs the cycle. Firms that wish to get a good rating also shop around for the best rater, thus implicitly pressuring the rating agencies for leniency if they were to get the business (see Jerome Fons' testimony to Congress, 2008). This pressure is cyclical. During the upside, more firms queue to be rated, hence more of the positive bias gets manifested in markets.

Rating agencies' revenues almost tripled between 2002 and 2007. This huge increase is due to ratings of securitized products. Recall that securitized products are partly responsible for the crisis we witnessed (Goodhart (2008), Lo (2009), De Larosiére (2009)). The issue of rating

[4] Gompers and Metrick (2001), Shias (2004), Nirei, Sushko and Stamatiou (2010) show such a behavior for institutional investors. This is similar with the beauty contest behavior described by Keynes (1936).

firms' behavior and their de facto oligopoly is, hence, very serious and has to be addressed.[5]

Currently in Europe, there is strong suspicion of the motives of the "American-based" rating firms. Some European politicians have proposed establishing a European rating agency.[6] Also, given the recent troubles faced by Greece in the sovereign debt market, when it comes to the collateral evaluation of EMU members' sovereign debt, the European Central Bank is slowly moving away from placing too much emphasis on the ratings produced by the rating agencies.

3.C Factors related to economic policy making

In this subsection, I describe three factors related to the economic policy making.

(I). The reality of economic policy making is partly responsible for the procyclicality of the financial system. During an economic boom, in particular, the political pressures on regulators to behave in a way similar to the market and the powerful financiers, and not to "take the punch away exactly when the party is rolling" is very strong. In the Geneva Report (2009), it is correctly mentioned that one way to avoid this behavior is to minimize the pressure on regulators by establishing rules to complement discretion.

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[5] The SEC, after a thorough investigation of the credit ratings firms in the 2007 – 2008 crisis, announced a series of measures aiming to confront the "problematic" areas of the rating agencies operations. The full list of these measures is available in the following web site: http://www.sec.gov/news/press/2008/2008-110.htm In addition, the Financial Stability Forum (2009) proposed a list of reforms in the credit rating agencies' operations.

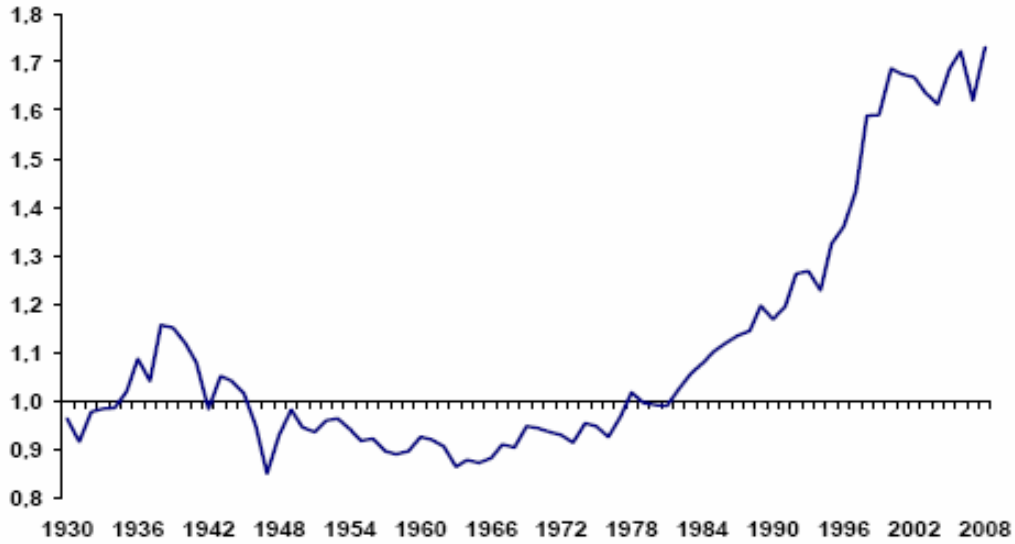
[6] Several EU leaders, among them the German Cancellor Angela Merkel (see http://www.france24.com/en/20100503-european-rating-agency-could-be-useful-merkel), the Prime Minister of Luxemburg Jean-Claude Juncker (see http://www.businessweek.com/news/2010-06-01/eu-s-juncker-calls-for-european-ratings-agency-overseen-by-ecb.html) and the Presinded of the ECB (see http://www.ecb.int/press/key/date/2010/html/sp100713.en.html) announced plans for a European rating agency. Towards this, the ECOFIN council in its July 8th, 2010 asked the European Commission for specific proposals on implementing a European mechanism for registering credit rating agencies (ECOFIN (2010)).

(II). A second factor contributing to procyclicality is the presence of "Greenspan/ Bernanke-type puts" (Miller, Weller and Zhang (2002), New York Times (2007)) in the behavior of policy makers. Fiscal and monetary authorities typically rush to save the economy from "too big to fail" financial institutions at the expense of the tax payer, yet they "forget" to control the markets when business is booming. This behavior reinforces moral hazard and the continuation of the cycle (Stiglitz (2008)).

One way to respond to the moral hazard problem is to provide disincentives on size of financial institutions, say, via capital requirements that increase with size. This may not be a complete solution, however, to a "Greenspan-type put," since contagion and similarity in the response of financial institutions can behaviorally transform a set of small financial institutions into a single large one. Later, in Section 4, we discuss how the new September 2010 G-20 agreed proposals attempt to tackle the moral hazard problem.

Figure 5

Relative Labor Productivity of the US Financial Sector



Note: Financial Sector Value Added per employee divided by total economy value added per employee
Source: Bureau of Economic Analysis

(III). A third factor is the apparent bias of policy makers in favor of the wealthy financial sector. This bias has evolved over time and is probably due to the dominance of the financial sector over the other sectors of the real economy. In the US, since the 1980s, the financial sector has been able to attract talent and cumulate wealth and contribute proportionately more to domestic value added relative to the other sectors (Figure 5). Most of the recent finance ministers in the US, for example, come from Wall Street. It is natural, therefore, for the financial sector to gain the ability to shift politics in its own desired direction, neutralizing any criticism from regulators or the public. As a consequence, a financial cycle gets prolonged.

3.D Factors related to the institutional features of the financial system

Let us now turn to features of the financial system which can either cause procyclicality or can be influenced to mitigate it. I discuss nine such features: (I) capital requirements, (II) provisioning, (III) mark-to-market accounting, (IV) leverage, (V) liquidity, (VI) collateral values and margins, (VII) size of financial institutions, (VII) home versus host country regulation, (IX) and financial market structure & organization.

(I) The first procyclicality item, which has received universal attention, is the Basel II-type rules on capital adequacy. These rules, as designed in Basel II, are pro-cyclical.[7] This is because the risk weighted assets in the denominator of the CAD ratio of Basel II is often based on market prices & short-horizon VARs. Economists have argued that regulators ought not only to neutralize this pro-cyclicality, but move beyond that point and impose countercyclical capital requirements. So far countries have abstained from state-dependent rules, preferring to simply raise the minimum level of capital requirements across all states of the economy.

[7] The Capital Adequacy (CAD) ratio is total consolidated regulatory capital over total risk weighted assets.

There is an on going debate about the exact method of instituting countercyclical capital requirements and, specifically, the variables which describe the state of the economy that would be assigned the burden of triggering a change in the minimum capital ratio. Goodhart & Persaud (2008) prefer the rate of real credit growth. Borio & Drehmann (2009) claim that a combination of the ratio of credit – to - GDP and real estate prices is a better alternative. Some others have argued for including market based variables in the decision mechanism, like credit related spreads. I would personally shy away from variables like credit spreads that depend on a market assessment, as the variables themselves may not have a stable relationship with the economic cycle. In any case, later in Section 4 we discuss the latest agreed proposals by the G-20. According to those proposals, the Capital Adequacy ratio contains countercyclical features.

(II) A second item and tool against the procyclicality of the financial system can be the degree & type of bank provisioning for non performing loans. Currently, bank provisions (general and specific) are set by accounting rules, which examine the size of the banks' loan portfolios as well as the historical loan losses of banks plus their non-performing loans. Yet, provisioning can be made a function not just of the cumulative history of revealed losses, but of the expected future losses the moment a loan is dispersed as well. Moreover, these expected losses can be designed in a countercyclical manner. Those complementary provisions could be held in non-distributable reserves. Unexpected loan losses would then be taken care by capital requirements (UN Commission (2009)). Naturally, today such type of arrangement would easily get into trouble with accountants in many countries, who do not necessarily accept the concept of expected future losses. Thus more cooperation with the accounting profession is required.

The type of provisioning rule described above was first applied by Spain. In July 2000, the central bank of Spain introduced dynamic forward looking provisions, which were intended to complement the traditional specific and general provisions already in place. The new extra

provisioning contained two components: A component related to future average credit risk over the business cycle plus a counter-cyclical component, which grew in size depending on the departure of the loan portfolio growth from the historical average. Obviously, linking provisions to credit growth discourages excessive lending during booms and strengthens banks in bad times;[8] and making the percentage of provisions state-dependent further enhances this characteristic.

Economists have pointed to a number of limitations of the Spanish model. The Geneva Report (2009) argues that provisioning alone cannot moderate the credit cycle. Also, the Spanish dynamic provisioning only applies to the banking book of a bank, not the trading book, which is the most risky component of a large global bank's portfolio. The subprime bubble, for example, would not been caught by Spanish type of provisions. Despite the criticisms, the Geneva Report admits that at the time the international crisis erupted, the Spanish scheme was the only macro-prudential instrument in place, which was both rules-based and state-varying.

(III) Mark-to-market accounting is a feature of the global financial system, better suited to reveal the evolution of the true value of assets and liabilities over time. According to the International Accounting Standards that apply in the European Union, for example, mark-to-market accounting applies to the trading portfolio and the available-for-sale portfolio of a bank, not its investment portfolio. Mark-to-market accounting is a focal issue because market valuations are procyclical, hence mark-to-market accounting makes the value a bank's balance sheet and its capital base pro-cyclical. This is a third feature of the financial system for which there is active discussion on how to adjust it. Most commentators would like to see the countercyclical properties of mark-to-market or fair-value accounting diminished. Others argue on

[8] With the 2004 adoption by the European Union of the IASB standards, the Spanish central bank regulators changed the provisioning rule a bit, but did not change the countercyclical philosophy.

their behalf, claiming that fair-value accounting did not necessarily contribute to the financial crisis (Laux & Leuz (2010)).

During the recent crisis, banks tried to minimize the size of their trading and available-for-sale portfolios, so they would not have to mark to market at depressed asset prices and show reduced profitability and/or a reduced capital base. Banks took advantage of the regulatory framework in many countries, which gives the option to switch assets from the trading portfolio into the investment portfolio, but only once. In the US, regulators used discretion and allowed this to happen anyway. The question then becomes whether the experience of 2007-2009, which shows discretionary alteration of the marking-to-market rules in an unusually depressed market, should somehow turn into a rule. It is an item the finance and the accounting professions would have to take up.

(IV). Leverage is another feature of the financial system, correctly blamed for spreading and deepening the crisis of 2007-2009. Restrictions on the leverage of investment banks were lifted by the Securities and Exchange Commission in the late 1990s, whereas restrictions on the leverage of banks in the US were often bypassed through the establishment of subsidiaries. Hence, today there is widespread agreement that leverage should be reduced and, if possible, be made to vary counter-cyclically.

It should be understood that the existence of capital adequacy rules automatically implies a risk-weighted leverage ratio. Yet the risk weighting scheme gave too many degrees of freedom in its interpretation and was apparently bypassed in practice. When regulators today insist on leverage restrictions, they think of a leverage ratio, which is simple and transparent to everyone, cannot be manipulated, is the same across different types of financial institutions and across different countries, and cannot be circumvented.

The regulatory framework concerning leverage was in flux for a long time. The G-20, in their last meeting in Toronto, Canada, in July 2010, reiterated their support for a new leverage ratio scheme in the upcoming

Basell III capital framework agreement. They also called for studying the issue in more detail before their next summit in Seoul in November 2010. In September 2010, there was an agreement on a specific proposal, which is described later in Section 4.

The US government passed a bill - the Dodd-Frank Wall Street Reform and Consumer Protection Act – which, among other things, prohibits depository banks from leveraging and investing on own-account. The first version of the respective measure, known as "Volcker's rule" from its author, the former Federal Reserve Chairman Paul Volcker, was very restrictive as it banned banks altogether from running private-equity and hedge funds for their own account.[9] Nevertheless, the final bill that was passed by the US government by mid 2010 softened up the initial declaration of a total ban in hedge funds ownership, etc., by banks. It permits depository banks to participate in private equity and hedge funds up to 3% of their Tier 1 capital. They could only, however, have up to 3% ownership of any private equity or hedge fund.

(V) Liquidity is another feature of the financial system, whose sudden disappearance exacerbated the crisis. When thinking about liquidity, it is important to differentiate between two types: Market liquidity and funding liquidity (Brunnermeier and Pedersen (2007)). Starting from the former, market liquidity is defined as the "ease" with which one can trade a security in a market (O'Hara (1997)). This "ease" can, in turn, is translated as a low bid ask spread, a small price impact, a high resilience or even an easy search in over the counter (OTC) markets (Pedersen, 2008).

Funding liquidity is a problem in financial institutions, whose intermediary role implies a mismatch between assets – that are long term - and liabilities, which are shorter term. Thus funding liquidity refers to the

[9] One of the basic facts of the 2007-2008 turmoil seems to be that many banks knew the dire situation of the market but, nevertheless, encouraged their customers to enter the market so as their own funds to gain from the customers' participation. This is similar to the well known Goldman Sachs – SEC case.

ability of a financial institution to generate the funding that will replace its maturing liabilities, which are necessary for supporting the assets it holds. Absence of funding liquidity would force an institution to liquidate its assets quickly and at a time of distress, exacerbating the on going crisis.[10]

Funding liquidity is highly pro-cyclical and disappears in a downturn, especially if liabilities have a very short-term maturity. Funding liquidity became problematic during the crisis. The crisis woke up economists to the need of not only a minimum liquidity buffer but also to the need of countercyclical liquidity requirements. The Geneva Report (2009) and the Warrick Report (2009) suggest that capital requirements ought to increase by a multiplier, which is a function of the maturity mismatches of a financial institution (and credit growth). Yet, reality may be a lot more complicated than the above studies assume. Maturity transformation is, after all, what banks do for a living.

Policy makers are planning to impose minimum liquidity requirements. In fact, the Basel Committee on Bank Supervision announced in September 2010 an agreement on two types of liquidity ratios, which are described later in Section 4.

(VI) Collateral requirements and margin requirements are important features of the financial system. Earlier in Figure 4, we saw how the loan-to-value ratios for car financing vary with the cycle, rising during economic expansions (periods of declining unemployment) and falling during economic contractions (periods of rising unemployment). The same empirical regularity is present in all collateral requirements. Regulators could intervene and impose floors on Loan-to-Value ratios (L/V) during economic busts and ceilings during booms, that is, impose a band on L/V. It is not clear that this is in the agenda of international regulators at the moment.

[10] Both types of liquidity events, once they occur, cause a positive feedback to one another. Borio (2010) and Gorton (2009, 2010) describe the situation in the repo market in the summer of 2007. A contagion was caused from the mortgage sector through the liquidity of the repo market to the rest of the financial sector.

Margin requirements are countercyclical. Margins are insurance deposits with a lender. The size of these insurance deposits usually declines in a boom as lenders become more confident about counterparty risk, but rise in a bust. In certain markets, like futures markets, even the official minimum margin requirements are countercyclical. This is because the margins are set in nominal dollar terms per contract, independently from the price of the underlying contract. Thus in a boom when prices rise, the percentage minimum required margin declines.

Figure 6.
The restrictive effect of higher margin requirements in metal futures contracts



Note: Day 0 is the day of a margin increase. Each margin increase is a separate event. Relative open interest is the ratio of business day t open interest to open interest two months before the margin increase. The sample contains the total of 280 events of a margin increase that took place from 1977 to 1993 in metal futures in the US. The graphs are constructed as cross sectional averages per business day t across the 280 events. The graph of benchmark open interest is constructed from a control group of metal futures which did not undergo a margin change in the 4 month window around the event.
Source: Hardouvelis & Kim (1995)

The cyclical nature of margin requirements exacerbates the cycle. Margins became a hot issue after the stock market crash of 1987, when a debate started on how margins may affect market volatility and what economists call, "excess volatility," that is, volatility not related to fundamentals. My own research shows that higher margins decrease both volatility and excess volatility (Hardouvelis (1990)) and, moreover, the relation is asymmetric (Hardouvelis & Theodossiou (2002)): A rise in margins during stock market booms decreases volatility, whereas a decline in margins during times of market stress tends to calm the market.

In the past, I strongly argued for using margins in a countercyclical fashion, as they may help in containing bubbles (Hardouvelis (2003)). The regulatory decision is simple and straight forward: After a sudden and large fall in asset prices, regulators ought to reduce margin requirements but then increase them back to their long-term steady state in normal periods when markets calm. The rule avoids the criticism of many economists that it is hard to differentiate a bubble from a reduction in risk premia while the bubble unfolds. According to the rule, the regulator is not forced to distinguish the presence or absence of a bubble.

One counter argument to the use of margin requirements as a tool to calm the market and avoid its cyclical fluctuations is that they are innocuous, namely they do not bite.[11] Yet, Figure 6, which is taken from Hardouvelis and Kim (1995), shows this is not the case for margins in futures markets. When margins increase the open interest moves away from the contracts that face higher margin requirements to other contracts, which did not undergo an increase in margins.

(VII) Turning to the issue of the size of financial institutions, size is cyclical, rising in booms and declining in busts. It is often argued that large financial institutions contribute more than proportionally to systemic risk, transmitting shocks across the globe while also being too big to fail

[11] Alan Greenspan has made this argument orally many times. Note that critics who claim margin requirements do not bite and simultaneously argue against the imposition of margin rules, contradict themselves. They should not mind the existence of rules if margins were not to bite!

and to save (Warwick Report (2009)). The critical element in this argument is not necessarily the size of the financial institutions per se, but the interconnectedness they create due to their size with the rest of the financial sector and hence the systemic risk they might generate (Lo (2009)). The issue is the impact of each institution on systemic risk. Many small but interconnected financial institutions can create systemic risk as well.

To confront the size – interconnectedness issue, various measures have been proposed and some are related to our earlier discussion. For example, the introduction of a leverage ratio for all financial institutions could limit their size and, hopefully, their contribution to systemic risk. Capital requirements can also be made a function of asset size (Warwick Report (2009), Squam Lake Report (2009)), providing a disincentive for large sizes. Adrian and Brunermeier (2009) propose a measure of contribution to systemic risk, the "CoVaR."

Beyond these authors, there is little research on measures of systemically important institutions or measures of interconnectedness of (perhaps smaller) financial institutions. A more extreme and perhaps unrealistic proposal is that of Rubini (2009), who urges the separation of commercial banking from investment banking, i.e. a partial return to the Glass-Steagall environment. Another proposal is the imposition of a Tobin tax on financial transactions, which would limit the size of deals and churning, hence reduce interconnectedness. This proposal is criticized by the Warwick Report (2009) and Pedersen (2008), who claim it would create more problems than solve. Later, in Section 4, I discuss measures to be taken against the size-interconnectedness issue, which were agreed by the Basel Committee on Bank Supervision as of September 2010.

Last, I turn to two additional factors, which themselves may not necessarily follow a cyclical pattern, yet the existence of the business cycle affects their effects on the economy and the financial sector: The home versus host country regulation and the existence of over-the-counter markets.

(VIII) The recent global crisis caused a common global recession and as a result brought to the forefront issues related to home versus host country regulation, as it pitted countries against each other. In Europe, subsidiary banks in a host country are supervised by the host country, yet bank branches in a host country continue to be regulated primarily by the home country. This structure seems to be an equilibrium that balances the needs of bank efficiency and bank supervision.

During the recent financial crisis, some foreign banks that operated internationally chose to exit from various host countries, causing a worse than expected domestic host country recession.[12] In other cases, the host country's taxpayer paid for the expenses that the international bank's subsidiary created in the local market (Goodhart (2010)). The Warrick Report (2009) adopts as its main theme the sweeping proposal of ending home country supervision altogether. Yet, the study does not perform a detailed and well documented cost – benefit analysis, raising the eyebrows of the federalist camp in Europe. The issue was not raised high enough to be included in the agenda of European political leaders, yet it may stay dormant as long as the financial sector remains fragile, only partially supervised and on a defensive mode.

(IX) Market structure and organization are important in the process of mitigating procyclicality. They influence the flow of information, the level of transparency and, hence, the level of counterparty risk. Thus they influence market and funding liquidity (Borio (2010)). Currently, there are discussions on the possible centralization of the CDS market and the imposition of transparency rules on smaller OTC markets.[13]

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[12] This was not a universal tendency, however. For example, 16 large European banking groups operating in Eastern Europe, with the intermediary help of the European Bank for Reconstruction and Development and the IMF, formed the so-called "Vienna Initiative" in January 2009. They made specific rollover and recapitalization commitments in Bosnia, Hungary, Latvia, Romania and Serbia at a time when the financial crisis hit those countries very hard.

[13] Note that centralization and similar market structure improvements provide a solution only for market liquidity, not funding liquidity. Thus, one can imagine situations in which the existence of both "tight" funding liquidity conditions and an improved market mechanism might "drain" liquidity from the market even faster. It follows that

3.E The design of regulatory instruments

This subsection takes up issues of design, which are important in counteracting the procyclicality of the financial system.

The first issue that needs closer attention is the set of instruments the financial system needs in order to fight procyclicality. This set ought to include more than one instrument for otherwise financial institutions might be able to arbitrage any free-standing single instrument by creating new financial products that circumvent it. We have already discussed a number of instruments like capital adequacy ratios, leverage ratios, liquidity ratios, loan-to-value ratios, margin requirements, dynamic provisioning rules, etc. Most recent reports (United Nations (2009), Geneva Report (2009), Warrick Report (2009), etc) adopt capital rules and provisioning as the basic tools of countercyclical regulatory policy. They disregard the rest of the instruments, which are complementary and may turn out to be very useful.

Any proposed regulatory policy cannot be enforced in isolation, but ought to take into consideration the economic/financial environment as well as other monetary, fiscal or regulatory policies already in place. This is a second issue we have to keep in mind. In our context, the aim is the stability of the financial system and the counteraction of its cyclical nature. Yet, our instruments may influence other objectives set by the monetary or fiscal authorities. Hence, the instruments for counteracting procyclicality should take into account the presence of monetary policy instruments like the overnight interest rate set by a central bank or the parameters of automatic fiscal rules set by the various governments.

Conversely, the previous countercyclical instruments should also be set keeping in mind that the particular monetary or fiscal policy rule in place may have already altered the cyclical properties of risk or the stability of the financial system. Little attention has been given so far to this topic.

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improvements in the market structure alone are not sufficient to solve the procyclicality problem.

For example, over the last fifteen years, many central banks adopted inflation targeting and used interest rates as a tool to counteract inflation. However, the accomplishment of the inflation target may itself create conditions for excessive risk taking, boosting procyclicality. Borio (2008, 2010) discusses this problem in greater detail and suggests that a target of high interest rates (i.e. tight monetary policy) should be pursued from time to time in order to address the building up of excessive risk taking.

A third important issue is the comprehensiveness of regulation. Regulations should encompass all financial players, including banking and non-banking financial institutions as well as rating agencies. In particular, there should be no overregulation of one market segment (for example the banking sector) and light or no regulation at another (for example investment banking and hedge funds). A regulatory asymmetry would create regulatory arbitrage and avoidance of regulation, as private funds would move towards the less regulated part of the market (Griffith-Jones (2009)). Examples abound: Security issuance in capital markets is equivalent to bank lending; or collateral requirements in banking correspond to margin requirements in broker-dealer lending in cash and derivative instruments. Also, it is important that all financial institutions, which handle other people's money, be commonly regulated.

A fourth issue relates to the domain of the various countercyclical trigger mechanisms. Trigger mechanisms should themselves be comprehensive, namely they ought to take into account both domestic and international economic developments, as well as both micro and macro considerations. Failure to do so might have a number of unwanted consequences.

A fifth issue is the choice of regulator to enforce financial market stability. This may not appear as important as the previous four issues, yet lately issues of information & liquidity provision suggest aggregating those functions under the central bank. The regulator problem is more intense in the United States, where many regulators fight for overlapping turfs and thus may not operate efficiently.

A sixth issue is the timing of introducing policy rules, which is also important. It seems reasonable that the implementation of the previously described measures does not take place in the middle of a crisis but rather at a time that markets are calm. Yet, as we will see later in Section 4, the new proposed capital, liquidity and leverage rules may allow for too long of a transition period.

Finally, a seventh issue is the cost of regulation, which should be seriously thought over and analyzed. Kashyap, Rajan and Stein (2008) argue that in a crisis no amount of capital is enough to withstand a downward spiral in balance sheets. Instead of costly extra capital rules, which would probably be circumvented, the authors suggest the use of less costly ways to insure against catastrophic crashes: Either: (a) buy direct insurance, or (b) issue bonds that would automatically be converted into stocks in a crisis. Others take the opposite view. Admati et.al. (2010) claim that most arguments on the cost of high capital requirements or other similar regulatory restrictions are false, as they do not distinguish between private banking cost and social cost. They argue that bank equity is not expensive from a social point of view. Hence, they recommend higher equity requirements in banking, which they claim to be superior to arrangements like a "bailout-fund," and, in cases of financial stress, they recommend restrictions on equity payouts or a removal of the discretion of equity issuance from bank managers. They even take a position against the contingent capital view of Kashyap, Rajan and Stein, mentioned above, claiming that no compelling case can be made that contingent capital is superior to equity.

While economists will continue arguing the case for additional restrictions on a theoretical basis, a recent lengthy and detailed study by the BIS (2010b) seeks to quantify the effects of regulatory restrictions on real GDP. The study reports the results from approximately 89 cases of models and countries. They were performed by different organizations and economists through the BIS coordination in the first months of 2010. The study follows a two-step procedure, first estimating the impact of regulatory restrictions on the spread between lending and borrowing rates

and subsequently estimating the effect of those spreads on real GDP, usually through investment, consumption, etc. or through the use of other models. The study reports a very small median effect on real GDP plus no great benefits from a long transition period in imposing regulatory restrictions, although the variance among the different model estimates is very large. The study also presents the experience of the two large Swiss banks, on which the Swiss government imposed very strict CAD and leverage ratios in late 2008 and yet the banks did not restrict their balance sheet or credit substantially in 2009. The overall conclusion of the BIS quantitative study seems to support the case for strong and rapid regulatory intervention in the financial sector.

4. Recent regulatory efforts

This section provides a brief description of efforts to re-regulate the global financial system. More than three years have gone by since the outbreak of the international financial crisis in August 2007 and regulators are slowly closing in an agreed new regulatory framework. Those efforts are coordinated by the G-20 group of countries, the Financial Stability Board that reports to the G-20 and the Basel Committee on Bank Supervision (BCBS), which also provides advice to the G-20 leaders.

The first subsection sketches the basic features of the agreed framework. Subsequently, the second subsection, analyzes the countercyclical elements of the proposed regulatory rules. Finally, the third subsection, discusses in more detail the countercyclical tools already in place in the various countries.

4. A G-20 and the Basel Committee

The G-20 group of countries aim at creating a more disciplined and less procyclical financial system, which would support a more balanced and sustainable economic growth. This system would not allow leverage to

increase to the extent that it did in the past. Nor would it allow enormous risks to be taken with profits accruing to individual actors but ultimate losses being borne by governments and the public.

The BCBS is expected to formulate a comprehensive set of proposals (so called "Basel III") in order for the G20 leaders to approve them, hopefully by the end of 2010. In fact, by September 2010, the BCBS had already agreed on a leverage ratio, on a rudimentary description of two liquidity ratios and on some more precise minimum capital standards, which are summarized in Table 1 (BCBS, (2010a), appendix).

Table 1.
New CAD ratios: Phase-in arrangements
(shading indicates transition periods, all dates are as of January1st)

	2011	2012	2013	2014	2015	2016	2017	2018	As of 1 January 2019
Leverage Ratio	Supervisory monitoring		Parallel run 1 Jan 2013 – 1 Jan 2017 Disclosure starts 1 Jan 2015					Migration to Pillar 1	
Minimum Common Equity Capital Ratio			3.5%	4.0%	4.5%	4.5%	4.5%	4.5%	4.5%
Capital Conservation Buffer						0.625%	1.25%	1.875%	2.50%
Minimum common equity plus capital conservation buffer			3.5%	4.0%	4.5%	5.125%	5.75%	6.375%	7.0%
Phase-in of deductions from CET1 (including amounts exceeding the limit for DTAs, MSRs and financials)				20%	40%	60%	80%	100%	100%
Minimum Tier 1 Capital			4.5%	5.5%	6.0%	6.0%	6.0%	6.0%	6.0%
Minimum Total Capital			8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Minimum Total Capital plus conservation buffer			8.0%	8.0%	8.0%	8.625%	9.25%	9.875%	10.5%
Capital instruments that no longer qualify as non-core Tier 1 capital or Tier 2 capital			Phased out over 10 year horizon beginning 2013						
Liquidity coverage ratio	Observation period begins				Introduce minimum standard				
Net stable funding ratio		Observation period begins						Introduce minimum standard	

Source: BCBS (2010a), Annex 2.

Briefly, the BCBS agreed to impose an increase in the CAD ratio from 8% to 10.5%, to restrict the definition of equity capital and raise its required minimum amount from 2% to 7% of weighted assets, to give countries the option to raise the CAD ratio to an even higher minimum level, up to 13%, as a function of cyclical fluctuations, and to impose penalties on stock and other hybrid instruments in case of a governmental rescue in order to minimize the moral hazard problem. The BCBS also agreed to

allow a long transition period for the new capital requirements on the argument that it will help ensure that the banking sector can meet the higher capital standards through reasonable earnings retention and capital increases, while still supporting lending to the economy.

Criticism on the announced agreed measures was immediately expressed in the financial press. Critics argued the new capital ratios are too small (Wolf (2010)) and the transition period too long (Scharfstein and Stein (2010)). According to the critics, previous research, especially that of Admati et. al. (2010) and the BIS (2010b), shows that the long-term impact of additional regulatory restrictions on loans is too small to have a big impact on economic growth. They also argue that market pressures would anyway force banks to meet the criteria way ahead of the particularly long deadlines.

Below, I describe seven key elements of the new GGHS proposals in more detail:

I. Higher and of better quality capital requirements. The minimum common equity requirement, i.e. the highest form of loss absorbing capital, will be raised from the current 2% level of total weighted assets before the application of regulatory adjustments, to 4.5% after the application of stricter adjustments. This will be phased in by January 1, 2015. The Tier I capital requirement, which includes common equity and other qualifying financial instruments based on stricter criteria, will also increase from 4% to 6% over the same period. Minimum Total Capital will remain at 8%. On top of these requirements, a capital conservation buffer and a countercyclical buffer were added, which will be analyzed in the following subsection.

II. A more restrictive definition of capital (common equity and retained earnings). The definition of capital is strengthened in order to raise the quality, consistency and transparency of the capital base. The focus is now on the core elements of capital (common equity and retained earnings) instead of debt-like substitutes of questionable

quality. Special attention is given to the treatment of minority interest, investments in other financial institutions and various deductions. In particular, all deductions from capital will now occur at the level of common equity, instead of Tier 1 capital, as has been the case until now.[14]

III. Strengthening the risk coverage of the capital framework, particularly with respect to counterparty credit exposures, in order to ensure that all risks are captured. Whereas the previous two measures tackle the numerator of the CAD ratio, this is an effort to address the denominator. The crisis uncovered weaknesses in the current system, particularly in the coverage of structured, complex and illiquid credit products, which were held in banks' books without an increase in capital to support the associated risks. The rules that govern capital requirements for trading book exposures, including securitizations and off-balance sheet vehicles are now strengthened and banks are required to hold much more capital to offset those risks.

IV. Systemic risk, interconnectedness and too-big-to-fail. Several additional measures are taken to address the associated risks and boost the denominator of the CAD ratio, which include: (a) Capital incentives for banks to use central counterparties for over-the-counter derivatives; (b) Higher capital for trading and derivative activities, as well as complex securitizations, which are associated with systemic risk and interconnectedness; (c) Higher capital for inter-financial sector exposures as these are more correlated; (d) Cross-border bank resolution recommendations as a practical way to begin addressing the systemic risk issue at global banks; (e) Possibly, systemic capital surcharge on banks perceived as "too-big-too fail."

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14 The regulatory adjustments (i.e. deductions and prudential filters), including amounts above the aggregate 15% limit for investments in financial institutions, mortgage servicing rights, and deferred tax assets from timing differences, would be fully deducted from common equity by January 1, 2018. In particular, the regulatory adjustments will begin at 20% of the required deductions from common equity on January 1, 2014, 40% on January 1, 2015, 60% on January 1, 2016, 80% on January 1, 2017, and reach 100% on January 1, 2018. During this transition period, the remainder not deducted from common equity will continue to be subject to existing national treatments.

V. Addressing more effectively the loss absorbency of regulatory capital in order to reduce the moral hazard created by bank rescues, particularly for "too big to fail" institutions. The BCBS (2010b)) proposed ways to share the losses by all types of regulatory capital in the case of a bank rescue. During a crisis, in many cases a public sector injection of capital that was needed to avoid the failure of a bank, ended up protecting investors in hybrid and common equity regulatory capital instruments from absorbing the loss that they would have incurred had the public sector not chosen to rescue the bank. These types of interventions may subsequently get incorporated into market expectations, creating moral hazard, whose presence results in significant under pricing or risk. By imposing a penalty on those instruments when a bank rescue occurs, the moral hazard issue declines. One form of proposed penalty is the mandatory conversion of the hybrid instruments into common equity prior to the rescue. Another form is the mandatory issue of new capital, and hence ownership dilution, prior to the injection of funds by the government.

VI. Controlling leverage, through the introduction of a simple, transparent, non-risk based measure that is calibrated to act as a credible supplementary measure to the risk based requirements. The enormous leverage ratios of some banks helped spread the last financial crisis across markets and enhanced the impact to the real economy. Earlier, banks had managed to uphold perfect Tier 1 risk-based capital ratios, while building up massive levels of on- and off-balance-sheet leverage. The Group of Governors and Heads of Supervision (GGHS) agreed on the design of a leverage ratio and an indicative calibration of a minimum Tier 1 leverage ratio of 3%.[15] The new leverage ratio includes both on-balance sheet liability positions and off-balance sheet

[15] The Committee will use the transition period to assess whether the proposed design and calibration is appropriate over a full credit cycle and for different types of business models. This assessment will include consideration of whether a wider definition of exposures and an offsetting adjustment in the calibration would better achieve the objectives of the ratio. It will also track the impact of using total capital and tangible common equity.

items and derivatives. The proposed minimum of 3% will serve as the basis for testing during a parallel run period that will begin in January 2013.[16]

VII. Introduction of a new global liquidity framework. Supervisors agreed to employ a common international standard for liquidity. The measures proposed intend to promote both the short-term resilience of banks to potential liquidity disruptions and longer-term structural liquidity mismatches. The proposed Liquidity Coverage Ratio (LCR) requires banks to have sufficient high-quality liquid assets to withstand a stressed funding scenario that is specified by supervisors. The Net Stable Funding Ratio (NSFR), which is a long-term structural complement ratio, is designed to address liquidity mismatches. It covers the entire balance sheet and provides incentives for banks to use stable sources of funding. After an observation period beginning in 2011, a minimum standard for the LCR will be introduced on January 1, 2015. The minimum standard for the NSFR will be introduced by January 1, 2018, after an observation period that will begin in 2012.[17]

It is important to stress that the above agreed interventions do not exhaust the possible set of proposed regulatory instruments. More is in line until the end of year 2010. For example, according to the GGHS September 2010 press release, systemically important banks should have loss absorbing capacity beyond the standards announced and work will continue on this issue.

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[16] The parallel run period will commence on January 1, 2013 and run until January 1, 2017. Disclosure of the leverage ratio and its components will start on January 1, 2015. Based on the results of the parallel run period, any final adjustments will be carried out in the first half of 2017 with a view to migrating to a Pillar 1 treatment on January 1, 2018 based on an appropriate review and calibration.

[17] The BCBS will put in place rigorous reporting processes to monitor the ratios during the transition period and will continue to review the implications of these standards for financial markets, credit extension and economic growth, addressing unintended consequences as necessary.

4.B The counter cyclical features of the proposed measures

The existing procyclicality of the financial system was always worrisome to regulators. For example, from the early days of the international effort to re-regulate the international financial system, the BIS (2009) had already sketched four key objectives for any future regulation: (a) Dampen any excess cyclicality of the minimum capital requirement; (b) Promote more forward looking provisions; (c) Conserve capital to build buffers at individual banks and the banking sector that can be used in stress; and (d) Achieve the broader macro-prudential goal of protecting the banking sector from periods of excess credit growth.

The September 2010 GGHS agreed proposals include countercyclical measures on the new CAD ratio, which partly address these objectives. First, banks are required to hold a capital conservation buffer of 2.5%, above the regulatory minimum requirement, after the application of deductions, bringing the total common equity requirements to 7% (see Table 1). The purpose of the conservation buffer is to ensure that banks maintain a buffer of capital that can be used to absorb losses during periods of financial and economic stress. While banks are allowed to draw on the buffer during such periods of stress, the closer their regulatory capital ratios approach the minimum requirement, the greater the constraints on earnings distributions. These include dividend payments, share buy-backs and bonuses.

At the macro level, economic stress occurs in an economic downturn. Hence, the conservation buffer has countercyclical characteristics. It allows for capital to be built up in good times and be drawn down in bad times. Moreover, it allows for boosting up capital in bad times in ways that may not have been chosen by individual banks were the regulation not being present. The regulation addresses the collective action problem that has prevented some banks from curtailing distributions such as discretionary bonuses and high dividends, even in the face of

of stress. The minimum capital requirement, the capital conservation buffer and the countercyclical buffer together are designed to ensure that the aggregate banking sector has the capital on hand to help maintain the flow of credit in the economy without its solvency being questioned, even when the broader financial system experiences stress after a period of excess credit growth.

4.C Regulatory developments across different countries

The procyclicality of the financial system is an international concern. Prior to any G-20 decisions, a number of countries had already used or had announced that they were planning to use various tools to mitigate procyclicality. In China, for example, the Banking Regulatory Commission (CBRC) plans to issue draft supervisory guidelines on a leverage ratio and countercyclical capital buffer for public consultation in the near future. In Spain, as mentioned earlier in Section 3, statistical or dynamic provisioning has been applied since 2000. Banks are required to set aside provisions during phases of rapid credit expansion according to a formula. The measure anticipates the impairments that will arise when the economy turns down and credit retrenchment appears. The instrument is seen as having successfully protected banks from the risk of under-provisioning during the boom phase. It was less effective, however, in moderating the financial cycle.

The BIS Annual Report (2010) presents a summary of countercyclical prudential instruments in use or proposed. Instruments in use include: (a) Caps on Loan-to-Value ratios for property lending in Hong Kong, South Korea, Malaysia and Singapore; (b) Caps on ratios of debt service to income for household lending in Hong Kong and South Korea; (c) Adjustments to risk weights in India and Turkey; (d) Statistical provisioning in Spain; (e) Caps on loan-to-deposit ratio, core funding ratios, reserve and other liquidity requirements in Argentina, China, Hong Kong, South Korea and New Zealand.

Also, the Committee on the Global Financial System has recommended consideration of margin requirements based on through-the-cycle valuations of collateral assets, which would reduce the procyclical sensitivity of margins to financial and economic conditions. Yet, not much more has been said about margin requirements or loan-to-value ratios. This is unfortunate as those instruments can easily complement capital requirements or provisioning rules.

In the EU, the speedy conclusion of the financial services reform process is recognized as a key pillar of future growth and an essential complement to fiscal consolidation and structural changes. Implementation will be carefully calibrated in order to avoid restricting economic growth and to avoid pro-cyclical effects. The reforms are based on the De Larosiére Report (2009), which recognizes that the excessive pro-cyclicality in the Basel framework must be reduced and proposes several methods. The Report, which was mentioned earlier in Section 3 as well, recommends the adoption of Through the Cycle Approach in banking books, introduction of dynamic provisioning as in Spain and/or countercyclical capital requirements. Also, concerning Deposit Guarantee Schemes (DGS), according to the Report, preference should be given to schemes which are pre-funded by the financial sector. Such schemes are better to foster confidence and help avoiding pro-cyclical effects resulting from banks having to pay into the schemes at a time where they are already in difficulty. The Report also suggests the ECB could become responsible for regulation related to issues such as procyclicality.

In the US, the Dodd-Frank Wall Street Reform and Consumer Protection Act, which was passed in July 2010, was mentioned in earlier Section 3 vis-à-vis its inclusion of various restrictions on leverage. The Act also includes countercyclical capital requirements. The bill grants the Fed authority to adopt capital rules for all bank holding companies (BHC) and savings and loan holding companies (SLHC). It also requires that the Fed seek to make all capital requirements countercyclical, so that the amount

of capital required increases in times of economic expansion and decreases in times of economic contraction.

5. Conclusion

The importance of counteracting procyclicality in the financial system became apparent in the aftermath of the 2007-2008 crisis (Griffith-Jones et al (2009)). Even though economic cycles are a periodic phenomenon partly caused by what economists call "deep" parameters of economic behavior, the actions of individuals such as managers of financial institutions or policy makers plus institutional features of the economy and the structure or regulation, influence significantly the magnitude of those fluctuations. As a result, regulators, policy makers and academics have recently turned their attention on ways and methods to reduce procyclicality in the financial system.

The paper went through an exhaustive list of factors that contribute to procyclicality and instruments that could be used to mitigate it. The factors were grouped into four categories, economic, financial, policy-related and institutional. The instruments to confront procyclicality were correspondingly many: Capital requirements, provisioning, collateral and margin requirements, leverage and liquidity ratios, or accounting methods.

Current regulatory proposals place an emphasis on increasing the capital requirements and making them less procyclical, and installing upper bounds on liquidity ratios and leverage ratios. Provisioning has also occupied the public discussion without any concrete proposals yet. Collateral and margin requirements are rather ignored. Accounting methods are not being discussed to the degree needed, either because they require the involvement of experts outside the economics profession or perhaps because they span a very treacherous domain that is not well understood. Yet, for effective regulation, it is prudent to utilize all

available instruments, and not rely almost exclusively on a few prominent ones. The multiplicity of policy targets – regulatory, monetary, fiscal and other - necessitates a multiplicity of policy instruments, each of which ought to take into consideration the impact of the others as well as their mutual complementarity. Issues of instrument comprehensiveness, timing and cost are also very important in the design of an effective regulatory system that would safeguard stability and promote financial intermediation.

The international financial crisis of 2007-2009 brought to the forefront a number of problematic aspects in the working of today's global financial system. Regulatory discussions on procyclicality are conducted within this framework. Hence, the "too big to fail or save" financial institution problem is a topic that dominates the public debate. Similarly, the "short-termism" in the behavior of financial institutions' managers is another hot topic. Contagion between what appears to be unrelated financial markets at the opposite sides of the world is yet another topic. The correct measurement of market risk, especially its systematic component is another slippery area. Market microstructure relating to centralized versus over the counter organization of markets keeps reappearing in the financial press. All the above topics are intimately related to policies that aim at stabilizing and making less procyclical the financial system. Indeed, we saw that instruments do exist which can alleviate some of those problems.

Finally, it should be emphasized that it is financial institutions themselves which will have to bear the costs of the fight against procyclicality, while it is the society at large which will reap the benefits of new regulation (Squam Lake Report (2009)). The financial sector is economically powerful, especially after the mid 1980s. Current regulatory proposals that drive the cost of financial intermediation up are bound to face considerable political resistance.

References

Abreu, Dilip, and Markus K. Brunnermeier, (2003), Bubbles and crashes, *Econometrica*, 71, 173-204.

Admati, Anat R., Peter M. DeMarzo, Martin F. Hellwig, and Paul Phleiderer, (2010), "Fallacies, irrelevant facts, and myths in the discussion of capital regulation: Why bank equity is not expensive," Research Paper No, 2063, Stanford Graduate School of Business, September 10.

Adrias, Tobias and Markus K. Brunnermeier, (2009), "CoVaR," working paper, Federal Reserve Bank of New York

Amato, Jeffery, D., and Craig H Furfine, (2003), "Are credit ratings procyclical?" BIS Working Papers, No 129

Angelini, Paolo, Andrea Enria, Stefano Neri, Fabio Panetta and Mario Quagliariello, (2010), "Pro-cyclicality of Capital Regulation: Is it a Problem? How to Fix it?" Bank of Italy, working paper

Artis, Michael and Toshihior Okubo, 2008, "Globalization and Business Cycle Transmission," CEPR Discussion Paper 7041.

Bank of International Settlements, (2009), "Strengthening the resilience of the banking sector", BIS Consultative Document, BIS, Basel.

_____ (2009), "Annual Report," BIS, Basel.

_____ (2010), "Annual Report," BIS, Basel.

_____ (2010b), "Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements," Interim Report, Macroeconomic Assessment Group, BIS, Basel, August.

Basel Committee on Banking Supervision, (2010a), "Group of Governors and Heads of Supervision announces higher global minimum capital standards", Press Release, Ref no: 35/2010, 12/9/2010

_____ (2010b), "Proposal to ensure the loss absorbency of regulatory capital at the point of non-viability", Consultative Document, August 2010

Blaug, Mark, (2006), The Methodology of Economics or How Economist Explain, (2nd edition), *Cambridge Surveys of Economic Literature, Cambridge University Press*, Cambridge

Bordo, Michael, D., (2008), "An Historical Perspective on the Crisis of 2007-2008", NBER Working Paper No. 14569

Borio, Claudio, (2006), "Monetary and prudential policies at a crossroads? New challenges in the new century", BIS Working Papers, no 216

_____, (2008), "The Financial Turmoil of 2007–?: A Preliminary Assessment and Some Policy Considerations" in *Revista de Estabilidad Financiera*, Bank of Spain. Also available as BIS Working Papers, no. 251

_____, (2010), "Ten propositions about liquidity crises", *CESifo Economic Studies*, Vol. 56, 1/2010, pp.70–95

_____, Craig Furfine and Phillip Lowe, (2001), "Procyclicality of the Financial System and Financial Stability: Issues and Policy Options", BIS Working Papers, no 1, pp 1-57.

_____, and Phillip Lowe (2002), "Asset Prices, Financial and Monetary Stability: exploring the nexus", BIS Working Papers, no 114

_____ and Mathias Drehmann (2009), "Towards an Operational Framework for Financial Stability: 'Fuzzy' Measurement and its Consequences", BIS Working Papers, no 284

Brunnermeier, Markus K., (2009), Deciphering the Liquidity and Credit Crunch 2007.2008, *Journal of Economic Perspectives*, Vol. 23, 1, pp. 77-100

_____ and Lasse Pedersen (2007), "Market Liquidity and Funding Liquidity", NBER Working Paper, no. 12939, February

Chan, Nicholas T., Mila Getmansky, shane M. Haas, and Andrew W. Lo, (2007), "Systemic risk and hedge funds", in Carey, M. and Stulz, R. (Eds), *The Risks of Financial Institutions*, University of Chicago Press, Chicago, IL.

Collander, Robert N., Forrest W. Pafenberg and Robert S. Seiler, Jr., (2010), "Automatic Recapitalization Alternatives," FHFA working paper 10-2, March

Cotis, Jean Philippe and Jonathan Coppel (2005): "Business cycle dynamics in OECD countries: evidence, causes and policy implications," *RBA Annual Conference Volume, in: C. Kent and D. Norman (ed), "The Changing Nature of the Business Cycle"*, Reserve Bank of Australia

Dalsgaard , Thomas, Elmeskov, Jørgen and Cyn-Young Park, (2002), "Ongoing changes in the business cycle - evidence and causes," SUERF Studies, SUERF - *The European Money and Finance Forum,* number 20, edited by Morten Balling.

De Larosiére, Jacques, 2009, The High-Level Group on Financial Supervision in the EU, February 25, Brussels

Ferri, Giovanni, Li-Gang Liu, and Joseph E. Stiglitz, (1999), "The Procyclical Role of Rating Agencies: Evidence from the East Asian Crisis", *Economic Notes* by Banca Monte dei Paschi di Siena SpA, vol. 28, no. 3, pp. 335-355

Financial Stability Forum (2008a), *Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience*, Basel

_____ (2008b), *Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience: Follow-up on Implementation*, Basel

_____ (2009), *Report of the Financial Stability Forum on Addressing Procyclicality in the Financial System*, Basel

Fons, Jerome, (2008), Testimony of Jerome S. Fons before the Committee on Oversight and Government Reform, United States House of Representatives, October 22.

Geanakoplos, John, (2010), Solving the Present Crisis and Managing the Leverage Cycle", Economic Policy Review, (Special Issue: Central Bank Liquidity Tools and Perspectives on Regulatory Reform"), Federal Bank of New York, Volume 16, Number 1, pp. 101-131

Geneva Report (edited by Brunnermeier, Markus, Andrew Crockett, Charles Goodhart, Avinash D. Persaud and Hyun Shin), *The Fundamental Principles of Financial Regulation*, (2009), Geneva Reports on the World Economy, no. 11, January.

Goodhart, Charles, (2008), "The Financial Economists Roundtable's statement on reforming the role of SROs in the securitization process", *The First Global Financial Crisis of the 21st Century Part II* June-December 2008, edited by Andrew Felton and Carmen M. Reinhart, pp.137-146

_____, (2010), "Procyclicality and Financial Regulation," *Establidad Financiera*, Banco de Espana, Num. 16, pp. 11-20

_____, and W.B. Lim, (2010), 'Interest rate forecasts: a pathology', (forthcoming)

Goodhart, Charles and Avinash Persaud (2008). "How to avoid the next crash." *Financial Times*, January 30

Gompers, Paul. A., and Andrew Metrick, (2001), Institutional Investors and Equity Prices, *The Quarterly Journal of Economics*, Vol. 116, No. 1., pp.229{259

Gorton, Gary B., (2008), "The Subprime Panic", NBER Working Paper Series, no. w14398

_____, (2009), Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007, Prepared for the Federal Reserve Bank of Atlanta's 2009 Financial Markets Conference: Financial Innovation and Crisis, May 11-13, 2009

_____, (2010),"Questions and Answers About the Financial Crisis", NBER Working Paper Series, no. w15787,

Griffith-Jones, Stephany (2009), "How To Create Better Financial Regulation & Institutions", FES Briefing Paper 2, New York

_____, Stephany, Jose Antonio Ocampo and Ariane Ortiz, (2009), "Building of the Counter-cyclical Consensus: A Policy Agenda," working paper, Foundation for European Progressive Studies

Hardouvelis, Gikas A., 1990, "Margin Requirements, Volatility and the Transitory Component of Stock Prices," *American Economic Review*, September, 80:4, 736-62.

_____, 2003, "Asset Prices and the Need for New Policy Instruments: The Case of Countercyclical Margin Policy," in *Cyclicality and International Financial Stability*, Banque De France, pp. 331- 350.

_____ and Dongcheol Kim, 1995, "Margin Requirements, Price Fluctuations and Market Participation in Metal Futures," *Journal of Money, Credit and Banking*, August, 27: 659-71.

_____ and Peter Theodossiou, 2002, " The Asymmetric Relation between Margin Requirements and Stock Market Volatility across Bull and Bear Markets," 2002, *The Review of Financial Studies*, Winter, 15:5, 1525 - 59.

Kashyap, Anil K., Raghuram G. Rajan and Jeremy C. Stein, (2008), "Rethinking Capital Regulation," in *Maintaining Stability in a Changing Financial System*, Federal Reserve Bank of Kansas City, pp. 431-71

Keynes, John, M., (1936) *The General Theory of Employment, Interest, and Money*, Harcourt, Brace & World, New York

Kindleberger, Charles P. and Robert Z. Aliber, (2005), *Manias, Panics and Crashes: A History of Financial Crises*, Palgrave, MacMillan, New York

Kose, Ayhan, M, Prasad, E., Rogoff, K., and Shang-Jin Wei, (2006)," Financial Globalization: A Reappraisal", IMF Working Paper, WP/06/189

Laux, Christian and Christian Leuz, 2010, "Did Fair-Value Accounting Contribute to the Financial Crisis?" *Journal of Economic Perspectives*, Winter, vol. 24, no. 1, pp. 93-118

Lo, Andrew, W., (2009), Regulatory reform in the wake of the financial crisis of 2007-2008, *Journal of Financial Economic Policy*, Vol. 1 No. 1, pp. 4-43

Lowe, Phillip, (2002), "Credit risk measurement and Procyclicality", BIS Working Papers, No 116

Metrick, Andrew and Gary B. Gorton, (2010), "Haircuts," Yale ICF Working Paper No. 09-15

Miller, Marcus, Weller, Paul and Lei Zhang, (2002), "Moral Hazard and the US Stock Market: Analyzing the "Greenspan Put"," *Economic Journal*, Royal Economic Society, 112(478), 171-86

McKinnon, Ronald, I, and Huw Pill, (1999), Exchange Rate Regimes for Emerging Markets: Moral Hazard and International Overborrowing, *Oxford Review of Economic Policy*, 15:3, 19-38

Nakamoto, Michiyoand David Wighton, (2007), "Citigroup chief stays bullish on buy-outs," *Financial Times*, front page, July 10.

New York Times, (2007), When Markets Are too Big to Fail, Editorial from the *New York Times*, September 22.

Nirei, Makoto, Sushko Vlad and Theodoros Stamatiou, (2010), Stochastic Herding by Institutional Investment Managers, University of Santa Cruz Working Paper

O'Hara, Maureen, (1997), *Market Microstructure Theory*, Blackwell Publishing, Oxford.

Pedersen Lasse, H., (2008), "Liquidity risk and the current crisis", *The First Global Financial Crisis of the 21st Century Part II*, June-December 2008 (Edited by: Andrew Felton and Carmen M. Reinhart), pp.147-152

Rajan, Raghuram G., (2009), "The Credit Crisis and Cycle-Proof Regulation," *Federal Reserve Bank of St. Louis Review*, September/October, part I, pp. 397-402.

Reinhart, Carmen M., and Kenneth S. Rogoff, (2009), Is the 2007 US. Sub-Prime Financial Crisis So Different? An International Historical Comparison, NBER Working Paper Series, no. w13761

Repullo, Rafael and Javier Suarez, (2009), "The Procyclical Effects of Bank Capital Regulation," Tilburg University, Center for Economic Research, Discussion Paper 2010-29S

Rubini, Nouriel, (2009), "'Too Big to Fail" Revisited", *Forbes Magazine*, November 5.

Scharfstein David, and Jeremy Stein, (2010), "Basel needs a firm hand and fewer delays", *Financial Times*, September 14, p. 13.

Sias, Robert. W., (2004), "Institutional Herding," *Review of Financial Studies*, 17, 165-206

Squam Lake Working Group on Financial Regulation, (2009), *Reforming Capital Requirements for Financial Institutions*, Council on Foreign Relations Press

Stiglitz, Joseph E. (2008), Testimony before the House Committee on Financial Services, October 21.

United Nations, (2009), *The Report on the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System*, New York, September.

Warwick Commission, (2009), *The Warwick Commission on International Financial Reform: In Praise of Unlevel Playing Fields*, The University of Warwick, November.

Wei, Chenyang and David Yermack, (2010), Deferred Compensation, Risk, and Company Value: Investor Reactions to CEO Incentives, Federal Reserve Bank of New York Staff Reports, no. 445

Wolf, Martin (2010), "Basel: The mouse that did not roar," *Financial Times*, September 15, p. 11.

Zarnowitz, Victor (1998), "Has the business cycle been abolished?" NBER Working Paper, no. 6367

Financial instability, institutions and regulations: The 2009-2010 Greek crisis

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1. Introduction

Greece has been the first member of the EMU to seek IMF support, due to its inability to access the international capital markets at reasonable interest rates. Greece, as well as other Club Med countries, is faced with unmanageable budget deficits and/or debt to GNP ratios. Consequently, Greece fell under the auspices of an ECB-EU-IMF triumvirate to fulfil its financing needs in the foreseeable future and has undergone a severe austerity plan dictated by the" troika". So far, the outcome of this programme has been an unprecedented recession for an EU country and increasing strains on its social cohesion. Evidently, the case of Greece presents the Eurozone with its first real test.

In this short note we shall argue that the imposition of the terms of the memorandum on Greece was not the only road towards fiscal consolidation. We agree that neither outright default nor debt restructuring were viable alternatives for the long run growth of the Greek economy. Instead, we

propose a temporary dual currency regime for any of the Club Med countries that face similar problems, not only for its economic benefits but also for the long run viability of the EURO experiment itself. The imposition of the harsh, and often times inefficient, terms of the ECB-EU-IMF memorandum is unnecessary and undesirable both for economic as well as socio-political reasons.

In addition, we pur forward, despite its technical difficulties of implementation, the possible idea of limiting cash transfers as a means to reduce, if not eliminate, corruption in the short run. Moreover, we suggest a series of structural reforms that might guarantee the exit of the Greek economy from recession and assure its long term growth and development. In particular, we regard as necessary conditions the stabilization of expectations, institutional reforms that will safeguard the orderly function of the markets, and, last but not least, investment in and efficient utilisation of the country's human capital.

2. Greek Options

3.1 Default

The default option and, consequently, Greece's exit from the Eurozone is the worst possible scenario for Greece. Besides the political humiliation that default would generate, the contagion effects for the entire Eurozone would be insurmountable.

As one can see from Figure 1, Europe's web of debt is such that no country can be found out without causing a generalized contagion crisis that would precipitate the entire Euro area's chaotic market destabilization. Furthermore, most of Greece's debt is Euro denominated and therefore exit from the Eurozone will not allow for better debt servicing. Plus, any country that defaults usually does not have access to the international capital markets for a long time. For example, Argentina, which defaulted in 2000, does not have an easy access to the capital markets even today. Likewise, Russia, which defaulted in its rouble denominated debt, did not have access the international markets for almost a decade.

Finally, full default will not necessarily ameliorate the painful adjustment costs that the Greek economy needs to undergo. Since it will not have access to the international markets, it will be obliged to spend what it collects from taxes. Thus, the welfare state, social security and other

provisions would be decimated. A country that has many continuing problems in foreign affairs (Cypriot issue, Aegean disputes, Skopje issue) cannot afford to compromise its strategic alliances.

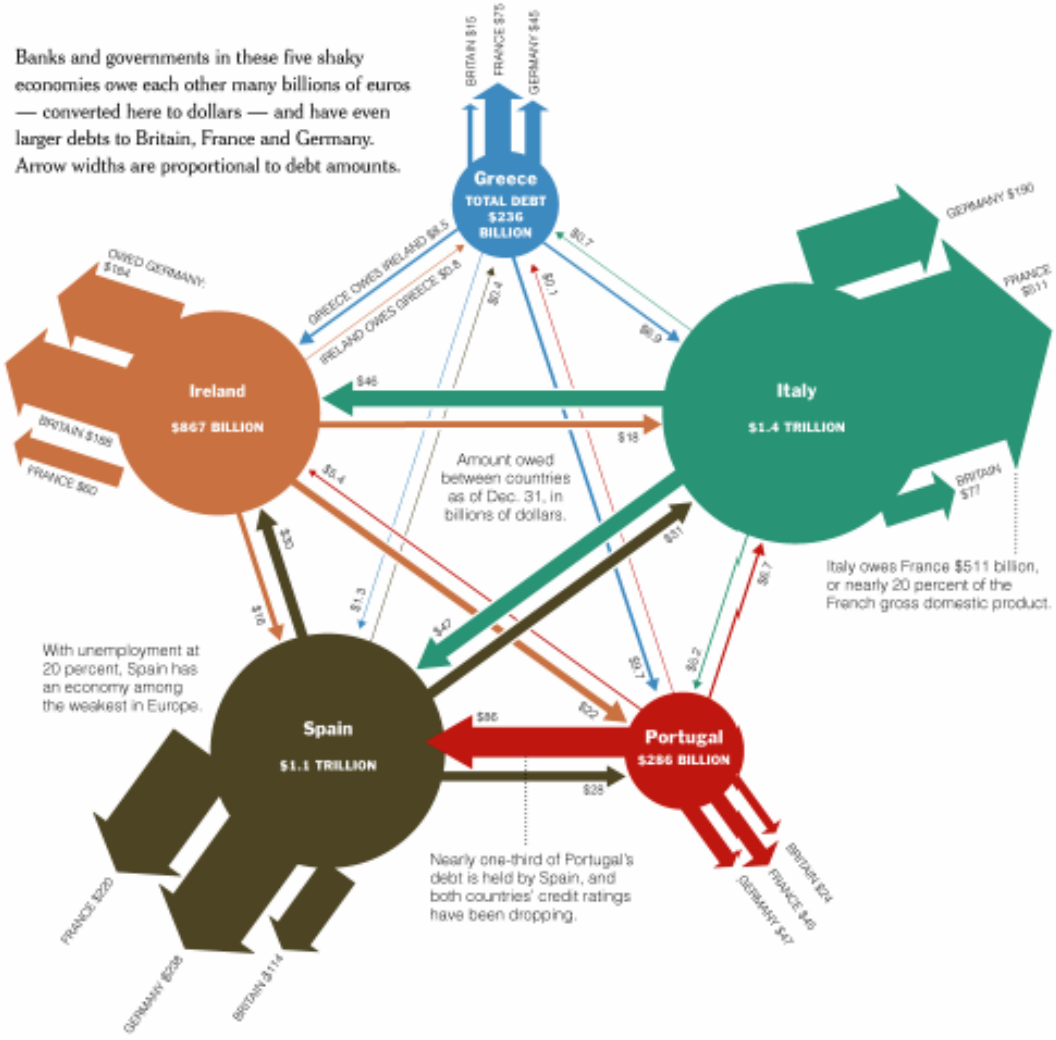


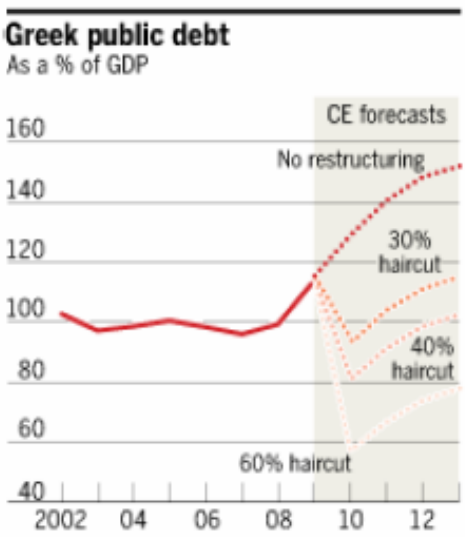
Figure 1

3.2 Debt Restructuring

The €110 bn financial support package announced by the EU and the IMF is associated with strict austerity measures for several years so as to achieve fiscal consolidation. Debt restructuring might occur with an exchange offer, i.e. new bonds of the Hellenic Republic would be offered in exchange for the Republic's existing bonds. Since the first Brady bond transactions in 1990, exchange offers have been the main instrument for sovereign debt restructuring of the emerging markets. However, short-term Treasury bills are excluded to keep markets open for the government's emergency financing needs. Alternatively, new instruments could be used, extending debt maturity as was the case in Uruguay.

The main advantage of debt restructuring is the prevention of full-blown default and the resulting painful adjustment process required by the EU-ECB-IMF memorandum of understanding. Moreover, the implementation of such a scheme could be done more easily than was done in Argentina, since Greek national debt is not diversified very much to retail investors. Finally, Greek debt is governed be Greek law.

However, the disadvantages of such an option are overwhelming. First, more that 30% of the Greek debt is believed to be owned by Greek institutional holders. Hence, potential restructuring will impose significant strains on the already ailing financial sector. The Greek banking system is already under substantial duress, and savings are flowing out of the Greek banks. Therefore, even the prospect of default or debt restructuring can only exacerbate this tendency, currently in the vicinity of 20bn EUROS. Over time, investment will recede and the recession deepen, and may very well culminate in bank runs and the eventual meltdown of Greek banks and contagion to the European counterparts. Second, since European banks are holders of the Greek debt, contagion cannot be ignored, so the EC will not be supportive of such a plan. Third, Greece's debt is denominated in Euros, and unlike the case of Mexico or Philippines, whose debt was held in US dollars, it may have adverse effects on the Euro itself. Finally, even with substantial haircuts at the level of 50% (see figure 2) it would then shoot up again quite soon. In sum,



Source: Capital Economics

debt restructuring does not solve the debt problem of Greece and yet it may not prevent the inevitable ousting of the country from the international capital markets. Last but not least, the adjustment costs will be borne at the end of the day.

3.3 The Californian solution: Dual Currency

Greece and Portugal have two severe economic problems. These are, first, a fiscal position, deficit and debt ratio verging on the unsustainable and, second, a serious lack of competitiveness (a real exchange rate which is much too high). Italy and Spain may also soon face a similar precarious situation. These countries' membership of the Eurozone constrains the solution to this joint problem.

For example, neither Greece nor any other country in a similar position could sensibly leave the Eurozone, (indeed any sniff of thinking about that would cause an immediate banking crisis). Apart from the immediate effects on wages, prices and interest rates, existing debts are denominated in Euros and any attempt to renege on that would, very likely, result in seizure of Greek assets abroad and expulsion from the Eurozone, in addition to a cessation of European Union net transfers. In this respect Greece is far more constrained than Argentina was.

Similarly, none of the Club Med countries could easily reduce its burdens by defaulting on its public sector debt. Even if they could, somehow, avoid the second-round effect on their domestic financial system, by ring-fencing banks and insurance companies against such default, they could not then borrow. If they could not borrow, they would have to cut spending into line with receipts. But if they had to do this latter anyhow, they could do so without defaulting in the first place. For default would accentuate, not reduce, their current fiscal problems, and precipitate a banking crisis in France and Germany, whose banks are loaded with their assets.

Many Greeks are still hoping for a bailout by richer Eurozone neighbours, under the implicit threat that a Greek enforced withdrawal from the euro or default, even though it would not be in the self-interest of Greece, could cause contagion elsewhere. But that would represent moral hazard in spades.

So, the road of devaluation that was chosen by the UK to fight the crisis is unavailable in a common currency area. On the other hand the Irish or Latvian road of a massive direct reduction in nominal wages and prices is politically unattainable in the Club Med countries and would greatly exacerbate the North-South divide. So what is to be done?

When a subordinate state in a federal monetary union has severe fiscal problems and runs out of money, what does it do? It issues IOUs. Think California or the Argentine provinces before 2000. For example, in Portugal, we could coin a phrase and call such IOUs escudo. Essentially the government passes a decree that states that such escudo IOUs would be acceptable for all internal payments, except tax payments, between Portuguese residents, but not for any external payments between Portuguese residents and foreign residents. All public sector and private sector wage payments shift on to an escudo basis as do interest payments by a Portuguese resident to another resident. Portuguese residents' deposits and borrowing with Portuguese banks shift to an escudo basis; others remain in Euros.

What then would give the escudo value, apart from the accompanying commitment to restore the value of the escudo to parity against the euro, whose credibility would, of course, only be doubted by the most cynical! Note that the government, whose taxes remain paid in euro, would be long in euro, whereas the Portuguese private sector would be long escudo, short euro. So, the government transfers its net long to the central bank and asks the central bank to manage the escudo/euro exchange rate, so that it is stabilised, say at a level that represents a 25 per cent internal devaluation, (the choice of number would need careful calculation). As a by-product the devaluation will enhance the competitiveness of the countries that introduce the mechanism of the dual currency without distorting wealth allocation and sharing the costs of re-establishing fiscal rectitude more equitably. This is in stark contrast with the dictums of the ECB-EU-IMF stabilisation programme. For example, in Greece most of the burden is born by the civil service, pensioners and the low income classess through the increase in VAT. If the central bank does not want to adopt such a dual currency, and under the Maastricht Treaty it could refuse, the Treasury could do this on its own. While managed, the exchange rate should not be pegged. The escudo would be inconvertible, and non-residents would not be allowed to borrow it. After all, this would be but a humble state IOU, though written rather large and not a 'proper' currency; indeed its success would be evident in its disappearance within a defined horizon, say 4 years.

All external monetary relationships, including interest payments, remain unchanged. Internally all price/wage relativities, tax rates, etc, remain unchanged. What changes is the relativity between internal and external payments, (all tourist payments remain in Euros). Portuguese wages and costs fall relative to their prior level; tax rates remain the same, but the enhanced activity raises revenue, and there is a reduction, as measured in Euros, in interest paid to Portuguese residents.

Incidentally, the Greek government has already started honouring its domestic obligations with interest bearing bonds. This is a tantamount to introducing *de facto* a dual currency, modulo the interest promised on these bonds. However, the disorderly and partial introduction of these IOUs will not preserve relative prices and, hence, increase income inequality against the middle and lower income classes. Consequently, consumption and investment demand will fall even further, thus, causing substantial increases in unemployment and the potential to unravel social cohesion.

It would be messy, and a dual currency mechanism is unattractive. But it could work; it has done so before now in other countries and circumstances. It would protect the German banking system, safeguard the basic existence of the euro, and, for the Eurozone countries in danger of default, it might be the least bad option. Indeed, it may very well decrease the gap between the developed North and the less developed South of Europe, as contrasted with the large-scale transfer of structural funds that were allocated and invested in a rather inefficient manner.

4. Should/Can Greece become more like Singapore?

Corruption, and its accompaniment tax evasion, are like a cancer in the Greek national body. Remove it, and recorded income/output and tax revenue would rebound. Corruption and tax evasion are fuelled by (unrecorded) cash transfers, just as cancers are fuelled by certain bodily transfers.

Remove the possibility of (anonymous) cash transfers, and corruption will wither. This is technically possible, requiring the generalised use of electronic e-purses, allowing direct purse to purse fund transfer, with a capacity for records to be sent simultaneously to a central recording station. The technical capacity to do this exists; it was considered by Singapore.

It would be enforced by making holding of all currency notes, whether Euros, dollars, yen, etc., or gold/silver coin, except for certified numismatists, illegal and subject to forfeit, and additional fine in large cases. All entrants to Greece, e.g. tourists, would be given a free e-purse, and required to transform all their currency holdings into e-form; everyone leaving Greece can transform e-money into the cash currency of their choice.

Besides tax evasion and corrupt back-handers, cash is commonly used to pay for human frailties, prostitution and drugs. These should, at the same time, be legalised and taxed, raising further revenue. There would be a trade-off between more tax revenue and becoming a 'sin-centre'. Since the use of e-purses for such 'frailty' purchase would be recorded, sex/drug trafficking by non-residents would be much reduced by threatening to inform home authorities about such behaviour.

There are, of course, numerous objections to this course of action. Let us start with the least pressing:-

1.The old and mentally handicapped would find it more difficult than cash usage. But only initially, and an educational effort would be necessary.

2. The prohibition on cash transfers within Greece, and the recording of e-purse transfers, can be avoided by shifting payments/fund transfers outside Greece. True, but the additional frictions/transfer costs would be considerable.

3. The use of the euro is legal tender in the euro-zone, and this measure would reduce ECB seignorage. Yes, but euro-zone colleague countries appreciate the need for Greece to reform and to raise more tax revenue, without running its economy into the ground. The political good-will should suffice to give Greece a waiver to do this.

Now we move on to the more difficult issues:-

4. The recording of all e-purse transactions, for whatever purpose, would give to those who receive such information enormous potential powers. On the principle of checks and balances to power, the recording site and its IT data base, should be kept outside Greece, e.g. in Switzerland. The staff should be independent (of the Greek government), preferably non-Greek nationals, well paid and their appointment made publicly and transparently by a Committee comprising a range of Greek and foreign notables.

All Greek persons, and Greek institutions, should have an ability to approach the recording centre for information. Yet another independent (and also largely non-Greek) committee, without any access to the data base itself, would then rule whether that request should be allowed. A set of principles indicating when such requests should be accepted would need to be established

5. Even if the provision of information, on e-purse transactions, is held independently of government, with strong safeguards, this would still be a potentially illiberal step. It would not be popular, particularly not so with those currently using cash to fiddle and to reduce their tax base.

The real question is just how serious the Greek nation is about reducing corruption and tax evasion. The technical means to do so can be found. Is the will to do so also there?

5. Structural Reforms

5.1 Stabilization of Expectations

The importance of expectations and market psychology cannot be over-stressed. In fact, arguably the destabilization of market expectations due to misreporting of economic and statistical data to the EU, as well as the sweeping generalizations of the state of the Greek economy by officials as of 2009, was significant. For example, the analogy of the Greek economy to the "Titanic" was preposterous, if not outright insulting. In fact, we cannot recollect a case in recent world financial history that the government had undermined expectation and market psychology so blatantly. In and of itself this incident merits further inquiry. The comparison with the prudent treatment of expectations by the Spanish government documents the point. It is virtually impossible that these officials can restore the credibility about the economic prospects of the country given the assumption that investors are rational.

The **genuine** independence of the statistics authorities is key to the stabilization of expectations. Moreover, the managers of state owned companies and/or government officials that contributed to the profligacy of the state and the widening of the budget deficit s**hould not** manage the exit strategy form the crisis. Since their credibility has been seriously impaired, it is virtually impossible to convince the markets about their commitment for fiscal consolidation[1]. Indeed, during the transition period towards fiscal consolidation it may be appropriate to dissociate the political cost associated with reform by allowing the presence of non-elected officials with a clear remit from the government to manage the state of the economy.

[1] One can connect this to the credibility of Central Banks and the anchoring of inflation expectations

Finally, transparency and communication of all the obligations that the government has undertaken with the IMF and the EU regarding the bailout package should be immediate and complete. Put differently, the dissemination of information should serve to explain the reasons for the memorandum of understanding, rather than emphasize the political costs associated with its implementation. Otherwise, the adjustment costs will be amplified and potentially foment further social unrest. In other words, transparency and genuine revelation of the relevant information helps to achieve commitment and anchoring of market expectations.

The case of Argentina illuminates how wavering policy measures can destabilize market expectations further and, indeed, deepen the crisis. Apropos, the natural "blame-game", which occurs in these circumstances, with one political party accusing the other for the economic situation, can only precipitate chaotic market reactions, as recently happened in Hungary with further opportunities for contagion.

5.2 Institutional Reforms

The institutional reforms needed in the case of Greece are well understood and much studied. However, their implementation clearly depends upon the political will of the present government as well as the political repercussions it can, potentially, generate across the entire political spectrum. It is not so much the knowledge of which reforms and how they should be implemented but the consideration of the associated political cost that holds them back. To some extent the unwillingness of every government to carry forward these reforms is a consequence of the clientalistic as well as the paternalistic structure of the Greek political system for the last 35 years.

We shall mention briefly the major medium-term reforms.

5.2.1 Overhaul of the public sector

The inefficiency of the Greek public sector is well known and extends across most of the arms of the state machine. Mismanagement of public funds and unaccountability of distribution are well documented. In addition, its productivity is low relative to other EU countries. It defies any logic that 10% of state subsidies to education are utilized for infrastructure replacement of damaged university and school property. The mere fact that the Greek National Health system is among one of the most expensive in Europe, yet its services are lamentable, is testament to the inefficiencies and

ineptitude of the state apparatus. Finally, bureaucratic barriers not only prevent private domestic and foreign investment, but also foment corruption.

5.2.2 Restructuring of Tax collections agencies

Given the intertemporal persistence of tax evasion, it is imperative to overhaul tax collection procedures by providing incentives to the respective agencies to improve their efficiency and productivity, and if necessary to subcontract part of the tax collection activity to the private sector. By most studies, evidence suggests that tax evasion accounts for €20 bn per annum.

5.2.3 Measuring and Registering the "shadow" economy

By most accounts, the shadow economy is over 30% of the Greek GDP. Registering and consequently taxing this substantial part of the economy is of utmost importance, since it constitutes a primary source of corruption as well. This attempt together with the reduction of tax evasion not only can increase the denominator, but also reduce the numerator of the Budget Deficit to GNP and National Debt to GNP. Furthermore, it would arguably send an explicit signal to the international capital markets that fiscal discipline and orderly functioning of the state has finally been established in the Greek economy.

5.2.4 Removal of the oligopolistic tendencies both in the goods and labour markets

There is a plethora of professions (e.g. lawyers, notaries, truck drivers etc.) whereby there exist barriers to entry, and, therefore, competition is seriously impeded. Moreover, Greek labour laws seriously limit labour market flexibility and consequently whenever a recession occurs then "hysteresis" predominates, thus unemployment persists.

As far as the goods markets are concerned, the office of fair trading needs to safeguard the competitive nature of the markets that for most part are oligopolistic. This inevitably underscores the need for supporting and providing incentives for the survival of small and medium sized companies. Heavy corporate taxation of the small and medium sized firms can only ensure that oligopolistic structures consolidate further, and thereby increase the inefficiency of the economy. Last but not

least, recapitalization of the banking system is necessary, but that might jeopardise its competitive nature and pre-eminence in the Balkans. Potential explicit or implicit nationalization and/or consolidation of one of the most efficient sectors of the Greek economy could prove to be disastrous in the long-run.

5.2.5 Management of state property

The market value of state property is about €300 bn and yet the return is miniscule. There exist various methods of private/public management that could increase considerably the revenue and, in addition, reduce the level of corruption. State property is fundamentally a public good and its optimal use is warranted.

5.2.6 Privatizations

The Greek Minister of Finance outlined a programme of future privatizations focusing on sales to strategic investors of stakes in transport, water supply and energy sector, gaming and telecommunications.

This privatization plan is based primarily on concessions for strategic investors and arms to reduce the bloated public debt and utilise the private sector efficiency for the Greek citizens' benefit.

However, since the Greek government will maintain the majority of these companies' shares, this will inevitably discourage potential investors. The Ministry of Finance seeks capital to be invested in a distressed economy without granting management rights alongside. The only exception is the National Railway OSE, the priority of the privatization programme as outlined by the Ministry of Transportation; investors will be understandably reluctant to acquire this massively indebted company.

The privatization plan should not be either primarily a fund collecting programme to reduce the budget deficit nor a vehicle for potential investors to acquire public benefits and tax reliefs. The point being that the state needs neither a paternalistic relation with the markets nor a complete dissociation from them. It needs a "clever" association with the private sector to improve its efficiency and productivity.

However, one should be vigilant when it comes to consolidation in the banking industry. Recapitalization is necessary, but also a well diversified industry is needed in the long-run to readily absorb shocks without endangering the ability of the entire banking industry and its intermediation function. The most adverse effect of the Olympic Games was, arguably, the concentration of economic activity into one area, together with its associated urbanisation. Besides economic asphyxiation, the inevitable social problems during a deep recession may constitute a time bomb for the Greek society as a whole. The emergence of ghettos in the centre of Athens and the increased criminality corroborate this argument.

5.2.7 Decentralization of the economic activity

The metropolitan area of Athens constitutes almost half of the entire population, Inevitably, this distorts development away from the Greek periphery and thus renders the entire economy vulnerable to external shocks in Athens.

5.3 Investment in and efficient use of human capital

The cases of Latvia and Estonia are illuminating when the IMF recipe is implemented without being accompanied with appropriate economic policies for growth and development in the economy. The brain drain that ensued in the above countries will inevitably have long-term economic and arguably socio-political consequences. Greece with its inefficient labour markets and lack of meritocracy may suffer a wave of emigration to the rest of the EU. More importantly, this wave of emigration may take the form of skilled human capital that is crucially significant for increasing in the productivity of the Greek economy.

The freedom of movement of human capital within EU will exacerbate the brain drain that less productive economies usually suffer. Given that low skilled immigration primarily occurs via the former Eastern European countries, only the high-skilled labour has a competitive advantage to be employed abroad. Evidence already suggests a dramatic increase of qualified professionals such as doctors that are willing to emigrate, and simultaneously a drop of Greek professionals who repatriate

themselves after their postgraduate studies abroad. The previous argument jointly with the pitiful state of higher education may undermine the future economic prospects of the country. Statism, the inflexibility of the labour markets and the suffocating grip of the Greek political parties on the part of the economy that is controlled by the state guarantee cachexia and backwardness.

6. Concluding Remarks

We have attempted to argue that amongst the available options available to Greece presently the least bad option is the introduction of a temporary dual currency mechanism, e-purses and quick structural reforms. The option of default or debt restructuring is to be avoided at any cost. In addition, the continued implementation of the memorandum of understanding between the troika and Greece almost surely will sink the economy even further into recession and endanger its social cohesion. Therefore, a renegotiation of the conditionality terms sooner rather than later.

Discussion

Chair:
Thank you very much, Professor Goodhart and Dimitri Tsomocos, for your presentation. Well, we have a little time left and we have had many and quite radical ideas thrown on the table by all our speakers. I don't need to repeat them, but let me remind you that we heard Professor Diamond talking about the importance of somehow accounting for tail events and the importance of self-feeding situations in markets. Professor Constantinides essentially talked about the need of quite radical restructuring of risk management models. Professor Hardouvelis then spoke about this pro-cyclicality system and what can be done to at least mitigate it, including my beloved subject of how to change the mandates and the behaviors of regulators in this system. And finally, Professors Goodhart and Tsomocos, who put on the table what I could call, I guess, a *maximin* notion: what is the best one can do of the worst possible outcome. If the program does not work, what is the best alternative, and this was the dual currency idea. Furthermore, I think they roundly suggested essentially the abolition of the cash economy, which I think is also a very provocative notion. So what I would like to do, given that so many ideas were placed on the table and we have such a gifted panel here, I would like to start by having a round of comments by panelists on presentations of other panelists, if they so wish. And then, I will open the session to a few questions. So, could I start from the left. Professor Harvdoubelis, would you like to make a comment on other presentations?

Gikas Hardouvelis:
I wasn't prepared for it, but now I am tempted. This dual currency idea reminds me of the leave of absence idea of Martin Feldstein in the FT. There is no leave of absence. You are getting kicked out of the euro zone, period. And it is actually the EU, period. It is hard for me to see how it can really work. I think the politics will be such, if we are lead to such a situation, that we will be kicked out of the European Union. I think no Greek wants that, except perhaps 7% of the voters, who might want to take us back to the civil war and hopefully win it. But you got to give more flesh to it to become believable. I like your points about not defaulting. I agree with you. I was in London and I realized there were two camps on this. The continental Europeans that said this is an EMU issue, this is not a Greek issue, and agrees with your analysis. And it was the hedge funds and the Americans who simply said, "Come on! In three years' time you are going to be running primary surpluses, assuming Plan A works and you are going to be doing ok, and then you are going to turn around and say 'Why should I have a 150% debt? I'd rather bring it down to 75%." There were some serious hedge fund managers that deal in trillions of dollars, not billions, who said that there is a 50% chance there is going to be a haircut of 70%. It was unbelievable. And the idea there was that we are going to do it voluntarily. That not necessarily that anybody would push us around, we would do it voluntarily. We had arguments, political this-that, this works, why not, whatever you say. But there is still a climate out there and a lot of people believe it that Greece will default voluntarily. Can you argue against it? So dual currency is more serious and I don't think will happen. And the other one. Can you persuade the Anglo-Saxons on the other one?

Douglas Diamond:
Yes, I have a question and a comment for Charles and Dimitri as well. The first one, it seems like one would have to introduce this plan very quickly, just because if it would require an

anticipated right down of the value of the peoples' bank deposits they would be leaving the room right now. So that doesn't sound like a very good feature. Secondly, on the thing on currency, we had a student at Chicago Booth, who managed to get some very interesting data from the Russian Central Bank that he had managed to buy over the internet, and it was effectively all of the wire transfers that the Central Bank processed and the names of all the people. It was supposed to remain quiet, but he got about two years' worth of wire transfer and even though these things were recorded, he was able to come up with an algorithm to capture bribes from oil companies to politicians and things like that. There were these companies named "Spacemen" that were set up purely to run transfer-in and transfer-out. So, it is not completely obvious that getting rid of currency would completely eliminate corruption, particularly if the people on the inside were involved. But it is interesting that after the fact you can go and actually figure out who was bribing who and exactly with how much; it would be useful to have such a record.

Dimitrios Tsomocos:
The first point refers to the dual currency. If, given this nice diagram with the international exposures of liabilities among countries, and given what has already started happening in Spain, given what happened in Hungary, perhaps I don't think that the European Union, its lethargic bureaucracy will take a lot of convincing. Because if this sovereign crisis spreads, it won't be a dual currency de jure, it will be de facto. And that is the important point. And something that perhaps I didn't flash out quite successfully in the presentation. The dual currency is in stark contracts with Feldstein's leave of absence idea. The dual currency is an idea, is a proposal to rescue the euro. Never forget there is the original sin of the North-South divide that was not properly cured in the last ten years, either because of profligacy either because of unequal development and so on and so forth. So the only way is to convince and to make more palatable this fiscal consolidation and the adjustment cost that will be fallen upon economic societies allover across Europe. And let us not forget there is that much one can touch; either the young or the pensioners. Because that is why age related taxation and increased taxation pensioners there is that far that can take a society.

Charles Goodhard:
Doug is absolutely right about the need to do this, if it ever was to be done, very quickly indeed. But I think he is wrong to assume that this and this alone would be a trigger for a run from the banks. I think that anything which indicates that there could be any default or even restructuring, which might as a consequence lead to any country involved to that having to leave the euro, which I think would be a very likely event, that would lead to bank runs. And indeed, the figures from the ECB about the amount of funding that is being required in the last few weeks, for example from Spanish banks, suggests that this run – to a certain extent – has already taken place. Two other comments, since we are asked to comment on our colleagues. I agree by 100% with Gikas. He and I stood shoulder to shoulder in this rather unpopular argument that you really do need to introduce counter-cyclical measures and that that can be done for a long time, and I was delighted to hear everything that he said. Where I do tend to disagree is with George Constantinides, who is arguing that the bubble development in 2006 and 2007 was patently obvious. There is a diagram which Turner, who is currently the Head of the FSA in the UK, loves to show. And this is a diagram of CDS spreads on all the major banks in every country. And CDS spreads were at about their all-time low by June-July 2007. Afterwards, they rocketed upwards. But it is perfectly clear that markets are not necessarily good predictors. The wisdom of the market just is not there. As I think a lot of people have

been arguing, and I think rightly, both the subprime as the first problem in 2007 and 2008, and now what appears to be the second leg of this crisis, with the Club Med difficulties, arose in large part because everybody tends to think that what has been for the last ten years will continue. Or if it doesn't continue, you do not know when it will change. Because you don't know when it will change, you don't know when to get off this particular (…). What I particularly remember is the EC told the Irish in 2004-2005 that they would have a much-much bigger surplus, because of the construction boom in Ireland. And the EC was right. But the Irish turned around and said, "Look. We've got a large primary surplus; we have got a surplus on the actual budgetary accounts, our debt ratio is quite low and falling. Who are you to tell us what to do?" And it is very-very difficult. Now, what do you do about trying to prevent the reliance on past data? Again, subprime, now demonized, was regarded as one of the best financial innovations that the world had ever seen in 2004-2006. And one of the reasons why that was so was because if you looked at US aggregate housing gator over the very long period which you had it, from about 1950, monthly or frequently, so you had a regression equation, which had huge numbers of observation, and you run that and during that period there was barely a month in which overall in aggregate US housing prices fell. Put that in your standard regression equation and you get out a prediction that US housing prices cannot fall, with a confidence limit of T equals 15 or something, more than 5%.Now, what is my solution to that? One of my solutions is to spend much less time on these kinds of modeling techniques, which frequently can lead us astray, and give much more time to the teaching of history; because people would have known, for example, if they taught history properly, that in Australia in 1890-92, which was about the biggest crisis that any country has ever suffered, the housing prices went down about 60% to 70% in Victoria and it caused an absolute disaster. Those who knew history would have known or should have known that the models that the credit rating agencies were using were just absolute total horror. As an academic economist, my feeling is that the worst single decision that has been made in almost all our universities is to hive off the economic history to a completely separate department and assume that the economists don't need to know any history. All they are going to be able to do is do DSGE modeling. That is wrong.

George Constantinides:
First of all, I would like to clarify that about the international crisis I was not arguing that it should have been predicted in 2005 and 2006. About that crisis, my point was that by February of 2007, which was the onset of the crisis, peoples' attention had been drawn to it, so I was commenting that it took about six months for that crisis to peak; and it is not clear to me why that particular information should have taken that long. But I was being stronger about the Greek crisis, where it is not a one year's current account deficit that caused the problem; because the amount of borrowing by Greece each year, since the time it joined the EMU, we knew exactly how much the debt was growing and we had the information to say that Greece was eventually not going to be able to say it. So if we had assigned, even without being able to assign probabilities, as to whether the economic growth in Greece would keep rising, if we just looked at the scenario what would happen, Greece was likely that the banks were not sufficiently sophisticated to be very much involved or at all in mortgage bank securities. But we saw that there was an international crisis. So if we were to stop and ask what would happen if that international crisis would affect the growth of Greece, then we would have been able to predict, or at least worry about it much earlier than we did. And for that I blame the risk management systems of all the banks and all the analysts and all the hedge funds, which if they cannot assign a probability to a certain event or to say that a

probability is small, it is easier to ignore that event than do a scenario analysis without even trying to assign the probability.

Anthony Papadimitriou:
I fear I may be abusing my position here in the center front raw, but I do have not one question, but a series of questions, which are really a statement or a comment on what Professor Goodhart and Professor Tsomocos has said about a dual currency proposal and the proposal to make away with cash payments. I have to say from the outset that I am strongly opposed to both ideas and I will put some questions to you and maybe you can answer them, or maybe the questions are self-answered. My question is, first of all, what is the difference between a dual currency and actually leaving the euro, the European currency? Would you have a fixed rate between the local currency and the euro? If so, then there is no difference. If you do as a floating rate, then in fact, what will certainly happen, as I know my Greeks very well, they will not use the local currency, whether you call it the new drachmae, or escudo, or whatever. They will not use it, except in the small denominations and only if it is absolutely needed to do that. In fact, we did have a dual currency system in Greece, right after the civil war, where the gold sovereign was actually the currency of preference in Greece. Houses were bought and sold for gold sovereigns, dowries were paid in gold sovereigns, olive-oil was purchased and sold for gold sovereigns, everybody was using the gold sovereign, except if they couldn't. So, effectively what will happen is that the populace and particularly the poor will have to suffer a deep haircut, not in their actual hair but in their pockets. Second question. Greece is not the only country which has this problem. Italy has it, Portugal, Ireland and maybe other countries. Would you apply the dual currency to all of these countries? Then, what is the use of the euro? The euro is worthless; it has nothing to do. A large part of Europe will not be using the euro. Third issue. You would need to introduce a police state. You would have to force the population to use the alternative currency. If they will use the gold sovereign, as it has happened at some point in Greece, use of the gold sovereign was illegal. In fact, it was a crime punished by imprisonment. Still, people continued using it and people did go to jail – I know that as a lawyer – people would go to jail because they used gold sovereigns in forbidden transactions. They did go to jail, until very recently. It is part of the Greek history, absolutely. Now, another issue: California. You mentioned the California model. I didn't quite follow; in fact, at the beginning I thought you were going into completely different directions, because I know that California is a state amongst others, which has been completely bankrupt for a number of years now, and nobody has suggested that California uses an alternative dollar, perhaps the Mexican peso or some other currency. In California, they have been continuously using the dollar and the federal government of the United States has found ways of dealing with the crisis of California in other ways; and frankly, I prefer the actual default by Greece, than having an alternative currency. Now, regarding the banning of all cash payments – I know, Mr. Chairman, I am probably abusing my time, as I said before - banning all cash payments. I do believe that this is an absolute thing for me. I do not accept that. It is going to be a Big Brother state; and certainly, I am probably the most taxed lawyer in Greece, and I know that lawyers are as people say the most tax-evasive persons. I am one of the most taxed lawyers in Greece; but I do object to having every single transaction I do, even in most petty one, to be followed by some Big Brother, in a place where I don't know where, and in particular in that Big Brother is situated in Switzerland. Thank you very much.

Dimitrios Tsomocos:
I will try to make it as fast as possible. First, you are absolutely right that it cannot be fixed. In Argentina, in some constituencies the dual currency was fixed and in effect there was a problem. Even though you can use it with low interest rates domestically, to increase liquidity in the constituencies. However, the idea of a dual currency is to introduce it on par and then allow it to flow. So in effect, you have an internal domestic devaluation that retains – and that is the important thing – it retains relative prices, so that the deflation depressors, on the contrary, will not hurt the poor and the weak; they will equally share across all society, since relative prices will remain the same. That is the key thing. Third, this thing is not used, using the gold after the civil war and all that, but as a temporary measure, three to four years, to introduce and foster fiscal consolidation. And then, you are back to square one, where everybody is using the euro. With respect that this is a very good point – in fact, I alluded to that – one should escalate the level of the use of dual currency as part as a temporary fixed rule for Club Med countries that may be facing this sort of problems. It is a domestic redenomination of domestic debt, without going outright for default or restructuring, where anyhow you are doomed to be ousted from Europe and the euro in particular. And, last but not least, how about illegal use of euro and all that, since wages will be received in escudos, deposited or converted in escudos, so large depositors and not only pensioners and the young will be hit 25%-20% and the amount of devaluation that is a careful econometric and statistical thing, they will be hit by the devaluation and taxes will be collected in euro, so that ultimately the Greek state to belong in euro and the Greek population to belong in escudos or whatever, so that to be able to service our dollar or euro denominated debt. Because the main point is default in foreign denominated currencies throws you out from international markets, for at least ten years; and then, you see real sweat and blood, as we have seen in Argentina. Perhaps Argentina was lucky enough to sell its debt to Venezuela. But I don't think that Greece or any other Club Med country has this opportunity to subcontract its entire economy to Venezuela or any country like that. And I leave the California description to Charles.

Charles Goodhard:
If you are interested, there is a nice little piece in the *Economist* this week, about the relationship between the Club Med countries and the states in the US. And when the states in the US run out of money, they are just using IOUs. Admittedly, they probably wouldn't have to issue in the states as much as Greece would, but then the US states are enormously much less indebted than Greece and the Club Med countries are. Now, you are absolutely right that dealing with corruption in the root that I have been talking about, even with the safeguards that I have been mentioning, is a potentially highly illiberal mechanism. But I think that any mechanism for dealing with corruption and tax evasion is going to be pretty highly illiberal. There is talk, I don't know how far is true, in the UK press of helicopters going round and checking on the cars and swimming pools and all the rest of it, so that you are going to be taxed by a sort of Big Brother, looking to see what you actually spend. It is a tradeoff. If you think that you are prepared, I believe you stand to accept a very considerable continuant degree of corruption and tax evasion, because you don't want to get on the illiberal route. And as this is a matter of preferences, I can't possibly do anything but say that that is your subjective judgment and I appreciate it. I think that there is actually a serious question for Greece, which is dealing with corruption and tax evasion, inevitably, one way or another, drives you towards a more illiberal system. How far do you actually want to go? How much do you actually seriously worry about corruption and tax evasion? If you don't, on the grounds that it would mean that your society will become less liberal, that is your choice.

Anthony Papadimitriou:

Just a very short point. I am not, as you implied, in favor of corruption. I am in favor of cutting down corruption as far as possible, but not at the price of instituting a police state. There are other ways, like democracies have the means of ways of fighting terrorism, as well as fighting corruption, which are within democracy. Thank you.

Third Session

Chair

Gregory Prastakos, Athens University of Economics and Business

Speakers

Nikos Vrettos, Boston Consulting Group

Christos N. Pitelis, University of Cambridge and Athens University

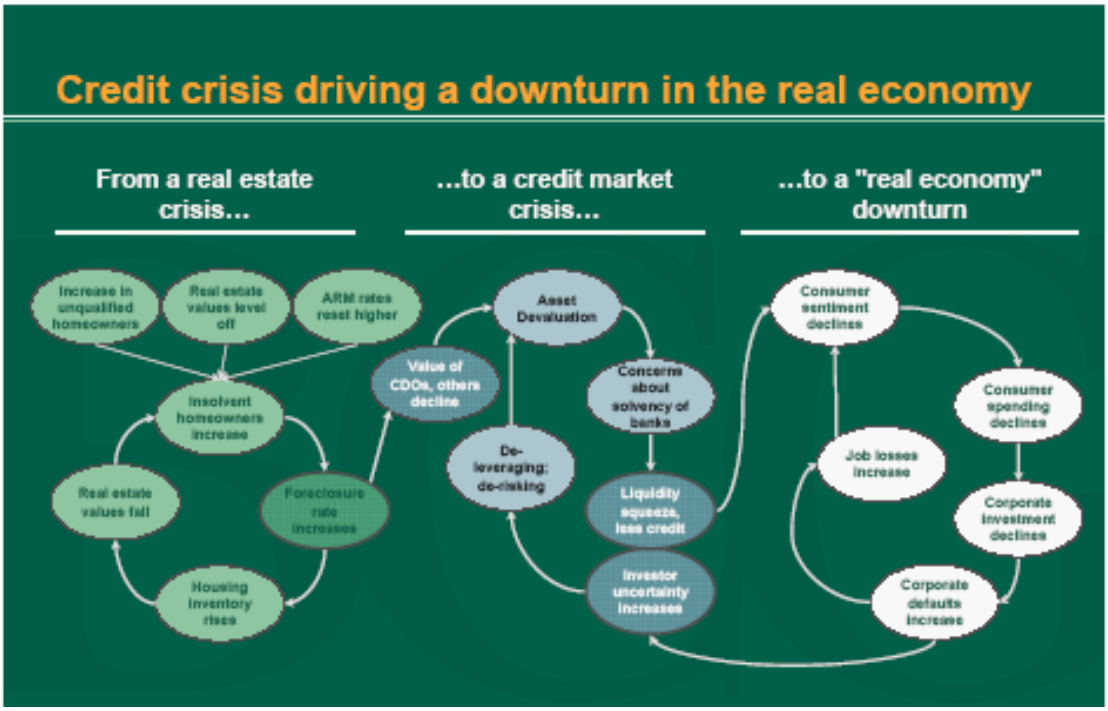
Situation and prospects for non-financial companies

Nikos Vrettos

The Boston Consulting Group

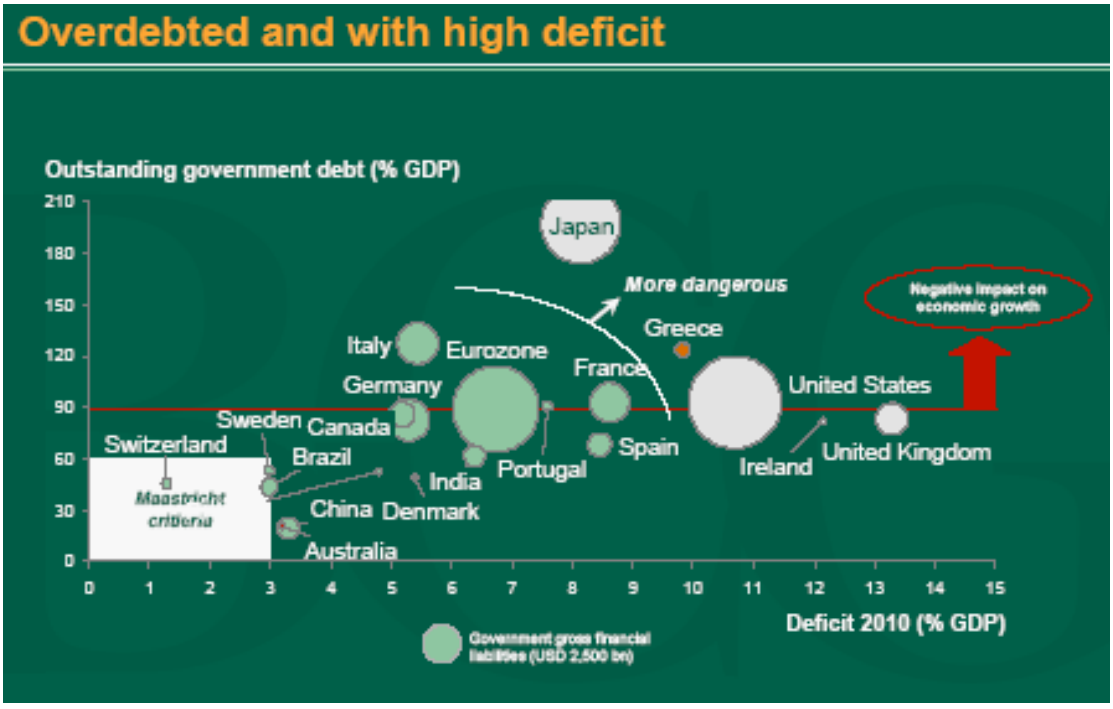
Good afternoon. Before I start, I would like to thank the *Onassis Foundation Scholars' Association* for having me here, presenting to you some ideas about mostly the macroeconomic world, because at the end of the day, it is where the real value and the real growth of the economy is coming. I have organized my presentation in two parts. The first one is about what we have termed at BCG "the Great Recession", namely, why we came into this recession and what it means for companies. In the second past I will try to give you examples from the Great Depression that took place in the '30s, and what we can learn from that period of time from the companies that performed well and flourished afterwards.

Let me start a bit to explain to you about the crisis. It was widespread, as bad loans in the US actually ended up in putting people unemployed in the Danzig shipyards in Poland; and this happened actually pretty swiftly, in the period of six to twelve months; and went all over the world, in all economies, with notably very-very few exceptions. The question is why this happened and maybe we can find three reasons.

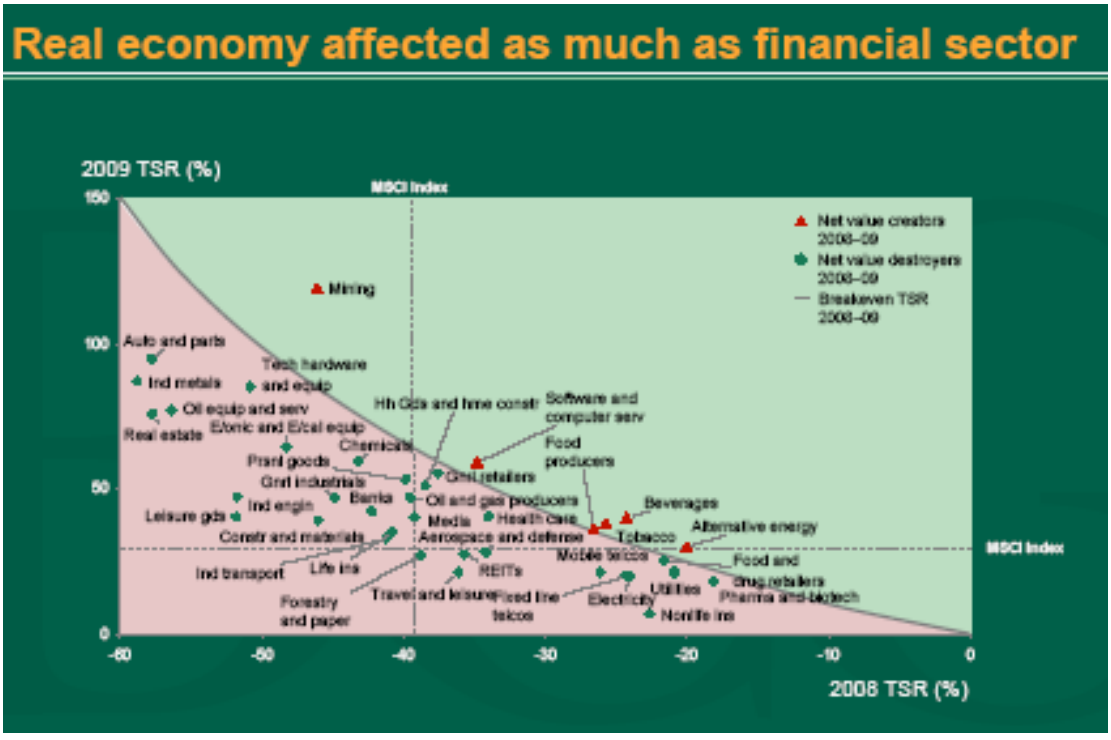


One was poor assessment of the credit worthiness of people getting loans. It was also poor assessment of the borrowers, who thought they had everything under control; and the third aspect was the fact that the risk was not well calculated and it spread like a virus from bank to bank.

And then, one day we had the financial crisis, which impacted the real economy, and this is the worst that can happen in reality. Financial crises, usually last two to three times longer than normal recessions. If you take the recessions of the oil shock in 1973, 1974, 1979, or even the dot.com thing. So this is where we are today and the question that we pose is: what has the governments around the world have done? In reality, they diverted back to an old strategy, which is the strategy "What do I do? I just put money into the economy from the state government point of view." If you look at this chart, you see at the bottom left the Maastricht criteria. This is what in the European Union many economists may think it is a healthy deficit and a health debt level. You see that the only counted today in this box is Switzerland, which does not belong to any union whatsoever. If you had plotted this chart in 2007, 2006, 2005, all the bubbles would have been smaller and to the bottom left side. What you have today is an expansion to the upper right. And you also see there the small grays signs representing Ireland, Portugal, Spain and France. I don't want to come back to the Greek crisis, but this is why people think of a domino effect hitting Spain, Portugal and the other countries.

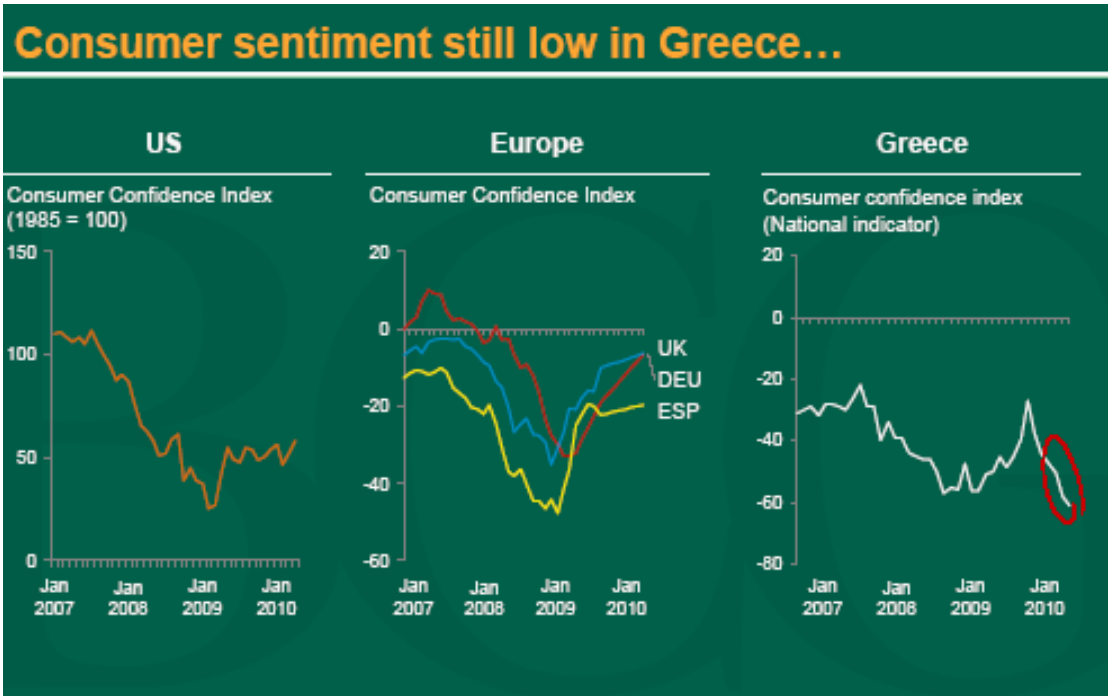


The question to me and to all of us is there is a limited thing at this point of time that government can do actually to spur economy, like the new deal had done in 1933, through Roosevelt and based on the model of Keynes. At this point of time, the question is what real companies do to come out of this situation they are in. The real economy, as said before, was affected severely. You can see here the TSR, which is the total shareholder return, 2009 on the Y axis and 2008 on the X axis. Companies who are on the left side of the graph, below the line, actually have not managed to recover in great net value. Companies who are on the upper right, on the whitish part of the slide, are companies that actually created value in these two years. You can see that in the middle of the gray zone, these are the banks, so this is not a phenomenon that only affected the banking sector or the "Citibanks" of this world. It is a phenomenon that affected all the industries. And even, as I mentioned before, the Danzig shipyard employee. So we are still not out of that. And this is a plot of the Athens Stock Exchange, to come back to Greece. You can see the fall of the prices, which actually in reality somehow the time lag or not, they reflect also the expectations that investor have on our companies here in Greece. You speak of a drop of about 50% to 60%.



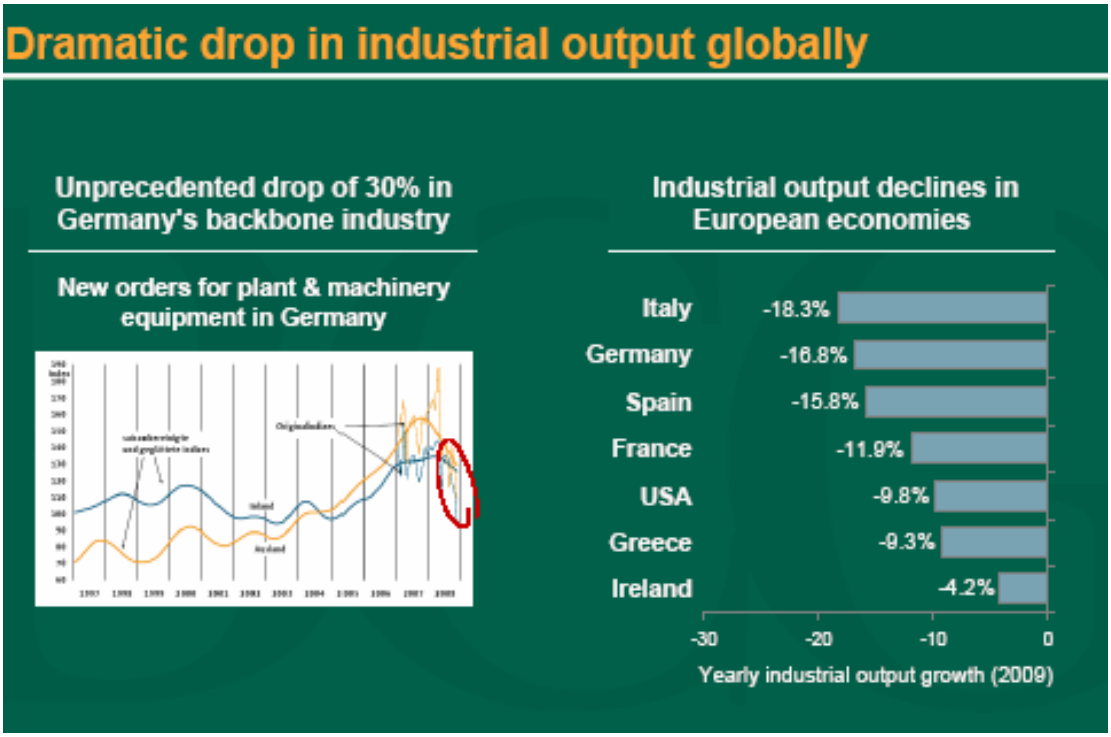
What do consumers think now? Why is the consumer very important? Let us consider the consumer spending figures in the US. They account for about 90% of the

US GDP. Now, this is a very high number, but also it affects the global GDP, because it affect even toy industry in China, i.e., the toys that are created or built in China. If there is no money to buy them in the US, China will suffer as well. This is actually the second order effect of the consumerism in the US, which actually affects the growth of the economy or the slowdown that is happening. You can see here on the left side that the index of confidence is still down, although it has stabilized a bit in 2009, beginning of 2010. The same applies for Europe. And in our country, Greece, because of the situation and the sovereign debt crisis, it is still going down in dramatic fashion. What does that mean in reality? If you look at the economy of the last 10-15 years, it was propelled forward, specifically in Greece, through spending. We had one of the highest parts of spending in the economy among OECD countries. And thisis what you see here is what is happening from the way that these consumers react to the crisis in Greece, but also elsewhere. You have reduced consumption, you have a trading down, increasing private label shares, you have bargain hunting and you have shift to discount channels.

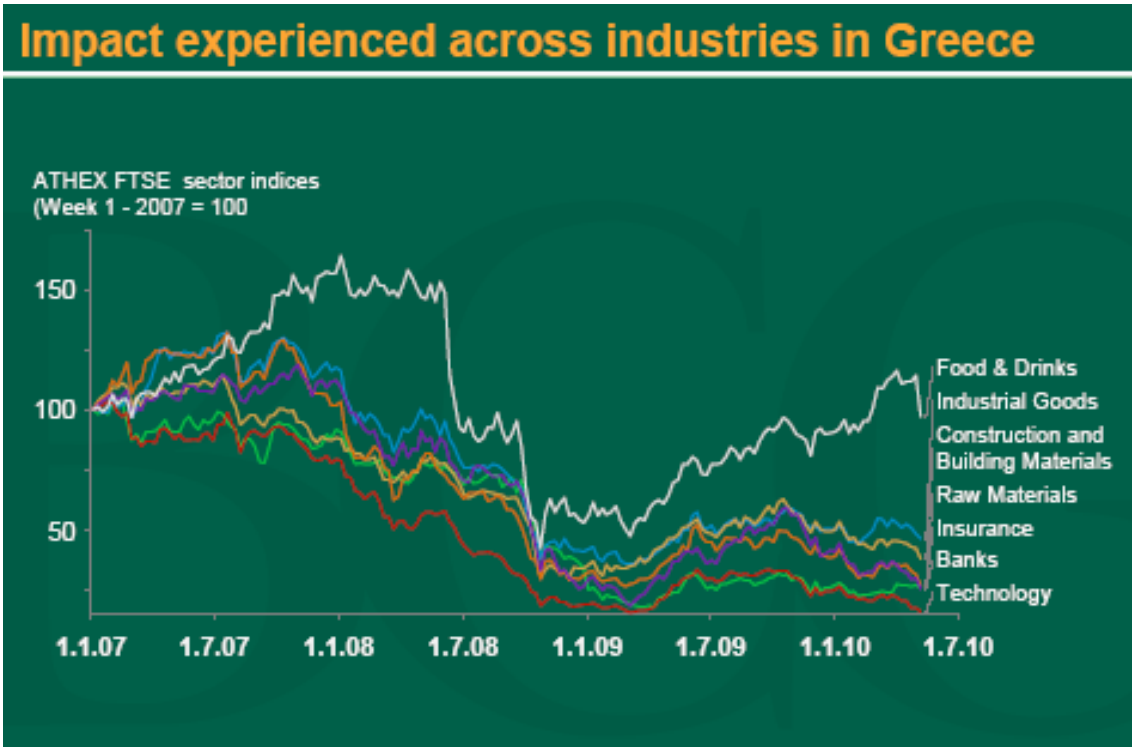


This is changing the way that today the consumer industry or the retail industry is actually performing and the trend at this point of time is at the stabilization or more to the down. Apart from retailing, you will see here that even in Germany, which is the most industrialized economy in Europe and of the world in general, you have also

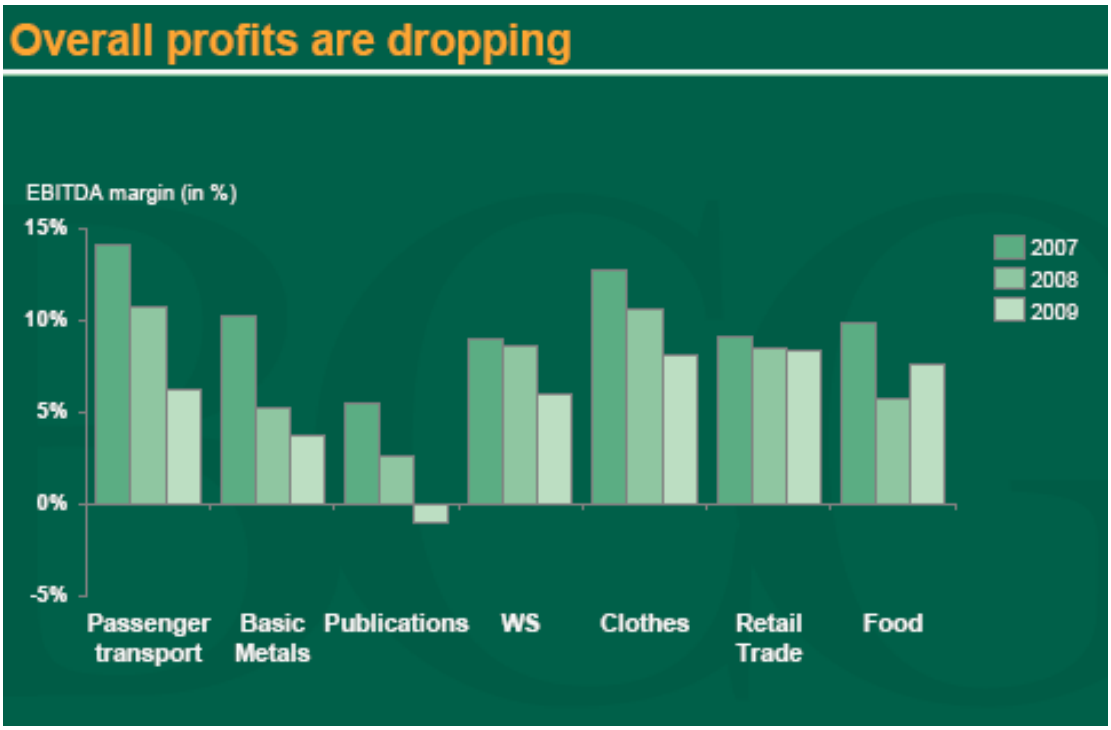
a drop in the output, a substantial drop in the output; and this is visible for all countries, specifically Italy, Germany and Spain, who are also industrialized societies and they are still producing a lot.

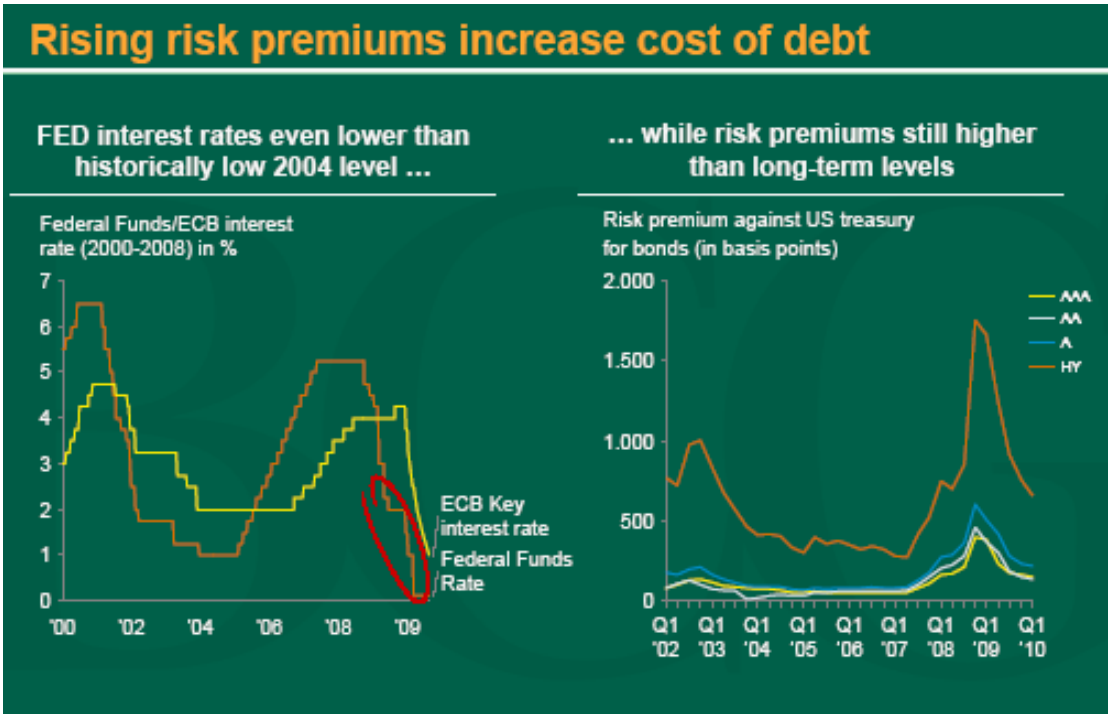


In Greece, the drop was smaller, because the nature of our economy is not an industrialized one. And of course, when you have these effects the profits go down across all sectors and you will see that here we have plotted three years in a row, 2007, 2008, 2009, across a variety of industries, like passenger transport, like publications' wholesalers, who actually are caught in the middle and are squeezed. You know, clothes, retail trade, food. So there is, all in all, a downtrend in the economy. What is also important is that there is a high need of deleveraging. There was a high debt built up, either private or public debt, unsustainable; and this is the reason why the crisis happened. So, one of the things that either consumers, or companies, or entities are doing is try to deleverage and bring the debt down. Of course, the rates on the left, I mean ECB or the Fed, are pretty small, but still the yields and the risk premiums paid are not so high as they were in the height of the crisis, 2007-2008, but they are still higher than they were in the years past. What does that mean for the companies? It means a liquidity squeeze; and it is the worst that can happen actually, you don't want to have that. You have the reduced access to the funds, you have rise in the costs, you have drop in demand, which decreases your re-



venue, and you have payment delays. You can see that across a variety of industries, which actually squeezes the cash you have and does not allow you either to repay your debt or invest to growth. Summing it up, it means that you have increased competitive intensity and this is going to grow in the next five years. You have a change in the nature that consumption is done; you have more conservative consumers. You have more difficulty in the access of capital, profitability under pressure, and what is scary, but it was done also in the past, is you have governments becoming more activists. But there is a limit to what they can do. How does this translate? It is reindustrialization, trying actually to put investments back into the economy, protectionism, which was a very widespread phenomenon in the global depression in the '30s. Re-ownership of companies; buying up companies that were sold in past decades, and of course increased regulation. It is kind of an amok defense mechanism that a state, or a government, or a country is trying to do. Does this help the companies? Well, it is tough. And to say how tough, I would like to go back to the Great Depression, because that was the worst that had happened, at least that we know of, in the last 150-200 years. There were many recessions in the last 60-70 years. In the ’80s, through the second oil shock in ’79, ’73-’74; there was a shaking in ’97 and ’98, through the Asian crises, there was the dot.com, and there is also the today’s one.

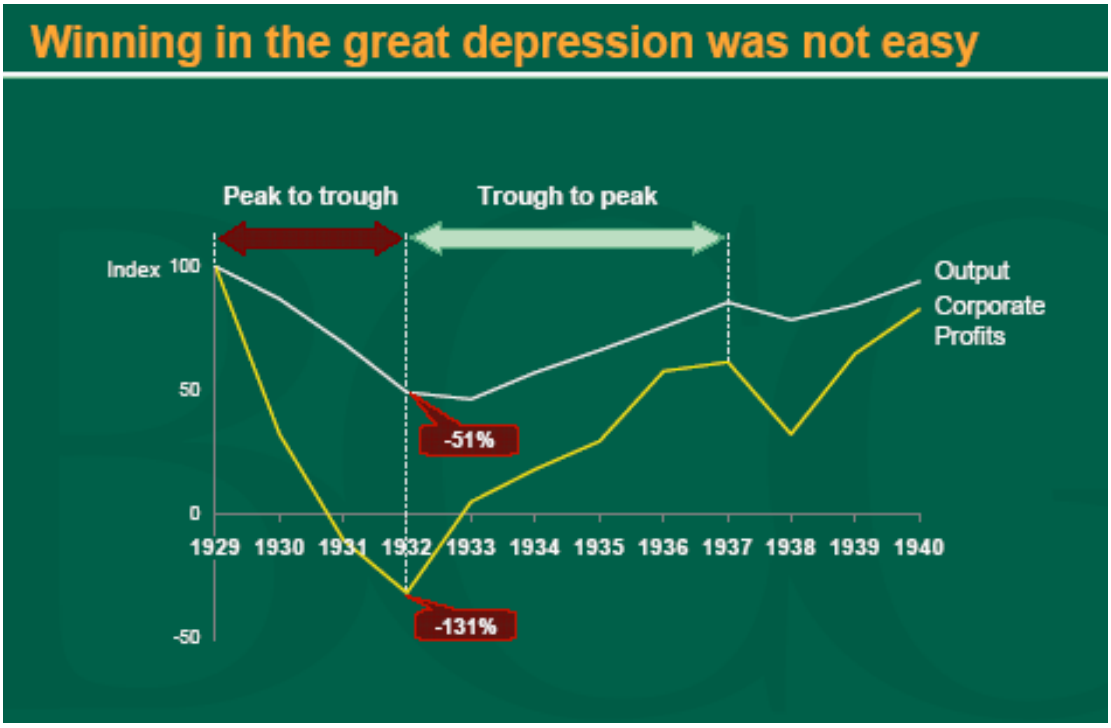




But the Great Depression was beyond everything that we understand. To give you a measure, there were more than 9,000 banks that failed in the US at that time. It was 20% of the US total. It accounted about 10% of total US household savings. The unemployment rose to around 25% in ’33 and stayed there until 1937-38 and started going down when the Second World War started. And the government expenditures,

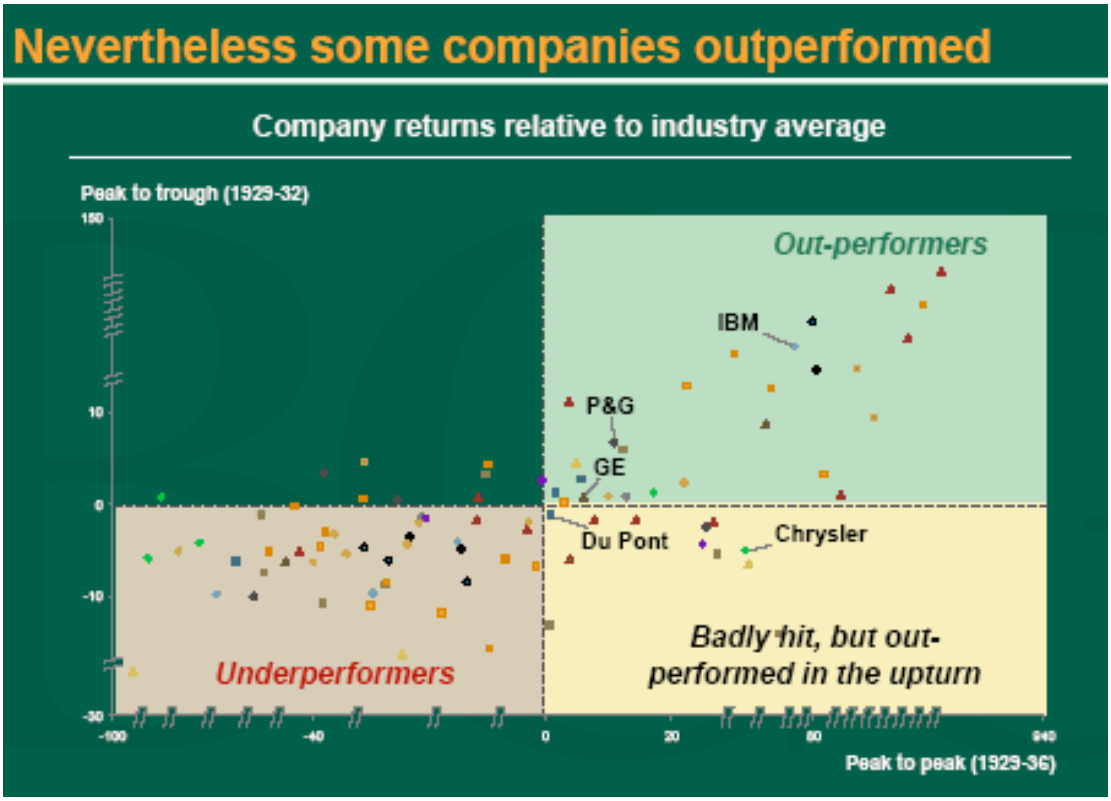
the new deal of Roosevelt, actually increased the expenditure from around 6%-7% of the GDP to 16%-17%. It was a huge amount of money going into the economy. He was printing money, he could do that, and he increased the debt in reality.

Now, the question is how does this compare? Well, Truman made a joke and he said in 1940s, "Recession is when your neighbor is losing his home, and depression is when you lose yours." So, having that in mind, let's move to see what happened in that time. Because if you can survive, excel and succeed in those times, in our times it would be relatively easier, because you have succeeded in a very-very big shakeup. If you look at this chart, it will show you that from '29 when it started, till '40, when the Second World War started, you have two periods. You have the period which is the peak to trough, till '32-'33; this is also from the point onwards, when the new deal started with Roosevelt. And then you have the trough to peak, when it started going up. You had at the bottom of the time, in '32, 50% reduction in the output and 130% of the profits. This was a paralyzed economy.

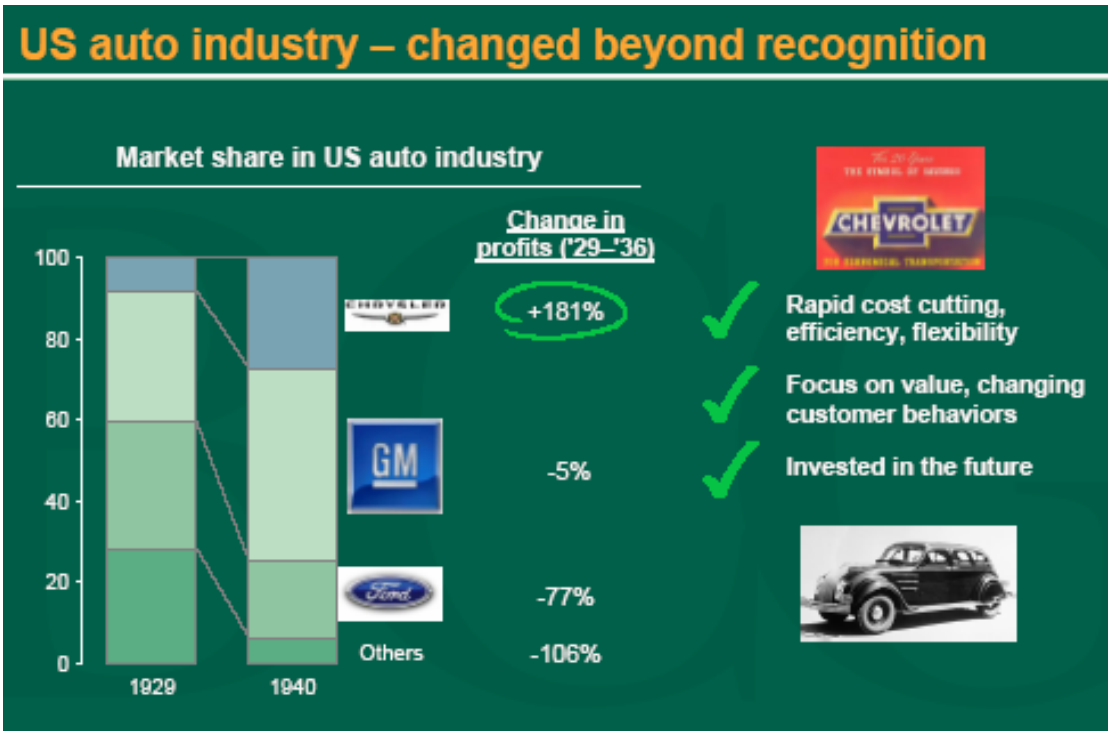


Can people or companies survive? Yes, they can, to use the Obama thing. What we have plotted here – you remember the two periods: peak to trough and trough to peak – companies that are in the upper right are companies that excelled and created value during both periods. The period of going down, which were the first three or four years, and then sustainable growth in the next ones till 1940. And these companies,

we have picked some to tell you what they have done, because probably they have done something well. We have picked IBM, P&G, General Electric, DuPont de Nemours and Chrysler. You see also companies in the bottom right part of the chart, which were badly hit on the peak to trough, on the first three or four years, but at the end they managed to recover. And of course, you see companies who are at the bottom left, that are the laggard, you don't want to be there. They are the companies that never recovered. They were for 14 years in a bad shape.



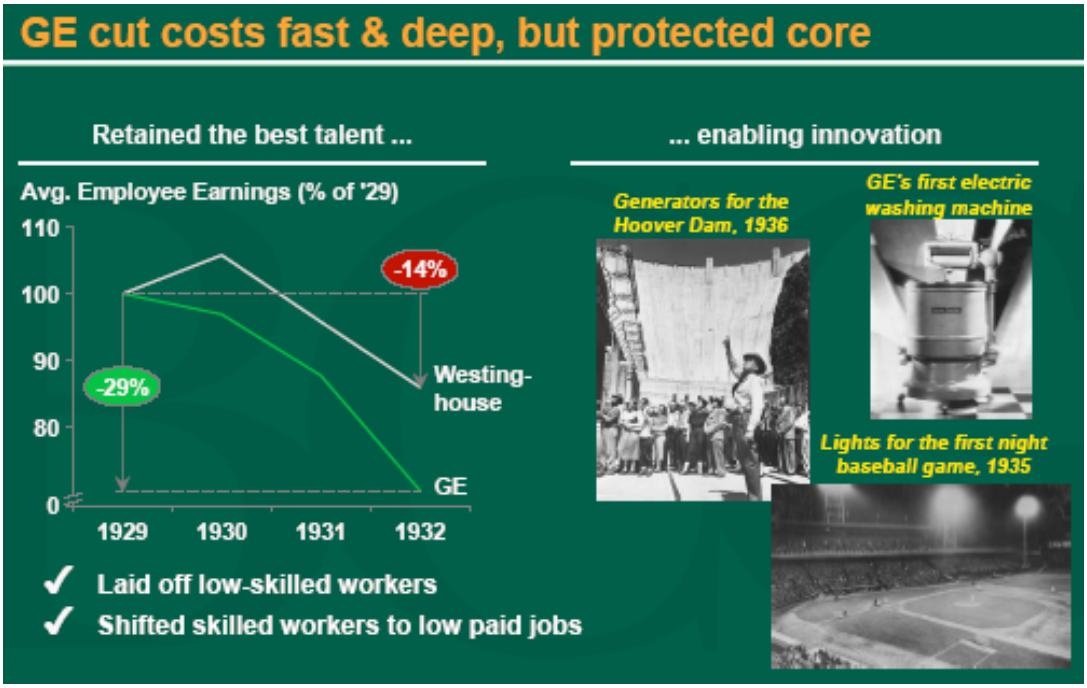
So what do all these four-five examples tell us? Let me start with the auto industry. Everybody speaks about the Big 3 in the US. Well, they were not big 3. In reality, if you look at 1929, Chrysler was very small, you see the left bar. It was General Motors dominating, it was Ford very big, and there were many others. What you see what happened after 1940, in 11 years, you see Chrysler entering the big game. And from that time onwards, there were the term "The Big 3." Chrysler, GM and Ford. So what did General Motors – because they also performed better, as you can see – Chrysler and Ford do or didn't do? Well, GM had in its helm Mister Sloan. Everybody who studies in MIT knows the Sloan School. He was the Chief Executive Officer of General Motors. And he said something very simple. He said: "We simply learned



how to react quickly." This was perhaps the greatest payoff. Now what did GM do? GM closed immediately plans; it laid off workers of course, it reduced production in the middle and high end cars, it focused on the Chevrolet brand, which was the low end brand and it reduced inventories and slashed the prices of its high end brands by 70%. Because it had limited backward integration, so it was the flexibility to move and do all these things and actually the passed on some of this cost to suppliers who were together with them in the group. The key, though, was that it realigned the product offering. It shifted the thing to Chevrolet, because they understood consuming was going to be down, so they shifted all their main production, sales force, into the Chevrolet thing; and they managed to come up, as you see, with more or less about 50%-60% market share. But the key was Chrysler. Chrysler was created in about 1925 by Chrysler and the merge with Dodge in '27-'28. But what they had done is what we call they executed the basic measures. They closed plants, they laid off workers and the usual stuff. They reduced G&A cost about 30% and there is an anecdote about Walter Chrysler, who actually asked his managers to cut down costs and they came up in one week with 1,000 reasons why this cannot be done. So what he did then is he said to his accountant, "Bring me a book, where all the employees are written. Name, employee, social status, salary, etc." So he collected all his management, he had this big book of that time, and then he took the book, he opened the last part and said: "I

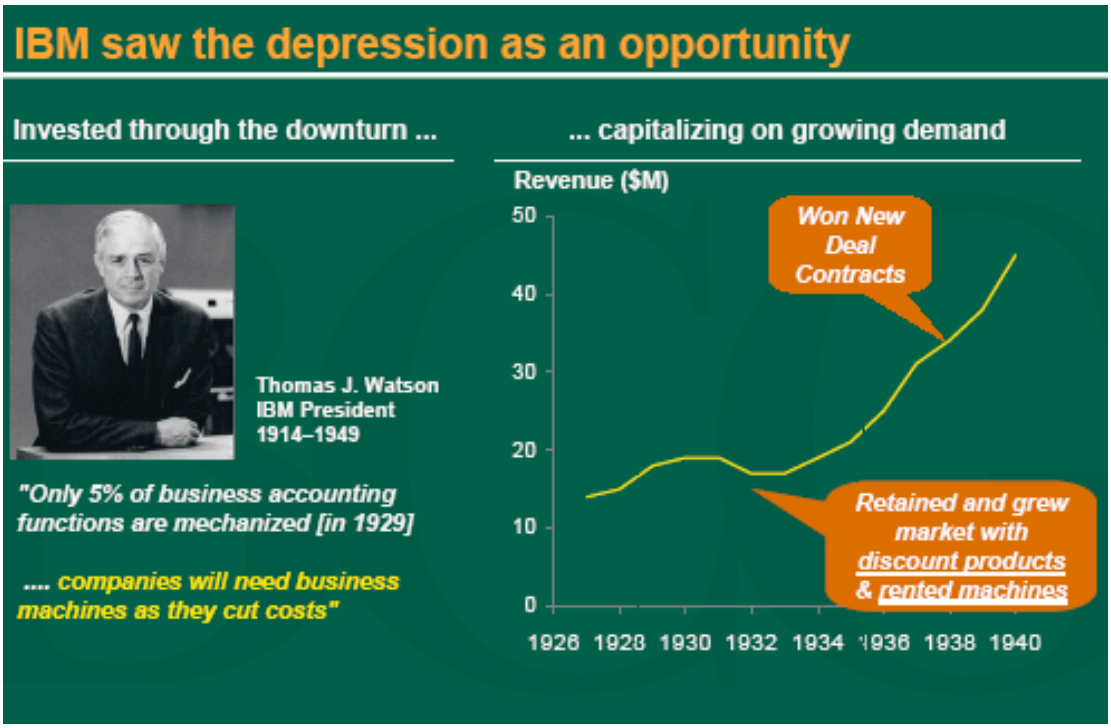
am going to fire one third of this book, indiscriminately." And then the people started saying, “Ok, then we try to go down,” and they went through analysis and they found actually people who thought they should be laid off in a more sophisticated way. The way of pushing things was what actually made things happen. The differentiation of Chrysler, though, was similar to GM with Chevrolet, the Plymouth. The Plymouth was a low end car and what they did is they managed to increase the efficiency of the plants. They were producing – and this is amazing – 50% more cars in the same amount that GM and Ford were producing. So they made Plymouth cheap. And people, not having so much money to spend, they started buying Plymouths. And this is what made them enter the Big 3. They also understood, and this comes to the new deal thing, that Roosevelt at that time was having the national highway expansion program, building roads. And they understood also people needed to travel longer distances with better powered machines. So they started doing research and they came up with the new engines and also with this airflow design that you see that the car industry is doing. This was a Chrysler invention. They were trying to make more cost efficient cars and this is what they did. Ford, on the other side, although was the leader, at the end of the day they were very slow at cutting down costs, very lax in their accounting, for whatever reason, and actually they managed to come up relatively well, but with scars. They lost their status. Chrysler took them over.

You go to GE. GE did also deep cost cutting. And they did it faster and better than Westinghouse, which was their other competitor. But GE tried to keep the best

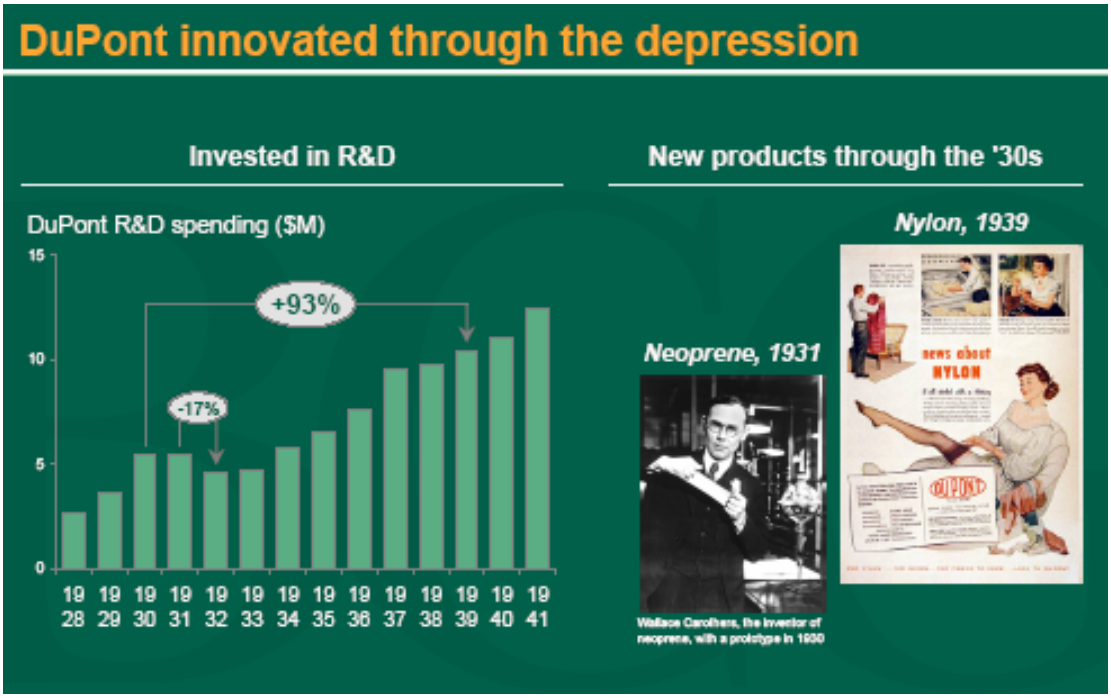


talent they had. So they were thinking they would have to build their capabilities, so they were trying to get the best. With that, what they did is they managed at the end of the day to keep the best. They redirected them to lower end jobs, but the people were happy to have the jobs. This was also what KLM did, actually, in 2009, not so very far away. They had the big drop of revenues and they asked about 2,000 of their pilots to volunteer for jobs as baggage handlers, hospitality agents and machine operators. This was the idea "I keep talent, I redirect it, and when the economy goes up, I have them there." This was the GE thing, plus the fact that they also realized that with the new deal program, they built the Hoover dam, as you know, they started putting money to R&D to make new appliances. Why? Because when the whole country was under electricity through the new deal, they thought people would need new appliances, toasters, etc. So they started building these things to sell them as well. Plus, they invented the credit from the industry side. So they created the GE Credit Corporation in 1932, because they realized that maybe consumers would need some money to buy their products.

Look at IBM. Similar stuff. But at the end, something differentiates them. They never cut costs. They never laid-off workers. What they did was they reduced wages to have a better cost base, but they never laid-off workers. And what they did is they were the first company in the world that actually introduced life insurance survivor benefits, paid holidays; everything that today you view as normal. This is IBM and Thomas Watson in the beginning of the '30s. Again, the philosophy was "I keep talent and I believe economy is going to go up." And this is a statement he made, that only 5% of business' accounting functions are mechanized. So he realized, with all the cost cutting, all the problems that the economy is going to have, companies are going to be in disarray, they are going to need automated machines. So, at that time he also built the famous IBM R&D Center, close to the plant, and started creating new machines. It was, I think, the first Alpha-Beta accounting machine that he was selling to clients. He also used the GE element, by inventing the leasing; because they could not buy in terms of cash, so he created a division where he was leasing the machines, so that the customers could have the machines. It was number 4 at the end of the '20s. At that time, number 1 was Remington Rand, which actually is a name many years gone from the company vocabulary. And you will see the revenues of IBM on the right chart, which actually exploded. But it is not only about cutting costs and leasing and giving credit.

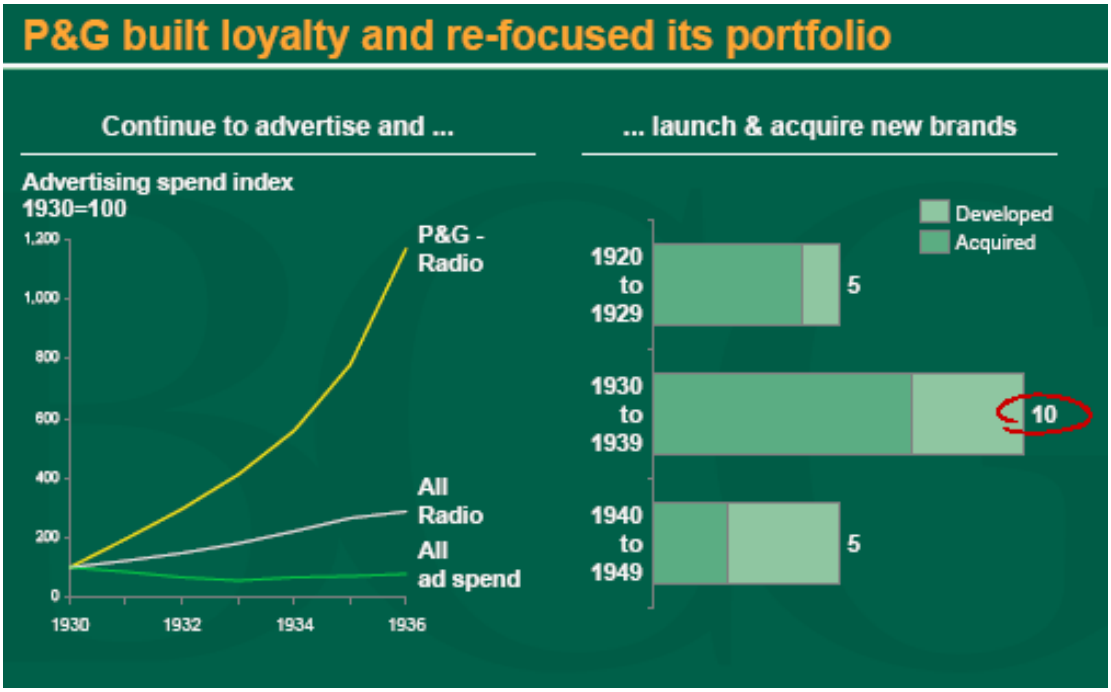


DuPont De Nemours. They thought it is the best time to invest. And what they did is, you can see on the left side of the bars, with the exception of one year, they have increased continuously their R&D budget. Actually, it went up 93%. Because they though "I am going to be ahead of the curve with innovation." The result of that was neoprene, which was introduced in 1931, but more importantly nylon, which was introduced in 1939-1940s. I don't know what you know about the nylon. There are

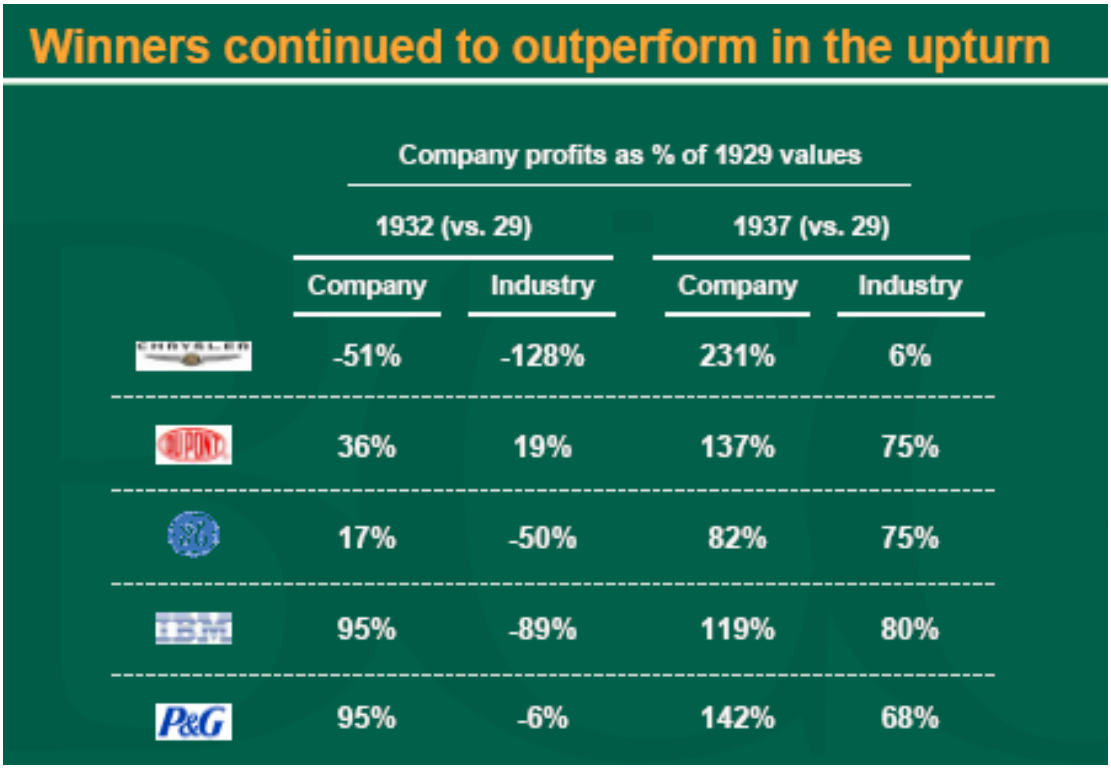


many rumors and discussions. Some people state it stands from an acronym. NYLON, which is an acronym standing for *Now You Lose Old Nippon*. Nippon is the name of Japan. Nylon was important because the military was using it for parachutes and tires and a variety of things. And they were using at that time, specifically for parachutes, Japanese silk and Chinese hem, cannabis, which could not be imported in the US at that time. So they were rushing to produce nylon – and the military was investing also helping them – actually to get it into the market. So this is actually what nylon stands for.

P&G is a another familiar name and big company. They were the masters of advertisement. What they realized is in recession everything goes down, advertising time is cheap and getting cheaper. So they said, "I am going to invest in advertisement," and what they did is, you can see on the left side, P&G, the spending that they had was humongous in advertisement. Specifically, at that time P&G had soap. The term "soap-opera" that you know comes from that time; because they were advertising on the radio. The radio at that time had this series for all the families etc, so they were actually intersecting the radio series with advertisements for soap; and the term "soap-opera" was invented at that time, through P&G putting all its money into advertisement. What they also did is, on the right side, they were extremely active in the M&A game. You can see on the left side the companies they were buying through the recession. Again, their idea was "It is cheap. There will never be a better



time for me to buy." So, in 1930-1939, they actually had ten companies and ten brands acquired and this was all over the world. They even acquired in Japan, in France, in the UK; so it was not only US based. Well, these winners, as you can see from this chart, and we have the comparison of the company that I showed you before with the industry average of the specific sector, they continue to outperform their peers and their industry in the years to come. People will say, "Well, it is Great Depression. This is an American economy and an American example."



I would like to bring you one more example, which is from Japan. It is a company called Siletsu. I don't know if you have heard it. It is one of the biggest producers of PVC. When I was in Japan, the stock market index was 39,000 in 1990-1991. Today, it is about 10,000, so they had a big drop. And in Japan, in the last 10-15 years, people call the '90s the "lost decade." It was an economy hovering around 1%, -1%, flat. And with a huge deleveraging going on. So you had a company like Sinetsu run by a CEO named Kanagawa, who before the bubble burst, before, he said, "Well, I need to readjust my business model." Everybody was saying everything is fine and he thought, "No. I am going to change my business model." And he realized things coming and what he said is "I am going to focus on one product, which is PVC." Mitsubishi Chemicals at that time, had five different products in the area of PVC or

PVC-related, and Sinetsu focused on that. And also, they started cutting costs, which is very difficult, because you start cutting cost and focusing in a period where everybody is expanding. So everyone thought he was crazy. What happened is recession came, a longer period, and Sinetsu came up with being the number 1 and leaving all others behind, around '94-'95. This thing continued into 2000, and then the dot.com bubble burst again, also in Japan. So he, the same guy, realized again that nobody is investing now, because tech goes now, but he saw that they need 300 wafers and conductors in the industry, the 300 millimeter wafers. So he put about close to a billion of investments, in a period when nobody is investing, to create the 300 millimeter wafer. That made him, in 2004, the number one player in that specific section again. What do all these things tell us? And we can continue with examples, because there are ample around the world. But at the end of the day, there are three main building blocks that all these companies or CEOs have done.

First defense, go in the offense and at the end of the day you need a managerial mindset. So, what was the summary of what they have done? They protected the basic financials and business fundamentals. Their cash positions, renegotiations with the suppliers, inventory management, reduction of debt. They drove down the costs, and more importantly, they maintained flexibility; because this allowed them to maneuver. Of course, they protected revenues, by doing strategic pricing, which means sometimes I can reduce the price, but I will gain market share;



they focused on innovation and R&D, they used advertising marketing power, and also they continued to buy up companies. But behind this whole list of activities, you cannot do that if you don't have the CEOs on the helm. We have a new paradigm today of what a CEO should be doing. And you can see here we have a long list of things. It goes from regaining public trust, thinking about the future of the business, rethinking about three steps ahead about what others are doing, working through the flows, helping your management making the right decisions, and also reassessing the way you try to lead your company, also in terms of compensations and the likes. Behind the names, the companies that I mentioned before, there was Watson for IBM, Sloan for GM, Chrysler for Chrysler, Carothers for DuPont, and so on. People, who today are very famous and you can read about them in most management books.



I would like to close the presentation, with something from China and Japan. Many people are speaking about crises, but the example I showed to you and these companies, actually they looked at the opportunity. And it is funny that the Chinese and Japanese words for crises have two elements: Danger and opportunity. And I would like to focus all of us on the opportunity and not so much on the danger that most people are seeing lately. Thank you very much.

Competitiveness, catching-up and the role of foreign direct investment and clusters •

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1. Introduction

In this paper, we explore the role of foreign direct investment (FDI) and clusters of Small and Medium-sized Enterprises (SMEs) on the competitiveness of emerging economies and economic integration.

We structure the paper as follows. Following this Introduction (Section 1), in Section 2, we assess briefly and critically extant theories of FDI and the MNE. In Section 3, we discuss theoretical perspectives on "clusters" of SMEs. In Section 4, we critically assess competitiveness and catching-up theory and policy and the role of FDI and clusters in this context. Section 5 sets off from limitations of extant scholarship identified in the previous section to develop a novel framework for competitiveness and catching-up and discuss the role of FDI, clusters and government policy in its context. Section 5V discusses ways through which emerging economies can effect economic integration through enhanced competitiveness and accelerated catching-up, by leveraging strategies informed from recent developments on scholarship in International Business (IB) strategy. Section 6 summarizes and concludes.

2. Theory of foreign direct investment (FDI) and the multinational enterprise (MNE)

2I.1 Extant theory of FDI and the MNE

The theory of FDI and the MNE dates back to Stephen Hymer's PhD dissertation, completed in 1960, and published in 1976. Hymer is arguably the father-figure of the theory of the MNE because he is the first scholar who posed the question why foreign direct investment (FDI), vis-à-vis alternative modalities of what he called 'foreign operations', like licensing, tacit collusion, joint ventures, etc (Dunning and Pitelis,

• I am grateful to John Dunning, Marc de Rond, Miroslav Jovanovic, Joe Mahoney, Anita McGahan, Neil Kay, Bart Nooteboom, Giovanni Dosi, Paul Tracey, David Teece, David Wolfe and participants at the DRUID 2008 Conference for comments and discussion. Errors are mine.

2008)[1]. Accordingly, Hymer posed the questions 'why internalize', for the case of the MNE, much in line with Coase's (1937) similar question for the national firm[2]. Hymer attributed the benefits of FDI to the advantages of the control it conferred to firms. He proposed three reasons for the choice of FDI. The 'Removal of conflict-Rivalry' between firms in international markets, and the exploitation of the (monopolistic) Advantages of firms were the two major reasons. 'Diversification of risk' was the third, less important one for Hymer, because it did not involve control. Through FDI firms could both reduce the forces of **R**ivalry in international markets, and exploit their monopolistic **A**dvantages better than through the open market. That was possible for numerous 'market failure' (or intra-firm success)-related reasons, to include the avoidance of bilateral oligopoly, difficulties of finding licensees in foreign countries, honest or dishonest differences in the perceptions of the value of the advantage, etc. All these have predated more recent literatures, as documented in Casson (1990), Horaguchi and Toyne (1990), Pitelis (2002), and Dunning and Pitelis (2008).

While the Coasean question 'why internalize', was already present in 1960, Hymer only pursued explicitly Coase's arguments later, in a 1968 article. He also quoted Coase in Hymer 1970 and 1972[3]. Post-Hymer developments of the MNE zeroed on the 'why internalize the advantages' question. Various important contributions emphasized different reasons. Buckley and Casson (1976) focused on the public good character of 'intangible assets', which are susceptible to 'market failure' if they are not exploited internally, while Williamson (1981) stressed post-contract hold-ups, in the case of 'opportunistic' licensees and investments in specific assets.

Post-Hymer 'internalization' theorists did not address the issue of location. Dunning (1958) had done so, and indeed Hymer discussed locational factors under various guises, for example, exploitation of foreign assets, better demand conditions abroad etc., see Dunning and Pitelis (2008). Location is most crucial, indeed a sine-qua-non or the theory of the MNE (Dunning 1998). One reason is that, in effect, most questions on the MNE are also applicable for the case of non-MNEs. Penrose (1987)

[1] Earlier contributions to the literature included both Edith Penrose (1956) and John Dunning (1958), indeed Hymer (1976) cites both Dunning and Penrose in his PhD thesis. However, neither Penrose, nor Dunning had posed the question why FDI (intra-firm) versus inter-firm foreign operations.

[2] Indeed he even used the verb 'internalize' already in the PhD thesis "The firm is a practical devise which substitutes for the market. The firm internalizes or supersedes the market" (Hymer, 1976, p. 48)

[3] Hymer's analysis and, even, terminology in this article incorporates most major contributions of the post-Coase transaction costs literature, see Dunning and Pitelis (2008).

criticized both Hymer-type and Coase-type application to the theory of the MNE, for failing to distinguish between intra-country and inter-national expansion. For inter-country expansion the crucial issue of course, is the investment in different countries. This is a locational issue. In addition, it is an issue that involves location under different cross-border regulatory jurisdictions (Pitelis and Boddewyn, 2009). In this context, the whole debate on why MNEs can usefully be subdivided to three sub-questions. First, why internationalization. Second, why integration/internalization. Third, which location, which in this case means which country.

In Hymer (1976, 1970, 1972) why internationalization (why foreign operations in his words), is explained in terms of push and pull factors, such as external market opportunity, product life cycle considerations, and differential demand conditions (e.g. mature domestic markets), (see Pitelis (2002a). Such considerations, especially when viewed in line with other 'locational' considerations by Hymer (see Dunning and Pitelis 2008) also provide an indirect answer to the question 'which country'. Instead, the 'internalization school' did not focus on the questions 'why internationalization' and 'which country/location'. It is John Dunning's **OLI** that envelopes all three aspects. In the **OLI**, **O** stand for Ownership advantages specific to the firm (which need not be monopolistic, but could also be due to efficiency). **L** stands for Locational advantages, and **I** for Internalization advantages. The main idea is that given **O**, **L** will explain the choice of location, and **I** the choice of modality. In terms of our questions, **L** explains 'which country' (and up to a point 'why internationalization') and **I**, why internalization. **O** is a necessary (but not sufficient) condition for both 'internationalization' and 'internalization'.

OLI has served and is serving an important role in the literature in part because of its paradigmatic nature, and in part because of the agility and ability of its proponents to incorporate new ideas and developments, as well as to propose new ones (Dunning, 2000, 2005; Dunning and Lundan, 2006).[1] As Dunning (2001) points out, it is arguable that in its early manifestation in the **OLI**, has paid limited attention to the endogeneity of advantages, in particular the link between intra-firm knowledge generation, **O** advantages and their relation to **L**, and **I** advantages - and thus (up to a

[1] Dunning (2005), for example, proposes institution-seeking FDI, an idea in line with the knowledge-based perspective.

point) the **OLI** underplayed the firm as a strategic actor.[1] Moreover, and similar to the internalization theories, the quasi-exogeneity of **O**, **L** and **I** also implied that the framework could benefit from a more dynamic, strategic, entrepreneurial and knowledge-learning-based foundation.[2] We contend that Penrose's contribution to the theory of (the growth of) the firm can serve such a purpose. At the same time, however, a learning-based perspective goes beyond extant theory of the **OLI**, by introducing a cognitive and entrepreneurial agency dimension, missing from the **OLI** (Spender, 1994).

2.2 A knowledge-learning-based approach

A founder of the knowledge-learning-based theory of the firm is Edith Penrose (Penrose, 1959; Spender, 1994; Pitelis, 2000). Penrose was one of the earlier contributors to the MNE, her 1956 article in the *Economic Journal*, appeared prior to Hymer's PhD thesis. As discussed by others, e.g. Dunning (2003), Pitelis (2000, 2004, 2007), Kay (1999), Rugman and Verbeke (2002), Penrose dealt extensively with MNEs and MNE-country relationships in general (e.g., the 1956 article), and in particular in the context of the 'international oil industry' and Arab countries. In the context of this work, Penrose was one of the earlier contributors to issues of 'transfer pricing', 'dumping', 'infant-firm' arguments (in support to some protectionism).[3] All these are also of importance to the issue of economic integration, see next section. However, Penrose did not address the question 'why MNEs' vis-à-vis, let's say, licensing or exports, therefore, she did not deal with the 'nature of the MNE'. – Similarly, her 1959 classic book on *The Theory of the Growth of The Firm* (TGF thereafter) did not address the issue why (national) firms either.[4] (Moreover, Penrose did not explore in any detail the implications of her TGF contribution for the MNE).[5]

[1] In contrast to some critics (e.g., Teece, 2006), Hymer had examined the historical evolution of **O** advantages in the context of his "'law' of increasing firm size" (Hymer, 1972), yet failed to see advantages as a process of endogenous knowledge generation and (thus) firm growth. That task was performed by Penrose (1959) and up to a point by evolutionary models of the MNE, such as Kogut and Zander's (1993). Despite significant progress in dynamising and extending the **OLI** (e.g., Dunning, 2001), an application of Penrose's intra-firm knowledge generation dynamic to the **OLI** has not been attempted before.

[2] No detailed explanation of intra-firm advantages generation has been provided in extant Hymer, transaction costs and (thus) early **OLI**-based theories. The intra-firm focus is specific to Penrose (and subsequent resource-based-view (RBV) scholarship, see, for example, Pitelis, 2006, for a recent account).

[3] As discussed in Pitelis (2002a).

[4] Although she explicitly distinguished between the firm and the market and discussed the boundaries issue, she went on to focus on growth, not on the issue of the existence per-se.

[5] For a speculation as to why, see Kay (1999) and Pitelis (2000)

The fundamental insight in TGF was that intra-firm knowledge generation (through learning) generates excess resources. These motivate managers to expand, as 'excess resources' can be put to (profitable) use, at (near) zero marginal cost. This endogenous knowledge/growth dynamic is realized through managerial 'productive opportunity' – the perceived dynamic interaction between internal resources and external/market opportunity (Penrose, 1959, Chapter V).

Despite limitations[1], we claim here that Penrose's insight has implications on the **OLI**, our three related questions, and the need for a more endogenous, dynamic, and strategic theory of FDI and the MNE (Dunning, 2001). In addition, Penrose's knowledge/learning perspective adds cognitive and entrepreneurial elements, currently missing from the **OLI**, of interest to theory, managerial practice and public policy. We explain these below in the context of Dunning's triad.

O(wnership)

In TGF **O** advantages are not monopolistic, at least as far as their process of derivation goes. They are efficiency advantages by definition, as they are the result of an endogenous knowledge/innovation process. **O** advantages only become monopolistic when firms attempt to capture value by, for example, bases, raising barriers to entry, using restrictive practices, etc. All these are discussed in Penrose (1959, mainly Chapter VII). In addition in Penrose there are also explicit references to both efficiency and monopolistic advantages. For example, Penrose (1959) observes that

> *"A firm may attempt to entrench itself by destroying or preventing effective competition by means of predatory competitive practices or restrictive monopolistic devises that relieve it of the necessity of either meeting or anticipating serious competitive threats to its position. In such circumstances a firm may grow for a considerable period depending on the demand for its products, harassed neither by price competition nor by the fear that competitive developments will make its products or processes obsolete. Examples of growth over long periods which can be attributed exclusively to such protection are rare, although elements of such protection are to be found in the position of nearly every large firm."* (1959, pp. 113).

Monopolistic advantages are in line with Penrose's claim that while the process of expansion is definitionally efficient, the resulting state need not be - as/when MNEs

[1] Notably, the observation that the use of managerial time has positive costs (Marris, 1999) that TGF fails to deal with issues of intra-firm conflict (Pitelis, 2000) and that a number of important assertations by Penrose have yet to be tested (Pitelis, 2006).

try to capture value through monopolistic practices. This idea introduces the important distinction between process and state-type advantages, the latter being potentially monopolistic as originally suggested by Hymer.

L(ocation)

Penrose did not deal with **L** in TGF. In her preface to the third edition (Penrose 1995) she claimed that all the theory of the MNE requires it to suitably adapt her TGF ideas, and account for the existence of different nations. This would require accounting for inter-national differences in regulatory and tax systems, different laws and cultures, etc. (Penrose, 1959: xv). Penrose did not pursue this much further, leaving it to other scholars to do so. (We will return to this later, when discussing **I**.) Nevertheless, the Penrosean perspective has important implications on resource/asset/knowledge/ innovation seeking and augmenting locational advantages for FDI. As firms are bundles or resources creating knowledge, it is 'natural' for them to locate where existing resources/knowledge is such that it can add value to firms' existing resources, knowledge and technological bases and (thus) operations. This implication from Penrose's work is in line with Dunning's discussion of asset and institution seeking **L**ocational advantages (e.g., Dunning 2001, 2005), and more recent attempts to build a theory of the meta-national (e.g., Doz et al 2001), which consider MNEs as pursuers of global learning, knowledge acquisition and upgrading.

I(nternalization)

Penrose did not deal with **I** - advantages in the specific context of the MNE.[1] However, she dealt extensively with integration, which she considered as an earlier (and more accurate) term for 'internalization'.[2] Accordingly, her views on 'internalization' should be looked at in her analysis of integration. For example, one argument she offers for horizontal integration is the acquisition of valuable managerial resources (partly in response to the 'Penrose effect'- limits to growth due to limited intra-firm managerial resources) (Pitelis, 2007).

Concerning vertical integration, according to Penrose, one reason for it is the superior knowledge, and (thus) ability of firms to cater for their own needs, as they

[1] The nearest she comes in the book to discussing the MNE is the following: "Often the large firms organize their various types of business in separate divisions or subsidiaries" (p. 156)

[2] In private discussions. Note also that Richardson (1972) too, pursued this approach. In essence the two terms are synonymous.

have better knowledge of these (Pitelis and Wahl, 1998 and Pitelis, 2007, discuss these points in more detail).

Applying such ideas to the case of the MNEs, would suggest resource/knowledge-seeking superior firm capability-induced FDI.[1] The last mentioned is similar to Kogut and Zander's (1993) subsequent 'evolutionary' contribution to the MNE (see also Verbeke, 2003, for a critical account).[2]

By bringing central stage the role of learning, the knowledge/learning-based view of FDI and the MNE has important implications both for interaction effects between **O, L** and **I**. Moreover, by incorporating cognition and agency, it calls for a more entrepreneurial, forward-looking approach for FDI, the MNE (and more widely), one that (tries to account for) anticipated change and to act on its basis.

Starting with interaction effects, these have not been given much attention in early literature (Dunning, 2001). They are crucial. **O**, **L** and **I** are dynamically inter-related. For example, **L** advantages once realized serve as **O** advantages. Similarly, **I** advantages are **O** advantages too (*viz* Hymer's (1972) view that 'multinationality per se' is an advantage, the standard view that vertically integrated firms may possess higher market power, etc., see Pitelis and Sugden (2002) for more on such advantages). In turn, **I** advantages are related to **L** and **O** advantages in that the last two pose the question what and where to be internalized respectively. In addition, in the context of a learning perspective, **L** and **I** advantages are endogenously selected as **O** advantages in the very process of firm growth. Crucially moreover **O**, **L** and **I** can be/are shaped by firms' own decisions. Managers 'productive opportunity' is in part a result of their own efforts to shape the firms' internal and external environment.[3] In this context, 'productive opportunity' both helps endogenize and shape **O**, **L** and **I**.

[1] Also institution-seeking FDI, a more recent important addition to the **OLI** (Dunning, 2005).

[2] Being capabilities-based and very Penrosean in nature, this contribution has acquired prominence. Yet both the Penrosean view of vertical integration and Kogut and Zander's view of the MNE, suffer from a failure to appreciate that differential firm capabilities are tantamount to relative firm superiority on the market (i.e. relative market failure). This also raises the question why - in which context the Hymer/Buckley/Casson/Williamson transaction costs-based explanation is of significance. It is interesting to note that in her case study on the Hercules Powder Company (Penrose, 1960) she provides a reason for vertical non-integration of Hercules' customers and of Hercules, in terms of 'oligopolistic interaction' arguments, but also in terms of the superior advantages of specialization of Hercules'.

[3] "Firms not only alter the environmental conditions necessary for the success of their actions, even more important, they know that they can alter them and that the environment is not independent of their own activities" (Penrose, 1959, p. 42)

This helps provide a more endogenous, dynamic, entrepreneurial and forward looking strategic theory of FDI and the MNE.

Another aspect of the learning perspective, often missed in the literature, is that it helps explain whether, what, when, where and how to integrate/internalize. This is a crucial limitation of the transaction costs approach, especially Williamson's (e.g., 1981) version. Despite his advocacy of 'bounded rationality', in his story, firms are always able to answer 'make or buy' through a solution of a global optimization process that includes transaction (and production) costs. If anything, solving this problem can be more difficult than the standard neoclassical problem of (production) cost minimization-profit maximization. Penrose's endogenous (perceived and imperfect) intra-firm knowledge generation idea provides an answer to the question whether to 'make or buy' (but also what, when, where and how). These issues are beyond the scope of both transaction costs economies and early **OLI**, as they involve learning. They are of importance.

By relying on learning the emergent knowledge-learning-based **OLI** is more concurrent/synchronic and also forward looking yet procedurally (as opposed to globally, or even boundedly) rational than its earlier cousins. It implies that proactive growing firms must at any given point in time rely on their endogenously generated extant 'productive opportunity' to make imperfect **L** and **I** decisions not just on the basis of what reality is perceived to be now, but also on the basis of anticipated change. This may require making apparently 'sub-optimal' decisions now, which are expected to turn out to be superior in the medium or longer terms, if and when conditions have changed in the way managers have expected, hoped for and importantly, aimed for! Such decisions moreover often need to be made simultaneously. A firm contemplating expansion, may have the option of horizontal, vertical or conglomerate expansion, domestically or cross-border. Its decision is based on existing knowledge, resources and advantages and its implementation represents simultaneously a locational, internalization and ownership-related advantage (or dis-advantage as the case may be).

The Penrose inspired learning-based k **OLI** is by its very nature more concurrent and at the same time forward looking. By helping explain **O**, **L** and **I** endogenously, paying more attention to firms efforts to shape **O**, **L**, and **I**, and by recognizing the close links and interactions between the three the knowledge-based **OLI** also needs to

account for anticipated and aimed for change. It is therefore both more agency-based (thus entrepreneurial) and forward looking.

The learning-based **OLI** is also more in line with concepts such as 'born-global' firms and meta-nationals. Both are phenomena of limited empirical occurrence (see Verbeke and Yuan 2007) yet of high conceptual interest. Born-global firms need more than already established firms to simultaneously consider **O** and **L** (and perhaps also **I**), while meta-nationals can be seen as global Penrosean resource/knowledge seekers/optimizers.

In terms of the three questions posed earlier in this paper, the knowledge-learning-based approach explains 'why internationalization' in terms of firms 'productive opportunity', 'why internalization' in terms of 'superior relative intra-firm ability for resource-knowledge transfer as well as resource/knowledge acquisition', and 'which country' in terms of 'perceived relative [dis]advantages of countries as seen from the perspective of firms' productive opportunity', and for exploitation and acquisition of resource/knowledge (and institutional) advantages (see Dunning, 2005, for the latter).

Three following propositions follow. First, in considering FDI, MNEs attempt to simultaneously optimize the **O, L** and **I** advantages. Second, entrepreneurial managers may consciously take what they perceive to be suboptimal decisions today when/if they expect these decisions to prove superior under perceived changing future conditions. Third, once imperfect decisions are made, entrepreneurial managers will aim to shape the perceived 'productive opportunity' of their firms to make their decisions succeed.

All three propositions seem to be well in line with current practice of MNEs. For example, by recently undertaking FDI in the UK, through acquisition of the RMC Group, the Mexican MNE, Cemex, chooses a **location** that confers to it an **ownership** and an **internalization** advantage simultaneously.

As *The Economist* observes, "The acquisition of the RMC added new expertise in ready-mix which was important, and more large-scale construction projects were beginning to be undertaken in Mexico, and Cemex's international competitors began to muscle in on the company's domestic market." (*The Economist*, 2005, p. 88).

This quote also shows that Cemex's choice is not necessarily the optimal one in terms of a pure net present value calculus of today's conditions. Instead, it is based on expectations of change both with regard to impending changes in the sector in Mexico and emerging competition. Clearly, once Cemex has taken its decision it will also

have to make the best of it by trying to influence the very changes it expects will take place, in the direction of the decision it has already taken. All this is very consistent with, and follows naturally from, the learning perspective. In contrast, Cemex' approach is more difficult to explain in terms of transaction costs, power/efficiency, and resource-based reasoning alone, and therefore in terms of the constituent element of the **OLI**.[1] Clearly Cemex is only one example, yet possibly representative of the behaviour of other MNEs.

To summarize, in today's knowledge-based, semi-globalized economy, knowledge-learning-based **OLI**, is in a better position to:

1. help explain the derivations of **O**, **L** and **I** advantages endogenously
2. pay more attention to firms' efforts to shape/create the **O**, **L** and **I** advantages (and (through) their 'productive opportunity')
3. help explain whether, what, when and how to internalize (thus create) **I** (and **L**) advantages
4. emphasize the interaction between **O**, **L** and **I**
5. emphasize the forward looking nature of decisions on **O**, **L** and **I**
6. can explain apparently sub-optimal decisions, taken on the basis of entrepreneurial manager's assessment of anticipated change
7. assert/predict that entrepreneurial managers will try to influence change so as to suit their decisions; once they have taken them.

All these help develop a more endogenous dynamic, strategic, cognition-based and entrepreneurial, forward looking theory of FDI and the MNE.

2.3 Dynamic capabilities and cross-border market co-creation: towards an entrepreneurial theory of the MNE

Following on Coase's (1937, 1960, 1991) footsteps, the economic theory of the firm and the MNEs relied on a separation between the objective of firms (usually taken to be the pursuit of profit), the nature of the firm (for Coase, the employment contract between capital and labor), and the essence of the firm (or how do firms "run a business" to achieve competitive advantage) (Pitelis and Teece, 2009). The economic theory of the MNE has largely relied on the same conventions. In the previous sections we showed that the injection of DCs into the theory of the MNE helps

[1] Our support is consistent with Dunning's most recent writings on MNEs as agent of institutional change (see Dunning and Lundan, 2006).

explain the essence of the MNE—or how firms achieve cross-border strategic advantage (SA). In this section we claim that the distinction between objective, nature and essence is of limited relevance to organization, strategy and entrepreneurship scholarship, not least because it downplays the role of economic agency (in particular entrepreneurship and entrepreneurial management) that the DCs perspective brings centre stage.

In particular, a defining, even existential issue of the strategy field, is whether and how the pursuit of value capture motivates economic agents to set-up organizations and develop strategies that assist them in capturing value. We suggest that organizational value capture, value creation and CA are co-determined and co-evolving, in that the objective (value capture), informs the nature and the essence, which are in turn intrinsically interrelated (Pitelis, 2009). In this context, the concepts of co-specialization and DCs help explain the nature of the MNE and the creation of firm specific advantage.

As applied to the case of the case of the MNE, co-specialization (scope economies and sub-additivity being just one example) helps explain why it is often beneficial to bring together firm-level and country-level advantages in setting up of an organization cross-border, which is the nature of the MNE (Verbeke, 2009). As noted, for example, it is often the case that co-specialization dilemmas (and hence co-specialization opportunities) are found cross-border. This is especially true for co-specialized intangible assets, at least knowledge embodied in specialist human resources (Teece, 2009). In such cases co-specialization explains why the MNE is a desirable structure for organizing economic activity when (internalization) is deemed preferable in terms of its ability to better capture the value from such opportunities, (through designing requisite value appropriation architectures), cross-border integration (i.e. the internalization of activity inside the firm) will be chosen over market-based transactions. Thus the nature (designing and setting-up of organization) and the essence (employing strategy to capture value) are co-determined and are linked to asset co-specialization and the DCs required to orchestrate such assets.

Consider the example of mPortal, a young venture involved in wireless content provision. According to its CEO, JP Venkatesh, mPortal is a naturally born global firm “from day zero” and because he himself “knew no other way.” Besides the CEO’s own multi-national background, an important reason involved cross-border asset co-specialization. In a rather extreme such case, the suitable programmer for

prototypes (development partner) in terms of flexibility, creativity and complementarity was based in Holland. That led to a fruitful collaboration, without the two parties ever having to meet. The case of mPortal shows why cross-border asset co-specialization and complementarity help explain internationalization, but not necessarily integration.

In the case of OriGene Technologies, a US-based young venture mapping the human genome, cross-border asset co-specialization (between the USA and China) probably constitutes the key reason it can exist. According to OriGene Technologies' CEO Wei-Wu He, the requisite technology is only available in the USA, which leads China by at least 20 years. However, the production of protein (a high labor-intensive, rather tedious job), could only be undertaken in China. For the time being, it happens that no other place (or technology) could satisfy OriGene's objectives, leading to a perceived view of extreme cross-border co-specialization. Integration (FDI) in this case may be predicated on the need to protect the technology, ensure quality control and related reasons. Importantly, however, for OriGene's CEO, an important reason for FDI is to "be there as a leader." This goes beyond extant theory of co-specialization, and is pursued below.

The extant IO economics-based approach assumes pre-existing markets, which fail under certain conditions, necessitating the emergence of business—firms to address these failures. However, in real life conditions of uncertainty and limited knowledge and rationality, the critical issue for aspiring entrepreneurs and/or entrepreneurial managers, involves creating markets for their ideas in the first place. Such markets often do not exist, or are very thin or otherwise imperfect. As often discussed in the folklore of the history of business strategy, early path-breaking ideas, such as the PC or the CT scanner, were met with skepticism and over-pessimistic guesstimates of their market size potential (Teece, 1986). In such cases it was up to the originators of these ideas to try to prove themselves right. This often requires amassing the co-specialized and complementary assets required to set-up an organization and adopt the requisite structures and strategies to create and co-create the (final product) markets. Once these markets are established, the enterprise will endeavor to capture as much value as possible through the simultaneous development and leveraging of value capture strategies and vehicles (Pitelis and Teece, 2009).

Importantly, as markets for ideas created in one national location are less likely to exist in another one, in the knowledge-based economy cross-border market creation

and co-creation is likely to be the norm. In everyday language, we submit that to help co-create a market one needs to at least be a part of the co-creation process. As markets are co-created, exchanges occur; as local players participate with their firm and country-specific advantages, the co-creation of cross-border markets enhances social value creation.

It follows from the above that the reason for the MNE is not just co-specialization and related issues. Importantly, the MNE exists because cross-border presence can well be part and parcel of the market co-creation process. The MNE becomes a proactive element in the global economic system. It does more than rectify market failures. In our schema, it also proactively helps create and orchestrate panoply of global assets in a manner which engenders the creation of markets in which both the MNE and other enterprises subsequently participate. The outcome of this process depends on the actions of the firm itself and the other participants in the market co-creation process (such as customers, suppliers, competitors, potential entrants, etc). These actions are partly endogenous to the actions of the MNE, and partly dependent on the actions of the markets co-creators, which are more often than not, not known or even predictable. Put differently, extant economic theory of the MNE and FDI assumes prior knowledge on O advantages, L advantages and I advantages. This is a heroic assumption. In addition it assumes behavior based on extant conditions, however, in practice entrepreneurs act on the basis of anticipated and partly malleable conditions, both internal and external to the firm (Pitelis, 2007a).

Through market co-creation, entrepreneurial management also helps establish the very eco-system within which the MNE operates. In contrast to Porter (1980, 1985) and the basic IO model, the DCs literature utilizes the concept of the eco-system (not the industry) (Teece, 2007) as the unit of analysis We extend this idea by submitting that eco-systems are also partly endogenous, being co-created by entrepreneurial managers. Eco-system co-creation, as well as market co-creation, allows firms to co-create social value for the purpose of its private appropriation.

Interestingly this idea is close to some of Porter's other work on clusters, (Porter, 1990). This work and the emergent literature on clusters show how firm locational decisions help engender eco-systems and augment markets. It often is the case that MNEs act as catalysts for cluster creation (Cantwell, 2000). Cross-border market, cluster, and eco-system co-creation, is arguably at least as important an explanation of the nature and essence of the MNE, as is market failure, in our view more. The

orchestration of this process of social value co-creation involves critical DCs, in designing and setting up organizations, and employing them to co-create markets, clusters and eco-systems. Given the enormity of this task, we submit that the requisite DCs are the DCs par-excellence. They involve setting-up organization to scan and leverage co-specialized and complementary resources cross-border, in order to co-create and shape the, eco-system. They include in various and changing mixes all the DCs discussed earlier and more. FDI is critical in this context, as it affords the control necessary to play the game—in which franchisees and/or partners may be inexistent, uninterested, less committed and/or plainly less competent players. While at the very conceptual level this is a form of market failure (a non- existent or thin market), market and eco-system co-creation is only effectuated, through real presence in a jurisdiction.

In conclusion, the capabilities perspective and concepts such as cross-border asset co-specialization, and market and value co-creation help explain the new nature and essence of the MNE in the semi-globalized, knowledge-based economy. In particular, the capability to orchestrate and leverage co-specialized and complementary assets in order co-create cross-border markets is arguably the grandest of all DCs and an important reason behind the spectacular advances of globalization, notwithstanding the current crisis and apparent de-globalization set-backs.

3. Theories of inter-firm co-operation (IFC) and "clusters"

3.1 Introductory and definitional issues

IFC can be defined as quasi-stable and durable, formal or informal arrangements between two or more independent firms, aiming to further the perceived interests of the parties involved. In this generic definition, IFC involves independent firms (hierarchies) that pursue their interests, without resorting to full integration, but in a way that involves more stable relationships than a spot-market contract; IFC is thus "between market and hierarchy" (Williamson, 1996; Ménard, 2004). IFC can take various forms, such as equity joint ventures (EJVs), strategic alliances, strategic networks, "clusters", etc. (Gulati et al., 2000; Ménard, 2004; Nooteboom, 2008). An important characteristic of such arrangements is that to varying degrees co-operation can co-exist with competition between firms, especially when co-operating firms are involved in similar activities (Porter, 2000). In cases like strategic alliances, for

example, cooperation can be in one activity, while firms compete in other areas (de Rond, 2003).

The literature on IFC is now voluminous. Forms of IFC, such as EJVs and strategic alliances became so topical in the 1990s, that John Dunning (1997) defined the whole era as "alliance capitalism". Indicative important contributions are, for example, Kogut (1988), Lorenzoni and Ornati (1988), Hennart (1991), Oxley (1997), Child and Faulkner (1998), Gulati (1998), de Rond (2003), Nohria and Eccles (1992), Ménard (2004), Nooteboom (2004, 2008), Dyer and Singh (1998), Kale et al. (2002), Reuer et al. (2002), Zollo et al. (2002), Zollo and Singh (2004), Locke (1995). In addition, interest in and literature on "clusters", "networks", "industrial districts", "webs", local production systems, regional systems of innovation, innovative millieux, etc, has taken off following, in particular, the work of Michael Porter (1990, 1998a, 1998b). Clusters have risen from obscurity to being seen by some as the only, or best, supply-side strategy for the international competitiveness of regions and nations, see Porter (2000), Pitelis et al. (2006), Mesquita (2007), Jovanovic (2009).

Work on cluster-type forms of economic organization go back to Alfred Marshall (1920), who stressed the benefits from co-location, availability of labor and knowledge. More recent contributions on clusters include contributions by, among others, Enright (1996), Sabel (1989), Saxenian (1994), Markusen (1996), Gordon and McCann (2000), Breschi and Malerba (2001), Maskell (2001), Martin and Sunley (2003), Mesquita (2007), Bell et al. (2009), Arikan (2009). There are many attempted definitions of "clusters"; Porter's (1998a) well-known definition, views clusters as geographical concentrations of inter-connected companies, specialised suppliers, service providers, firms in related industries, associated institutions (for example, universities, standard agencies, trade associations) in a particular economic field, that compete but also cooperate (see e.g., Porter, 1998a: 77-90; 2000).

There are four major elements of clustering that have emerged from the theory and the evidence discussed in the aforementioned literature. These are geographical agglomeration, linkages, "social capital" and competition with co-operation (co-opetition), (Pitelis et al., 2006). Surprisingly, these have not been put together in a single definition. The following definition of clusters covers all these characteristics in a more comprehensive fashion:

> "Clusters" are geographical agglomerations of firms in particular, related, and/or complementary, activities, with a geographical dimension, that exhibit horizontal

and/or vertical intra- and/or inter-sectoral linkages, which operate in the context of a facilitatory socio-institutional setting, and which co-operate and compete (co-opete) in national and international markets.

The above could be seen as the definition of a developed cluster, such as the Cambridge high-tech cluster or Silicon Valley. As real-life clusters are usually the result of a path-dependent, evolutionary, socio-political, historical and also entrepreneurial process that unfolds in real time (Locke, 1995; Feldman, 2001; Feldman et al., 2005; Simmie and Martin, 2010), they will tend to differ as to the extent to which they are characterized by the above four features (Gordon and McCann, 2000; Arikan, 2009)[1]. Gordon and McCann for example identify three ideal-typical models of 'clustering' – the pure agglomeration, industrial complex, and social network models. They suggest that each model (or ideal type), exhibits different logic and characteristics, including the nature and degree of IFC. In addition, elements from the three ideal types can co-exist in some real life clusters. In her influential work, Markusen (1996) identified three additional types of industrial districts, to the Marshallian, Italian and/or Porterian type, which is akin to our definition above. These are hub-and-spoke districts, satellite industrial platforms and state-anchored industrial districts. The three additional types can differ significantly as to the extent to which they are characterized by the four characteristics above. In particular, all three involve less cooperation between competing firms than the first type.

Our approach in this paper is to focus on the most general Porter-type category. This is because this type of clusters has been more widely discussed, in part as a result of Porter's work, but also because it highlights some important issues, on which we wish to focus, and also because theoretically one can look at more specific cases as special cases of the more general one. Importantly, moreover, all types of clusters involve cooperation to some extent and with some other firms (even when not between competitors), thus justifying our approach. In particular even the more extreme cases of a cluster being created by a multinational firm, like the Toyota production system, this involves appreciable cooperation with some cluster participants, such as suppliers (Dyer and Nobeoka, 2000). Accordingly a focus on IFC is both justified and potentially value adding.

[1] For a different classification of five types of firm agglomerations (local production systems, Porter clusters, monopsonistic clusters, Marshalian industrial districts, and innovative millieux) in terms of three co-ordinates (structure of governance, innovation/learning, and thickness of inter-firm relationships), see De Propris and Driffield (2006).

A common approach to the question "why clusters?" in the literature involves the listing of a number of absolute advantages of clustering. These involve "agglomeration and external economies" from co-location, reduced transactions cost due to trust, social capital, concentration of skilled human resources in the region, the flexibility and entrepreneurship of small firms involved in clusters, economies of diversity, as well as the existence of dense networks of associations and interest groups, (which are said to be capable of aggregating diverse interests, mediating conflicts and diffusing information) (Locke, 1995; Krugman, 1992; Gordon and McCann, 2000). On the negative side, there can be agglomeration dis-economies (due, for example, to "congestion effects") and also the possibility of "institutional sclerosis" and lock-ins. In some cases success can eventually engender failure, Martin and Sunley (2003, 2006). More recently, knowledge-based theories aim to explain clusters in terms of their knowledge-value-creation advantages, for example through increased variation and deepened division of labor. In this framework the additional value created through clustering is said to be able to offset any costs of clustering (Lawson, 1999; Maskell, 2001).

As noted, one aspect of "clustering" relates to the presence of inter-firm cooperation (IFC) between firms. However, the link between existing IFC and cluster-type literatures is often tenuous, even non-existent. In addition, the very foundations of IFC itself remain under-conceptualized. Extant perspectives, notably the industrial organization (IO), transactions cost and resource-knowledge-capability-based, have different implications on IFC. Moreover, existing theories on IFC are also rarely brought to bear on a comprehensive comparison between alternative modes of organizing economic activity, such as markets and hierarchies (e.g., firms-integration). An important exception is the seminal article by George Richardson (1972). This has arguably assumed the status of a classic by some scholars (such as the contributors in Foss and Loasby, 1998), but seems to have gone amiss in much of the more recent literature by organizational economics and management scholars, for example Aoki (2004), Bell et al. (2009), Arikan (2009), Menzel and Fornahl (2010). We return to this issue below.

The early literature on clusters also lacked solid conceptual foundations (Martin and Sunley, 2003; Pitelis et al., 2006). The classic works on "industrial districts" (e.g., Becattini, 1978; Brusco 1982, 1986; Pyke et al., 1990), were rich in historical and descriptive detail, but lacked well developed economic-theoretical foundations,

especially of the comparative governance type. The focus has been on the absolute advantages of "industrial districts". Moreover, despite its apparently superior analytical sophistication, the more recent literature on "increasing returns", the "new" economic geography (e.g., Krugman 1991a, 1998a,b; Audretsch, 1998), and "clusters" (notably Porter 1990, 1998a,b) focused on the absolute advantages of clusters, not their comparative ones.[1] Porter (1998 a,b) for example, explored in some detail the positive impact of such absolute advantages on innovation, productivity and competitiveness of the cluster, region and nation. However, as Coase (1937), Richardson (1972) and Williamson (1975) have convincingly argued, the important issue is not one of absolute advantages (or costs) but of comparative ones.[2] For example, the argument that clusters may reduce transactions cost, because of "trust", social capital, and lower cognitive distance, (vis-à-vis arm's length transactions), need not imply that clusters can do so more than "integration" by firms, thus "hierarchy". Similarly, Porter's discussion of the benefits of "related and supporting industries" does not address the question whether and why an integrated larger firm does not possess the same or even larger benefits than a cluster, either through full integration or by co-creating a production system (like Toyota). In both cases, unless one explains the comparative advantages and disadvantages of clusters, one only has a partial and incomplete explanation of the phenomena in hand.

In conclusion, despite progress, it is arguable that a remaining problem with much of the extant literature is that it tends to focus on the absolute advantages of clusters, and therefore does not adequately address the question "why IFC and why clusters?" relative to alternatives, notably "integration" by firms and as compared to markets. In addition, the literature tends to focus on value creation at the expense of value appropriation, which is often ignored. We aim to address these limitations below.

3.2 Extant perspectives on inter-firm cooperation (IFC) and clusters

There are three major generic analytical perspectives on IFC: the "industrial organization" (IO), the transactions cost and the resource-knowledge-capabilities-based. There also exist variants within each perspective. Given extensive coverage,

[1] For recent accounts of industrial districts and new economic geography, see respectively Belussi and Caldari (2009) and Jovanovic (2009).

[2] Despite this common focus, the Coasean and Williamson's versions of transaction costs differ. Coase questioned strongly the concept of rationality and Williamson's emphasis on asset specificity. Moreover, he did not pay as much attention to the case of opportunistic behaviour (Coase, 1993). See also Posner (2010).

e.g., in Child and Faulkner (1998), de Rond (2003), Bell et al. (2009), Arikan (2009), here we provide a bird eye's view.

First, from the IO perspective, IFC is initially seen in terms of price collusion. Firms have an incentive to collude so as to raise price-cost margins, by influencing the structure of the industry (Cowling and Waterson, 1976).[1] Game theoretic work on IFC such as Axelrod's (1984, 1997), provided additional important reasons and some evidence as to why firms may have an incentive to co-operate - in terms of, for example, retaliatory ("tit-for-tat"-type and/or other variants of) strategies of economic agents (Child and Faulkner, 1998; Parkhe, 1993). Other, efficiency-based, arguments within IO, such as Demsetz's (1973), can also be used to explain IFC in terms, for example, of production-side, synergy-related efficiency gains. However, whether it is market-power (mostly collusion) and/or efficiency, within IO there is no comparative governance-based analysis between different modes of organizing economic activity. This is not surprising, as the IO perspective is in effect mono-institutional. The only institution examined is the market and its (industry) structure (Coase, 1937, 1972).

The nearest one comes from within this broad (power vs. efficiency) IO perspective to an explanation of more complex forms of IFC (than collusion), is in the work of Stephen Hymer (1979). Hymer observed that "integration" has its costs and risks in comparison to alternatives, such as subcontracting, and is chosen over such alternatives because it involves a higher degree of control, which he felt was desired by firms. In order to offset the disadvantages of integration (notably the risk of owning production operations), firms, especially large multinationals, would aim at maintaining control, but outsource production - that is, control the intangibles (brand name, 'business model' etc.) and some important tangibles (e.g., a "secret recipe", "unique colors", "proprietary quality coffee", etc.), while subcontracting production per se to "independent" operators. Such forms of IFC are widely observed today (Teece, 2006). However, as Cowling and Sugden (1987) have noted, in such cases the subcontractors are often controlled by, and therefore are essentially part of (even the definition of) the (subcontracting) firm. In this context, Hymer's contribution, albeit impressive in predicting the recent trend for outsourcing – externalization, is almost exclusively power/control-based. Moreover, it focuses on a particular form of inter-

[1] For wider considerations on power, markets and hierarchies, see Dosi (1995), Pitelis (1991), and Hartman et al (1993).

firm cooperation – that of subcontracting, and only compares some forms of market transactions (namely subcontracting) to integration.

The origins of the transactions cost explanation of IFC go back to Coase's (1937) classic article. Coase focused on the nature, or existence, of the firm, vis-à-vis the market, and attributed integration (firms) to high market transactions cost. Following the emergence of debates on co-operation, Oliver Williamson (1985, 1996) originally viewed such co-operation (and hybrids more generally) as a transient phenomenon, a progression from market to hierarchy.[1] In this perspective, there can be transactions cost benefits of co-operation vis-à-vis markets, but not vis-à-vis hierarchy, which is superior in terms of transactions cost reduction. This is not surprising, given for example that the quantity of transactions increases as the number of transacting parties does. Moreover, for Williamson (1985), hierarchy could also alleviate transactions cost, even given the number of transactions, by reducing negotiation costs through authority. This is useful to bear in mind, as some explanations of "clusters" rely on transactions cost arguments (see Aoki, 2004 and below). Important contributions in the transactions costs tradition involve Hennart's (1991) analysis of joint ventures and Oxley's (1997) analysis of alliances. An implication of the transactions cost perspective is that *ceteris paribus*, in transactional terms (and subject to increases in organizational costs not fully offsetting any transactions cost saving), IFC is an inferior form of organizing economic activity in terms of economizing behavior than integration by firms - hierarchy.[2]

The transactions cost analysis is predicated on the assumption, made explicit in Williamson (1985), that the production side can be assumed to be constant for different modes of the organization of economic activity (market, hierarchy, IFC). This need not (and indeed, realistically, cannot) be the case (Langlois and Robertson, 1995; Aoki, 2004; Pitelis, 1991). Different institutions are likely to possess different

[1] Williamson (1996, p. 22), for example, states that "Joint ventures and alliances should sometimes be thought of as T-forms of organisation that permit the parties to remain players in a fast-moving environment. Each party being unable, by itself, to assemble and deploy the requisite resources in a timely way, the requisite resources are instead assembled by pooling. Thus constructed, both successful and unsuccessful joint ventures will commonly be terminated when contracts expire. Successful joint ventures will be terminated because the combined effort has permitted each to remain viable, to learn enough, and/or, buy time to go it alone. Unsuccessful joint ventures will be terminated because the opportunity to participate will have passed them by." Williamson also acknowledges that "Our understanding of T-forms of organization is not good but is steadily improving." – for which he cites works outside the transactions cost tradition, notably Nelson and Winter (1982), Dosi (1988), Teece (1992), Teece et al. (1994). T stands for temporary or transitional.

[2] For a comparison of transaction costs and game theoretic view of IFC, see Parkhe (1993).

capabilities and differential advantages and dis-advantages. The resource-knowledge-capabilities-based perspective is based on the explicit observation that institutions and organizations differ in terms of their value-creation and capture capabilities (and indeed the same is true for different firms). For Penrose (1959), firms are superior to markets in term of the endogenous creation of knowledge, innovation and value. For other "resource-based" and (dynamic) capabilities scholars, for example Peteraf and Barney (2003); Mahoney and Pandian (1992); Kor and Mahoney (2000), Dosi et al. (2000); Teece et al. (1997); Foss and Loasby (1998), Teece (2007), (see also Loasby, 1999 and Mahoney, 2005 for accounts), each firm, too, is unique in its ability to create and appropriate value.

Recognizing that the production-value creation side is not constant, may totally change the calculus, as one then needs to analyze the differential advantages and disadvantages of each organization both in terms of its costs and its value-creation and capture benefits. For example, even if IFC is inferior to integration in terms of transactions cost, it may be superior in terms of value creation benefits. This indeed is the basis of the more recent knowledge-based theory of IFC clusters (Lawson and Lorenz, 1999; Lawson, 1999; Kim and Park, 2002; Lorenzen and Maskell, 2004; Malmberg and Maskell, 2002; Maskell, 2001; Tallman et al. 2004; Storper and Venables, 2004; Arikan, 2009). This costs-benefits calculus is more complex than that based on the transactions cost alone, and is important to be pursued (see for example Colombo, 2003). This in particular is the case as markets themselves can be seen as institutions that can serve the objectives of economic agents (Ménard, 2004), that firms and markets are complementary (Marshall, 1920; Simon, 1995), that each can portray characteristics of both market and hierarchy (Alchian and Demsetz, 1972; Dosi, 1995; Marshall, 1920), and that markets can often be created, or more accurately, co-created by firms (Pitelis and Teece, 2010).

Penrose did not originally deal with intra-firm co-operation. Later, she recognized its importance (Penrose, 1995) and her very last published paper focused on networking and IFC (Penrose, 2008). Penrose felt that networking blurred the boundaries of the firm. She attributed networking to its production-side benefits as compared to market or hierarchy. However, she did not consider the transactions cost side. In addition, despite reference to Richardson's seminal piece, Penrose did not take up Richardson's resource-capabilities-based analysis of the division of labour between market, integration and co-operation. Building on Penrose (1959),

Richardson (1972) had produced a template, or "good practice", for the choice of mode of organizing economic activity, in terms of his proposed concepts of similarity and complementarity of activities. He defined similar activities as those that require the same capabilities, while complementary activities as those that require complementary capabilities. In Richardson's schema, similar and complementary activities are best integrated in a single firm. Dissimilar yet complementary activities are best undertaken through co-operative arrangements. Markets are best, when activities are both dissimilar and non-complementary.

Richardson's contribution was the very first conceptual framework aimed at explicitly dealing with IFC vis-à-vis both market and integration. It was more or less contemporaneous to (even marginally preceded) the classic contribution of Williamson (1975); it considered three (not two) modes of economic organization; and importantly it employed the now popular capabilities lens (Dosi et al. 2000, 2008; Dosi and Marengo, 2007; Teece et al., 1997; Loasby 1999; Teece 2007). For these reasons it deserves a lengthier appraisal.

Seminal as it is for its timing and originality (and in part because of it), Richardson's contribution has weaknesses. His focus was exclusively on production costs efficiency in terms of requisite production capabilities. It did not deal with other potential differential advantages of alternative modes, for example those arising from the "revenue" side. Clearly, at one level, savings in production and transactions costs do have a revenue-increase aspect, *ceteris paribus*. However, the revenue-value creation side is important per se. Different modes may have differential advantages, for example in knowledge creation. The currently extensive knowledge-based view of clusters (Maskell, 2001; Arikan, 2009) draws on and supports this view. Richardson did not deal with this aspect. This is interesting and paradoxical; while he developed an explicitly Penrosean, resource-capabilities-based view, he went both beyond Penrose (by focusing on production cost efficiency) and at the same time ignored Penrose's main contribution; which was her focus on the revenue side of firms and their ability to generate knowledge and innovation better and/or faster than markets. In this context, Richardson's analysis complements the transactions cost approach, by looking at the production efficiency side. On the other hand, in his analysis Richardson ignored altogether both transactions cost and knowledge-creation considerations.

As noted above, work on clusters also tends to focus on the perceived absolute advantages of clustering. The work of Michael Porter on clusters, for example Porter (1998a, 1998b), moreover, demonstrates no conceptual framework as such, and makes no reference to transactions cost, resources, capabilities or the work of Richardson. More generally, Porter's work is *sui generis* and detached from important contributions on IFC and other contributions on clusters and more widely. Arguably, the useful elements from Porter's work need to be placed in context, and combined with other insights, for further conceptual progress to be made. Important recent insights from the transactions cost lens (Bell et al., 2009) and/or the knowledge-based one (Maskell, 2001; Arikan, 2009), go well beyond Porter's early analysis, yet do not attempt a comparison of the advantages and disadvantages of IFC and clusters vis-à-vis both markets and integration/hierarchies, as well as in terms of a comprehensive set of available theoretical perspectives (such as transactions cost, resource-knowledge-based, control-IO-based), in both a comparative static and a co-evolutionary agency-based framework.

We may conclude from the above that to date there is no widely adhered to, sufficiently developed, comparative governance-based framework on IFC and clusters. We attempt to make a step in addressing this limitation in the next section.

3.3 IFC and clusters; a comparative statics-based comparison

At a general level, the very existence of IFC implies that firms have been unable and/or unwilling to pursue integration and/or spot contracting. In the particular case of some 'clusters' (such as Italian industrial districts) firms might have not even consciously considered to undertake IFC – the type of IFC present in the cluster may simply be the perceived wisdom, "the way things are done around here", history-specific and path-dependent. In cases where more choice is present, (such as in EJVs between firms, especially of different nationalities, such as Western and Chinese), non-integration can be due to government restrictions or other external impediments, for example unavailability and/or unwillingness of targets to be taken over (Hymer, 1979). Such "negative" reasons or constraints are possible and can be due, for example, to policies by governments. However, not all instances of IFC are the outcome of constrained choices. In many cases of EJVs, strategic alliances, or the choice of franchising-licensing over foreign direct investment (FDI), IFC is chosen by firms as preferable to full integration (Hennart, 1991; Oxley, 1997; Colombo, 2003;

Pitelis and Teece, 2010). In addition, the choice of spot contracting is always available, at least theoretically (Williamson, 1975). The question of why IFC therefore involves more than the analysis of restrictions.

In this section, we hypothesize that IFC emerges when there exist conditions that engender positive net advantages vis-à-vis market and/or integration. We attempt to address this question and go beyond extant theory, which focuses on one, or at most a pair, of theoretical perspectives, for example Parkhe, (1993) Colombo (2003). We do so by employing four concepts that build on, and go beyond, extant theory. The first is that of "productive opportunity", proposed by Penrose (1959, 1960); the second is that of dynamic transaction costs and capabilities employed by Langlois and Robertson (1995), and Teece et al. (1997); the third is Richardson's (1972) concept of similarity and complementarity of activities; and the fourth is that of market and value co-creation proposed by Pitelis and Teece, (2010).

At the most fundamental level, an analysis of economic organization, can draw on observations by Adam Smith and Alfred Marshall, that specialization and the division of labor help engender a great variety of domain- limited knowledge, skills and capabilities within an economic system (Loasby, 1996). In this context, variation and diversity can be the outcome of limits to coordinating capabilities by large firms (Radner, 2000), and indeed limits to their "absorptive capacity" (Cohen and Levinthal, 1990). Richardson's idea that the governance of different activities by different governance structures "economize" on the requisite underlying capabilities and/or ability to absorb and leverage knowledge, can follow organically. We claim below that within this general context, the four concepts mentioned above can contribute to taking the analysis further.

Penrose (1959, 1960) defined "productive opportunity" as the managerially-perceived dynamic interaction between the internal environment of the firm and its external environment. She claimed that "productive opportunity" determines a firm's growth and the limits to such growth. While Penrose did not deal with the "nature" of firms per se, it can be claimed that the Penrosean advantages of firms vis-à-vis markets, in terms of knowledge creation, innovation, endogenous growth and productivity can serve as a reason for the existence of the firm, over and above transactions cost considerations. IFC allows firms to exploit their respective "productive opportunities". The sum of these productive opportunities, or the "joint productive opportunity", can exceed the productive opportunities of each separate

party, and may exceed the sum of the two productive opportunities of the firms, if these do not co-operate.[1] This can be due to complementary resources, other synergies and importantly to the combined knowledge-base and vision of the co-operating firms. Market transactions are inferior to co-operation in terms of this argument. Two independent firms cannot normally, through spot contracts, gain access to the resources, knowledge and vision of the other firm, not to the same extent at least. In addition, *ceteris paribus*, coordination through the market involves higher transactions cost. It follows that in terms of both "productive opportunity" and transactions cost, IFC will tend to be superior to spot contracts (markets).

When comparing IFC to integration, however, our previous observation is modified. *Ceteris paribus*, IFC involves higher market transactions cost than integration. If these exceed any increases in intra-firm transactions cost (organizational costs) due to integration, integration will tend to be superior to co-operation in transactional terms. The case of the "productive opportunity" is more complex. At one level, the integrated firm will have a more coherent joint productive opportunity: for example, consider the case of a multinational firm taking over an independent firm in another country, but letting it operate with its existing resources as a quasi-independent business unit or subsidiary so as to leverage its subsidiary skills (Papanastassiou and Pearce, 2009). This can give rise to an enhanced "joint productive opportunity" which is more "coherent" than that of two independent co-operating firms (Teece et al., 1994). Clearly, in some cases, an integrated entity may lose out in terms of "productive opportunity" potential if, for example, useful resources of the acquired firm are being lost to the new entity. However, on the whole, integration will tend to dominate IFC, both in terms of joint productive opportunity and transactions cost. Clearly integration is also superior to IFC in terms of control advantages (Hymer, 1960/1976; Porter, 1980). This leads to our baseline Proposition 1 below.

Proposition 1. Ceteris paribus integration will be superior to IFC, in terms of transactions cost, joint productive opportunity, and power-control-related factors.

The apparently self-evident Proposition above raises the question why does IFC exist? Richardson's concepts of similar and complementary activities help moderate

[1] In this context we can speak in terms of the "productive opportunity" of the cluster or the region.

the above baseline observations and address this question. If firms are involved in dissimilar activities, the joint productive opportunity of the integrated body may not be as well aligned as that of two firms involved in similar activities. This is simply because the dis-similarity of activities and their underlying capabilities can blur a firm's vision by engendering confusion as regard the firm's focus. This argument is akin to problems related to unrelated diversification (Porter, 1987). In addition, the internal organizational costs of the integrated unit will tend to be higher. Even the control advantages of hierarchy are put into question if activities are dissimilar, not least because of knowledge co-ordination-related problems. On the other hand, when activities are dissimilar but complementary, IFC acquires logic (in that there is mutual potential advantage in acquiring complementary knowledge). In the case of dissimilar activities, IFC may be superior to integration. In the event of non-complementary and dissimilar activities, markets may be superior, as the integration of dissimilar and non-complementary activities is likely to lead to high organizational costs (if integration makes any sense in this context, to start with) and IFC makes limited sense, as there is little of mutual benefit to be gained.

From the above it follows that in the case firms are involved in dissimilar activities, which are also complementary, IFC may be superior to both market and integration. This results in Proposition 1b.

Proposition 1b. When firms are involved in dis-similar, but complementary activities, the net advantages of IFC in terms of transactions cost, joint productive opportunity and power-control can exceed those of integration.

While this too may appear self-evident ex post, it is rarely observed in the literature. On the other hand, however, the work of Richardson and Hymer exhibits a degree of strategic rational choice and even perfect and full knowledge, usually absent from reality (Loasby, 1996), or even Williamson's bounded rationality-based transactions cost analyses. For example, there is little in their analyses by way of explanation of how resources are being recognized as complementary and/or similar and how control-power is exercised.

Interestingly, the work of Penrose can complement and help address these lacunae. In Penrose production-specific and relevant knowledge is being engendered intra-firm. This affords entrepreneurs-managers the appreciation and even imagination of ways in which resources and activities can be similar and/or complementary, as well

as ways in which control can be exercised through knowledge. As noted, for example by Foucault (1980: 154), "Power is exercised by virtue of things being known and people being seen".

Such knowledge and power also afford firms the capability to create markets or more often to co-create markets with other firms, suppliers, customers and the wider community (Pitelis and Teece, 2010). The market creation and co-creation capability of organizations, whether fully integrated (hierarchies), or in the form of co-operating hierarchies (IFC), helps differentiate firms (and IFC) from markets. Firms can create, or co-create markets; markets themselves cannot create markets. In this sense, firms are superior to markets in their ability to create and co-create markets, (and indeed some types of clusters, Markusen, 1996; Dyer and Nobeoka, 2000; Feldman et al., 2005).

As already noted, clusters can be seen as a special form of economic organization that often involves IFC (Saxenian, 1994; Porter, 2000; Aoki, 2004). Fundamental differences, however, of "clusters" to forms of IFC such as EJVs, strategic alliances or subcontracting, are the existence of geographical co-location, a usually lower degree of formality of linkages, as well as a lower direction-control and strategic choice-intentionality (especially vis-à-vis subcontracting).[1] In addition, firms in some clusters, such as Silicon Valley and the Cambridge high tech cluster, need not be involved only in complementary and dis-similar activities, but also in the whole gamut of similar, dissimilar, complementary and non-complementary activities, (including firms with similar and complementary activities).

In the context of our earlier analysis, the existence of the cluster can be attributed to the differential advantages of such special attributes, which are in addition to factors favoring IFC such as increased "productive opportunity" and reduced transactions cost vis-à-vis spot contracting. Such advantages of clustering can exceed the advantages of integration (Aoki, 2004). Namely, the net external economies-flexibility benefits of clusters can exceed the benefits of integration in terms of "joint productive opportunity" and reduced transactions cost for each member of the cluster, thus leading to non-integration, even when there exist similar and complementary activities. Indeed, the benefits of clustering for each firm may make them unavailable

[1] Note, however, that this can vary depending on the clusters. In some clusters, the presence of dominant firms can engender a higher degree of control (Markusen, 1996). However, this will normally still not be as high in an integrated firm.

as a target of a take-over, thus reducing the population of potential targets for potential acquirers. Clearly integration will be taking place in a cluster, too, but full integration of all firms with similar and complementary activities can fail to realize for the reasons detailed above, even assuming willingness on the part of potential acquirers.[1] This is the case even when a cluster is dominated and has even been co-created by a firm, such as in the case of the Toyota production system. There follows Proposition 2 below.

Proposition 2. Clusters are a form of economic organization that often involves IFC and which enjoy net advantages that can render them superior to *integration, even when cluster firms are involved in similar and complementary activities.*

To summarize the argument so far, we claimed that IFC can be attributed to its superior advantages vis-à-vis market and hierarchy (integration) in terms of "productive opportunity", transactions cost, and control-related considerations in the case of dissimilar but complementary activities. We also provided reasons for the predictive failure of one of Richardson's suggestions, namely why full integration is not observed in clusters more commonly, even when Richardson's conditions are satisfied. We proposed that clusters can be seen to as a form of economic organization that involves IFC, but also exhibit special characteristics as compared with other forms of IFC, notably (for successful clusters) positive net external-agglomeration economies and social capital (Aoki, 2001). In addition such characteristics-advantages will tend to lead to regional joint-productive opportunity effects (and indeed a 'regional industrial identity', Romanelli and Khessina, 2005), that may suffice to outweigh the advantages of integration (and/or limit its availability), even when firms are involved in similar and complementary activities. In so doing, we provided a more complete, to now, theory of the nature (why) of IFC and clusters.

3.4 Market and value co-creation and value capture

A limitation of our analysis so far (and in our view much of the cluster literature as a whole) is that it focuses on efficiency and value creation, with almost total disregard

[1] Penrose's (1959) idea of "interstices" (market segments with large firms cannot cover, thus leaving space for smaller ones), and Marshall's (1920) "tendency to variation" within each activity, also support the existence of this argument. Similarly limitations to knowledge, such as bounded rationality, limited absorptive capacity and/or variety that can be handled by a large organization, can also constitute limits to integration (Kay, 1997).

to value appropriation/capture. This is rather curious. Clusters are not charities. Their constituent firms are involved in business for much the same reason as are other firms – to make as much profit as possible (Penrose, 1959) and/or to capture as much value as possible out of their perceived value creating advantages, actions and action potential (Pitelis and Teece, 2010). A theory of clusters that fails to consider value capture is at the very best half a theory (possibly less, given that value creation need not always lead to value capture, Teece, 1986a) and that value capture is the ultimate objective of firms. It is therefore important for value capture to be addressed and for an explanation to be provided as to when and how cluster firms can avoid what Augier and Teece (2008) call the 'zero profit condition'.

Some clusters, such as Italian industrial districts, can be in a very real sense one of the nearest types of organizational market structure one can think of, to the neoclassical economics ideal of 'perfect competition' (large number of usually small firms with similar products and technology). In this context, the possibility of 'zero profit' is very real indeed ('zero profit' being the major characteristic of 'perfect competition' and contestable markets, Baumol, 1982).

As noted, this issue has not, to our knowledge, been adequately addressed. An exception is Feldman et al. (2005), who note the need of entrepreneurs and cluster firms to act so as to satisfy their business interests. Aoki (2004) observes that knowledge exchanged in clusters such as Silicon Valley, is non-proprietary, yet intensive interactions make clusters a more coherent institutional arrangement, than predicted in terms of transactions cost analysis. While we share this view, we feel that one needs to support this with an analysis of the value capture potential of clusters. Our working hypothesis would be that the viability and even the emergence of clusters is predicated on two major factors that facilitate value capture. The first is value co-creation, given the existing value capture architecture of each cluster firm. The co-location of firms and other institutions and organizations in a cluster helps create a supporting eco-system (Nelson, 1993), and co-create value, thereby increasing the overall pie of created appropriable value. Given each cluster firm's extant value capture strategy/architecture, firms will choose to operate in a cluster if and when the part of co-created value they can appropriate is higher than the value they could have appropriated, had they been able to appropriate more value but from a smaller pool. In turn, value capture strategies are being developed by entrepreneurs who can set-up organizations (firms) and help co-create markets, eco-systems and

clusters, so as to appropriate co-created value (Pitelis and Teece, 2010). Differently put, if firms can capture more value, through integration, or indeed spot market transactions, and given the choice (which as we noted need not always be available), they will opt for such alternative modalities. This results in Proposition 3.

Proposition 3. Firms will help co-create a cluster and remain part of it if/when the value they can appropriate through requisite value capture strategies, by going alone, is lower than the co-created value they can capture by being part of a cluster.

Besides value capture, Proposition 3 has the advantage of also addressing another limitation in cluster literature – the implicit assumption that cluster firms can either be part of the cluster or just not be. This need not be the case, especially for larger firms (but even smaller ones), that could decide to relocate, and they sometimes do. An example is the ceramics firm Royal Doulton of the North Staffordshire cluster, which had fully relocated – outsourced its production (Sacchetti and Tomlinson, 2006). This renders important an analysis of factors that induce firms to select to locate and stay in a location, which we suggest to lie in a cluster's value co-creation advantages, given each cluster participant's value capture strategy. While these advantages are similar in nature to those discussed in the literature, our emphasis on co-creation helps partly address the issue of capture too.

Our conclusion from the analysis so far is that extant perspectives on IFC and clusters tend to provide one-dimensional, absolute advantage-based explanations, and fail to link the two, even when these obviously co-exist.. Richardson's capabilities-based view focuses on production-related advantages and introduces the important concepts of similarity and complementarity of activities. However, it does not consider power-control, transactions cost, "productive opportunity" and dynamic market co-creation related benefits. Moreover, Richardson did not address the question why integration in clusters is not so common, even when there exist in clusters firms in similar and complementary activities. In addition, there is no literature that employs both a static and co-evolutionary comparative governance, agency-informed perspective. Our synthesis and extension of extant theory takes the debate further. It provides some support to Richardson's analysis but also explanation of its predictive failures, such as the limited occurrence of integration in the case of many clusters that satisfy Richardson's conditions for integration.

Additional contributions of this section concern a consideration of the issue of value capture, particularly how clusters avoid the 'zero profit' condition, despite some of them apparently approximating the assumptions of 'perfect competition' and 'contestability' (Baumol, 1982). We explored this in terms of market and value co-creation in clusters, in line with extant observation – cases, and hitherto unobserved.

4. Theories of competitiveness and catching-up

Economic integration between nations is effected when countries which are currently worse-off improve their economic performance at a faster rate than that of the current leaders. In this context, an analysis of economic integration requires addressing the issue of "competitiveness" and "catching-up".

The concept of "competitiveness" is both elusive and controversial, especially when applied to nations. For example, Krugman (1994) lamented the "obsession" of policy makers with the issue of "national competitiveness", claiming that this obsession can be dangerous. One of Krugman's critiques refers to competition between firms and nations. Firms do compete, in his view, for example for market shares, and this competition is zero-sum. Instead, nations do not compete in a comparable way, and the outcome is positive-sum: when one benefits, the others do too. For Krugman, the best measure of national economic performance is total factor productivity (TFP) – a proposition also supported by Porter (1990).

Krugman's views have been subjected to a battery of criticisms, see Aiginger (2006a, b) for a recent account, albeit not so much on his views on competition. These, we believe, are not immune to criticism. Following, for example, Allyn Young's (1928) work on increasing returns, we appreciate that competition between firms is one fundamental way through which markets are created and expanded, suggesting that inter-firm competition need not always be a zero-sum game. On the other hand, when nations compete through strategic trade policies, Krugman's own work shows that the outcome need not be positive-sum, (Krugman 1986, 1989). Fundamentally, however, competition and competitiveness are not synonymous. In its more generic sense competitiveness refers to the ability of an economic entity to outperform its own "peer" group, in terms of a shared objective. For example, if the objective is to improve a country's per capita income in terms of purchasing power parity, and if other nations share a similar objective, a country that outperforms the others in terms of this objective can be defined as more "competitive". This

competitiveness could be achieved through apparently rivalrous actions (e.g. strategic trade policies), co-operative actions, a combination of the two (co-opetition), or just no interaction whatsoever; a country can outperform another without necessarily engaging in trade with it, or even in trade. In fact, such a generic definition of competitiveness can be applicable to individuals, firms, regions, even universities and courses, such as MBAs, as we well know. What changes is the peer group and thus the shared objective, (which for example in the case of MBA courses, would be to outperform other universities with a comparable MBA course, ranked on the basis of a widely accepted index). A useful characteristic of this definition is that it has immediate implications for catching-up. For example, if an existing developing country is more competitive than the leading nations, this leads to catching-up.

Arguably, one can distinguish four major extant approaches-frameworks on competitiveness and catching-up; the neoclassical economic theory-based approach, the Japanese practice-based one, the "systems or innovations" view and Michael Porter's "Diamond". Despite some overlapping (especially between the last three) we aim to show below that there are sufficient differences too, between the four models/frameworks, to qualify them as separate.

The neoclassical view has a very long and distinguished history; the issue of the nature and determinants of the Wealth of Nations was central in Adam Smith (1776), while the importance of international trade in this context was a main concern of David Ricardo (1817). In its modern developments, (exogenous) growth theory includes the landmark contribution of Solow (1956) while, more recently, endogenous growth theory, includes scholars such as Lucas (1988) and Romer (1986, 1990). The main difference between the two types of views is that "endogenous" growth theory tries to account for the (endogenous) role of "technical change", human capital and "increasing returns", which were previously treated as exogenous variables, see Solow (2000) and Fine (2000) for critical assessments. In international trade, neoclassical theory built on the idea of David Ricardo that free trade, based on comparative productivity advantages can benefit all nations. The well known Heckscher, Ohlin, Samuelson (HES) model relies on comparative advantage (abundance) in factor endowments, and confirms the Ricardian ideas under conditions of non-increasing returns, see for example Samuelson (1962). More recently, however, strategic trade theorists, such as Paul Krugman (1987, 1989) question the predictions of the HES model, for the case of imperfect competition, increasing

returns, spill-over effects, and first-mover advantages. In such cases, Krugman shows that strategic trade policies (in support of some sectors and firms) could at least theoretically favour a nation that leverages them (see Krugman 1992). On the other hand, strategic trade policies can lead to conflicts over the division of benefits, and are plagued by the possibility of "government failures" (in identifying the right sectors/firms), and possible retaliations, leading to a potential lose-lose situation, Boltho and Allsopp (1987). In the case of high adjustment costs, characterizing the case of inter-industry trade (more common in cases of countries at different levels of economic development), the aforementioned problems could be accentuated (Krugman 1989, 1992). Deraniyagala and Fine (2001) provide a critical assessment of the theory and evidence of trade theory and policy.

Concerning the "competitiveness" of a nation, the implications of exogenous growth and the HES model, on the one hand, and the endogenous growth theory and new trade theory, on the other hand, can be at odds. Exogenous growth theory and HES assert that perfectly competitive markets, alongside free comparative-advantage-based trade, can optimise national and global resource allocation, therefore lead to competitiveness and convergence, see Verspagen (2005). Convergence follows directly from the implied negative relationship between the growth rate of capital stock and the initial level of capital stock. This "absolute convergence" is not empirically confirmed, see Barro and Sala-i-Martin (2004). On the other hand, while "conditional convergence" and/or "club convergence" could be more likely for countries sharing comparable key fundamentals, like saving rates, underlying long-run growth rates and capital stock depreciation, recent evidence does not seem to be in support either of them, Baddeley (2006). The role for government intervention in the context of exogenous growth – HES theory, is rather modest,, to addressing problems of market failure (such as imperfect competition), ensuring no barriers to trade, and aim for temporary increases in the growth rate by increasing investments in plant, equipment, human capital and R&D, see Solow (1997).

The implications and predictions of endogenous growth and new trade theories are more complex and more open to government intervention, especially in their interaction. For example, endogenous growth theory views increasing returns and (thus) imperfect competition as a contributor to growth, while the new trade theory regards the same factors as reasons for possible strategic trade policies. In combination one can foresee a situation where governments promote imperfectly

competitive markets in order to promote growth at the national level, while at the same time protecting their imperfectly competitive sectors and firms, in order to gain advantages from (strategic) trade. The above are not the only policy implications of the two theories, yet such implications are consistent with them, while they are inconsistent with the exogenous growth-HES views.[1]

An implication from the above as regards the neoclassical theory of competitiveness is that it consists of two major variants with different assumptions, and inconsistent prescriptions. Perhaps more importantly, the neoclassical theory is ill-equipped to deal with the creative role of markets (as opposed to their allocative functions, once they exist). This renders it of limited use to analysing issues of competitiveness and catching-up, see Kaldor (1972), Audretsch (1989), North (1994), Amsden (1997), Nelson and Winter (2002). In the words of Nobel laureate Douglass North (1994):

> *"Neoclassical theory is simply an inappropriate tool to analyze and prescribe policies that will induce development. It is concerned with the operations of markets, not with how markets develop. How can one prescribe theories when one doesn't understand how economies develop?"* (p.359).

Concerning "old growth theory", Robert Solow (1997) almost admits as much, but suggests that one should turn "more naturally to Max Weber than to a modern growth theorist" (p.72), in order to explain the role of institutions, attitudes and "modernisation" (versus "growth" of an already modernised economy). Solow goes on to suggest that the fundamental differences between old (exogenous) and new (endogenous) growth theory, are that the former aims to explain trend-lifting growth, not trend-tilting one (growth policies that simply lift the trend as opposed to increasing the rate of growth per-se). The latter is achieved by endogenising technological change, but also at a potentially huge cost of hard to test assumptions, too much importance on the role of investment decisions on growth rates and fragile, too powerful and rather dangerous conclusions. In his conclusion "the forces

[1] Endogenous growth theories can also predict "divergence", instead of convergence, and that ceteris paribus larger countries will grow faster than smaller ones; see Verspagen (2005), who also distinguishes between "convergence" (refers to the world level) and catching-up (that refers to individual countries) and discusses the similarities and differences between endogenous growth and evolutionary views. Divergence is also implied by contributions in agglomeration and new geography economics, see Henderson (2005) and below. Feenstra (1996) suggests that in the absence of knowledge diffusion divergence is more likely than convergence in open economy models of endogenous growth.

governing the scope of the potential trend – the sustainable rate of growth- are complex, technological, and even a little mysterious. What we do know how to do is to lift the potential trend by a few percent. Even if the slope remains as before, that is a fine achievement" (Solow 1997, p. 92)

The macroeconomic policy prescriptions deriving from the analytical foundations of the neoclassical perspective have been encapsulated in the various versions of the Washington and post-Washington-type policy advice to developing and transition economics, see Shapiro and Taylor (1990). Their record has been at least questionable, see Stiglitz (2001), Rodrik (2004), Dunning (2006), Serra and Stiglitz (2008).[1]

A second approach to competitiveness and catching-up is that adopted by the Japanese government during the post-second world war reconstruction effort. While more pragmatic than theory-based, the approach has subsequently been "deconstructed" by scholars both Japanese and Western in a way that unearths the theoretical insight of the Japanese policies, see for example Best (1990), Amsden (1989), Wade (1990), Shapiro and Taylor (1990), Pitelis (1994). In addition, variants of the Japanese approach have been adopted by the various "tiger" economies of the East Asia, justifying, we feel, the term the "Japanese"- East Asian approach (Pitelis 1994, 2001).

An important characteristic of the Japanese approach is an interventionist stance of the government in close contact/partnership with industry, and with the explicit aim to restructure the economy in a way that creates competitive advantages, as opposed to simply accepting existing comparative advantages. In this context, elements of the industrial/competitiveness strategies of the country, devised and implemented in Japan by the Ministry of Economy, Trade and Industry (METI, formerly known as MITI), included: the targeting and support of specific firms and sectors (which were perceived to be important in terms of high value-added, high income elasticities of demand and oligopolistic with high profit margins). These sectors and firms were at first protected from international competition, through managed-trade policies. Intra-sector competition was managed too, in the sense that in each sector the major players

[1] For Stiglitz (2001) "The advocates of the neoliberal Washington consensus emphasize that it is government interventions that are the source of the problem; the key to transformation is "getting prices right" and getting the government out of the economy though privatization and liberalization. In this view, development is little more than the accumulation of capital and improvements in the efficiency with which resources are allocated–purely technical matters. This ideology misunderstands the nature of the transformation itself–a transformation of society, not just of the economy" (pp. xiv).

should be not too many, but not too few either (so as to avoid collusive practices, but also to avoid resource dissipation and create critical mass). In effect that was managed locally-based big-business competition. To ensure technology transfer, in the absence of foreign direct investment (which was discouraged), MITI encouraged an aggressive policy of buying licenses from foreign firms. To ensure competition from below to big players, thus a relatively level playing field, MITI required that firms purchasing licences would make them accessible to smaller players, Hill (2006). In addition, Japanese firms pursued a corporate strategy of growth and market share acquisition, not short-term profit maximisation, see Best (1990).

In the above context, a number of other characteristics of the Japanese approach included new innovative methods of doing business (for example, just-in-time), human resource management, worker participation, and others such as total quality management. All these have been widely discussed in the literature and were felt by many (e.g. Best 1990, Amsden 1989, Wade 1990, Pitelis 1994, Grabowski 1994, Shapiro/Taylor 1990) to have contributed to the remarkable performance of the Japanese economy, up to the late 1980s when it was leading global markets in sectors such as electronics, semiconductors and automotives, see Hill (2006). Variants of the Japanese approach were adopted by the "tiger" economies, such as South Korea, Taiwan and Singapore (see Pitelis 1994, Chang 1994) and, more recently, by the Chinese government (Nolan 2001, Lin 2004) and other tiger economies, such as Thailand, Malaysia and Indonesia (see Jomo et al. 1997) and Vietnam (Chesier/Penrose 2007). A difference to the Japanese approach, of interest to the current paper, is that smaller economies, like Taiwan, Singapore and Malaysia, did not discourage, but rather encouraged FDI, albeit in a way that was perceived to be aligned to the overall competitiveness strategy (Pitelis 1994, Jomo 1997).[1]

There is extensive and heated debate on the effectiveness, or otherwise, of the Japanese approach, including the possibility that the subsequent decline of Japanese economic performance could be attributed to this original interventionist model, see Pitelis (2001). The simple fact is that it is not easy to tell. Moreover, even if we accept that the Japanese approach was successful, other factors might also be in play. These include the effectiveness of the political-bureaucratic structure (less government

[1] For a more detailed and nuanced account of similarities and differences between the various East Asian countries, see Shapiro and Taylor (1990), Rodrik (2004), and for differences between older and newer 'tigers' see Jomo et al. (1997).

failure, so to speak) as well as cultural, institutional, and macroeconomic issues, see Shapiro and Taylor (1990) and Pitelis (2001). We do not wish to re-enter this debate here. However, we do wish to point out that many of the fundamental presumptions of the Japanese competitiveness strategy did receive theoretical support, from one source or another. For example, the emphasis on big-business competition, the pursuit of market share, the emphasis on innovation of all types (including organisational, managerial and human resources) and the pursuit of long term profit through market share, are all in line with the work of scholars such as Schumpeter (1942), Penrose (1959), Chandler (1962), Baumol (1991) and others, and even more recent endogenous growth theory-based approaches, see Lucas (1988), Romer (1986). A focus on targeting of "strategic" sectors is in line with early development economics thinking on "infant industries" and more recent "new trade theory", see Kaldor (1972), Krugman (1987, 1989), Shapiro and Taylor (1990). The emphasis on domestic competition is in line with arguments by Porter (1990) – see below. The support of SMEs and clusters seems to find accord with almost all economic perspectives, albeit for different reasons (e.g. entrepreneurship, agglomeration economies, cluster-building, locally-based development, challenge to multinationals, etc), see Krugman (1991a, b), Porter (1990) and Henderson (2005).

It is clear too that mistakes were made, and I believe that the failure of the Japanese to gradually give more space to market forces, could indeed partly explain subsequent difficulties. This is also in line with theoretical prescriptions, concerning the identification of the "optimal" mix between planning and markets and between market, hierarchy and co-operation.[1] Important for our purposes here is that the Japanese-East Asian perspective could be seen as a developmental-competitiveness approach in its own right. It has clear implications on catching-up – indeed the whole philosophy and purpose of the approach is to catch-up through creating and capturing value faster than other countries -as well as implications on FDI and country size, to which we return below.

A third approach to competitiveness involves work under the evolutionary, resource and systems-perspective and varieties of - comparative capitalism banners. Much of this has been encapsulated in the "systems of innovation", agglomeration and

[1] For example it is arguable that a more hands-on approach by government is required at the catching-up phase, while once a country has reached the "technological frontier" so to speak more focus on market signals may be appropriate.

clusters and varieties of capitalism-related literature, see Lundvall (1988), Krugman (1991a,b), Nelson (1995), Freeman (1995), de la Mothe and Paquet (1997), Fagerberg et al (2005), Jackson and Deeg (2006), Jovanovic (2009), and Lundvall (2007) for a recent summary, assessment and proposed extensions. A main characteristic of the evolutionary and systems-based views is a focus on intertemporal efficiency effected through innovation, combined with the belief that innovation is best promoted not by an exclusive focus to free and competitive markets, but by big-business competition and systems-wide linkages that involve markets, hierarchies (firms, governments), co-operation and competition, NGOs and more wider social capital-promoting institutions and organisations, see Freeman (1995), Jackson and Deeg (2006). The strength or otherwise of the innovation-system depends on the linkages of the whole system and on government policies, and institutions that promote innovation. Markets are but a part of the system, albeit an important one (see Stiglitz 1989). They need not be competitive, indeed big business competition may well have innovation-promoting advantages, see Nelson (1995) and/or Nelson and Winter (2002). In addition, the existence and promotion of agglomeration and clusters by small and medium-sized enterprises (SMEs) can be a potent means to promote linkages, diversity, and (thus) innovation, see Fagerberg et al (2005), Metcalfe (2002), Wignarajah (2003).[1]

It is arguable that the systems perspective is focused more on value creation through innovation than value capture, (therefore catching-up), albeit not in all cases, see for example the discussion of catching-up in Freeman (1995). It can be argued that the promotion of an innovative economy will help engender superior economic performance, therefore superior competitiveness and (thus) catching-up. This does not fully account however for the possibility that value creation need not always be captured by the innovators (Teece 1986, Research Policy 2006) – we will return to this later. In addition, the "agglomeration" element of "clustering" may well engender inter-regional and inter-national divergence, see Krugman (1991a,b).

It is arguable that dissatisfaction with competitiveness models motivated Michael Porter (1990) to identify a gap to be filled. This is one way to explain why someone

[1] There is extensive work on "agglomeration" economies, that draws on the work of Krugman (1987) on new trade, see Krugman (1991) and Henderson (2005) for a collection of papers. Martin (1999) provides a critical assessment. Martin and Sunlay (2003), Pitelis et al (2006) and Jovanovic (2009) also discuss the historical antecedents of agglomeration and "clusters"-type literatures. For our purposes, agglomeration economies by themselves imply divergence, but also the possibility to catch-up, by diagnosing and upgrading agglomerations. Kottaridi et al (2010) provide an empirical test of the role agglomeration plays in attracting FDI, in the context of UK regions; the results are in line with the idea that agglomeration and the location of R&D labs by subsidiaries are positively correlated.

should be writing a book in 1990 on a topic that goes as far back as the origins of modern economics (Adam Smith's Wealth of Nations, 1776), and so extensively discussed since. Porter's "Diamond" approach suggests that the coexistence of appropriate factor conditions, demand conditions, firm and sectoral structure and strategy and related and supporting industries, engenders a "Diamond" and/or "clusters" of economic success-competitiveness.

Many of the elements of the "Diamond" are present in extant works, for example "factor conditions" in the HOS model; demand conditions in Vernon's (1966) work on the "product-life-cycle", related and supporting industries, in the works of Marshall (1920) and work on clusters (see Best 1990, Edquist 2005), industry structure and rivalry in the works of Industrial Organisation (IO) scholars, see Tirole (1988). However, Porter added new insights and dimensions, notably firm strategy. This draws on strategic management and Porter's earlier works (Porter 1980, 1985), and it is a breakthrough vis-a-vis neoclassical competitiveness models, which usually focus on macroeconomic considerations at the expense of firm-level analysis. The last mentioned is critical, as it can help shift focus on value capture (a main concern of firms) and (thus) up to a point catching-up.

In addition to the above, interesting in Porter's work is the re-surfacing of agglomeration and "clusters" (in the form of related and supporting industries), and in their interaction with other parts of the "Diamond", an emphasis on specialised, rare and hard to imitate factors (which is very much the theme of the resource-based view of firm strategy – see Wernerfelt (1984), Barney (1991), Peteraf (1993)), his emphasis on the importance of local as opposed to distant (such as international) rivalry, and a focus on demanding and sophisticated consumers (not just undifferentiated aggregate demand, as in the Keynes (1936), tradition). All these are quite impressive and help explain Porter's successful journey from IO to strategy to national competitiveness policy scholarship and advice.

Concerning FDI, the four models have different implications and/or recognise different roles for it. In the neoclassical HOS model of international trade, FDI can be one of the mechanisms whereby factors and resources are transferred from where they are abundant to where they are scarcer, thus contributing to catching-up, see Stiglitz (2001). In the Japanese Far Eastern approach, FDI is a means to an end, it is used to serve the end of catching-up. In some cases, when technology transfer can be effected without FDI, alternatives are chosen; for example licensing in Japan, joint ventures in

the earlier phases of Chinese opening-up to international markets, see Nolan (2001). When FDI is deemed to be necessary for industrialisation, it is encouraged, but placed as much as possible within the context of the industrial strategy objectives, as in Singapore, Korea and Taiwan (Shapiro/Taylor 1990, Chang 1994, Pitelis 1994, Jomo et al. 1997, Amsden, 2009). In the systems-perspective, FDI is seen as part of the system – it may help strengthen already extant linkages, but could also be of limited import, if footloose and stand-alone, see Freeman (1995). Finally, in the "Diamond", FDI is seen as a measure of success, indeed outward investment is claimed by Porter (1990) to be no less than a sign of "competitiveness". Others, e.g. Dunning and Pitelis (2008), question this optimism, seeing both positive and negative elements. In addition Dunning (1993), as well as Rugman and Verbeke (1993), extended Porter's approach to include the potentially important role of FDI in affecting the determinants of the "Diamond". There has also been extensive work on the potential interrelationship between FDI and clusters, see among others Freeman (1995), Pitelis (2001), Rugman and Verbeke (1993), Cantwell and Iammarino (2000) and Pitelis et al (2006).

There are few direct implications from the above models on the issue of country size, with the possible exception of the endogenous growth theory, where market-size facilitates growth. On the other hand, the ability, for example of Japan and China, to make MNE entry their markets conditional on licensing or joint ventures could well be attributed to the attraction to MNEs of the large size of the market of these economics, alongside the bargaining power that this attraction afforded to them. In contrast, the pursuit of more proactive inward investment strategies by smaller players, (e.g. Taiwan, Malaysia, and Singapore), could be attributed to that their market size was not by itself a sufficiently attractive proposition for MNEs – so more proactive FDI policies were required to foster development.

In the next section, we build on extant theory to develop a competitiveness framework that aims to address some problems of existing theories. In particular, none of the competitiveness frameworks or approaches discussed here has an explicit link between competitiveness at the micro (firm), meso (sectoral, regional) and macro levels; there is no explicit discussion of the issue of value capture for catching-up, versus value creation (which may be captured by others), and (thus) the interrelationship between value capture for catching-up strategies and value-wealth creation strategies. Indeed, some models of national competitiveness are ill-equipped

to even address such issues, as they tend to rely on macro-categories, at the expense of the micro level (for example strategic management), where value capture is far more prominent. In this context, we feel that work on national competitiveness could benefit from insights derived from the international strategic management literature, when applied, suitably modified to the national level. Last, but not least, work on international business and strategy can also have useful implications on the choice of developmental model by countries.

5. A novel framework for competitiveness and catching-up and the role of FDI and clusters

5.1 A novel framework

The limited discussion of micro-(firm-level)-foundations and the lack of an explicit focus on superior value capture capabilities (which can lead to catching-up) are two major limitations of extant theory.[1] Both can be addressed by strategic management scholarship, which on the other hand, (excepting Porter and some scholars of the systems-approach), is mostly alien to competitiveness theories, which are mainly macro-based (see Nelson/Winter 2002).[2] To go beyond noticing this, it would be useful to identify factors that engender value and wealth, at the firm level, but also the meso and macro levels, when suitably understood and aggregated-augmented.

The concept of value, first, is very loaded in economics and management (see Dobb 1973, and Bowman/Ambrosini 2000 respectively). To avoid entering the interesting, albeit unresolved yet, debate on the nature and theories, of value, we focus instead on the much better understood concept of "value added". Of course, this still incorporates the word "value", a definition of which seems inescapable (yet is missing and/or highly contested in the literature, see Dooley 1990). For our purposes, we propose value to be defined as perceived worthiness of a product or service to a (potential and/or target) user. In this context, value added is the additional value

[1] For a relatively recent comprehensive discussion on catching-up, see Fagerberg and Godinho (2005) and Fagerberg and Srholec (2005). The authors deal with most levels of analysis, but not the very micro (strategic management) one, as they themselves acknowledge.

[2] Microfoundations, in the sense of optimising behaviour by economic agents, is at the very heart of the neoclassical theory, not least its endogenous growth variety (see Fine, 2000). In this context our claim may sound paradoxical. However, it is simply in line with the well known criticism by Coase (1937), Penrose (1959) and others, that the neoclassical theory treats the firm as a black-box. What microfoundations there exist are in terms of profit maximising black-boxes, or the price-output decision of firms – not the creative role of firms and its impact on the macroeconomy. It is this type of microfoundations that we have in mind that it is missing and that requires much more work and progress than there exists, including our own limited contribution here.

conferred to a product or service by an economic agent, be this an individual, a firm, a sector, or a nation. Value added can be potential or realized. It is potential before users have been convinced to pay a market price to purchase the product or service, and it is realized once the product or service is purchased. Value-added may never be realized if consumers lack the power to purchase (effective demand) and/or when sellers are outcompeted by rivals who possess substitute products, and/or superior competitive advantages (such as complementary assets and capabilities, see Teece 1986). This renders a discussion of value realization and value appropriation/capture strategies critical.

Value added is engendered in two fundamental ways: one is through increased efficiency and/or productivity, therefore a reduction of the cost of production; the other is an increase in the perceived utility-worthiness of the product or services through "differentiation".[1] This can be due to real factors, such as increased functionality and/or aesthetic appeal, or to "imaginary" factors, effected for example through advertising. There are long debates on these issues in industrial organisation (IO) and strategic management (see Tirole 1988, Grant 2005); usually real and imaginary elements coexist, and it is arguable that through innovation, cost reductions and increased appeal (product differentiation) can take place simultaneously (see Pitelis and Taylor 1999, who propose a "value for money" strategy that integrates Porter's 1985 two major "generic strategies"-cost leadership and differentiation).

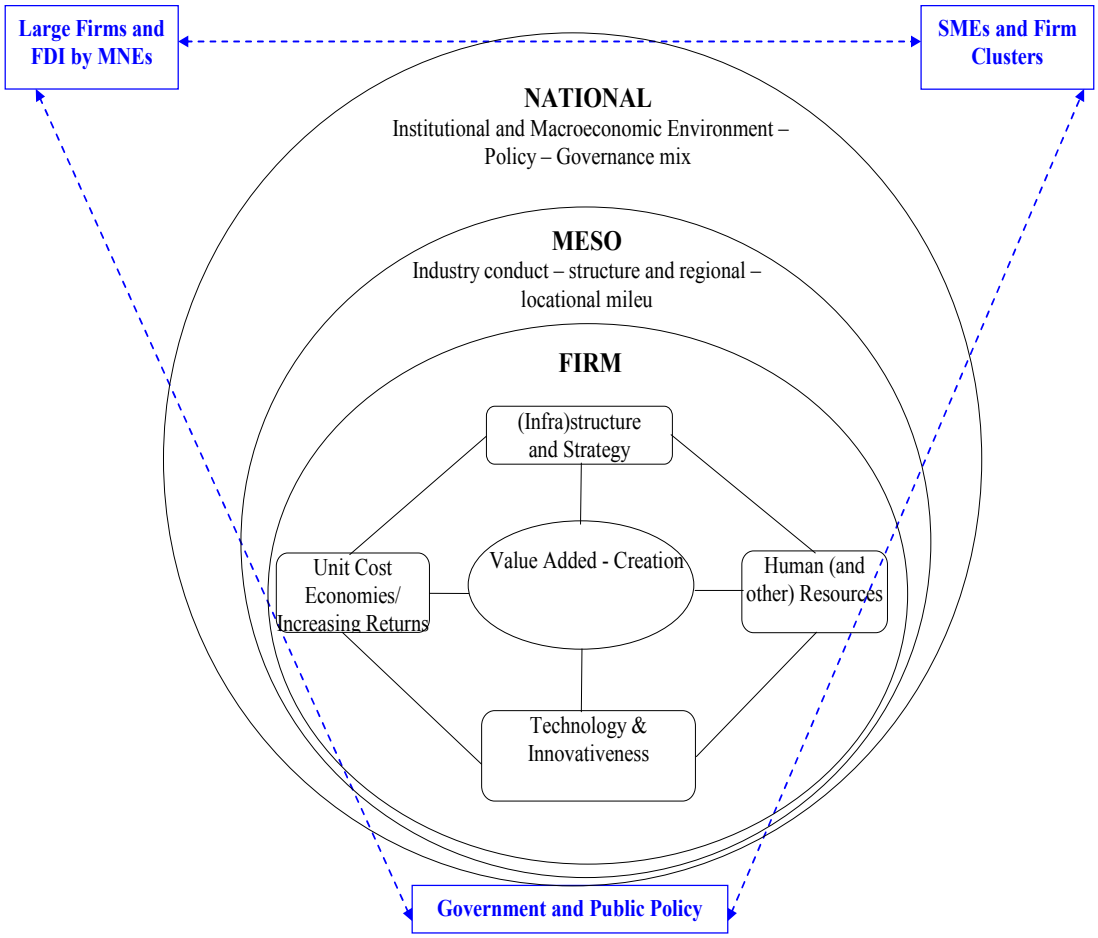
The crucial question is what are the major determinants of value added at the firm level, and to what extent the same or similar determinants exist at the meso and macro levels; so as to build on the firm-level microfoundations, in order to derive the determinants of the wealth of a nation. Drawing on extant theory of economics and management, Pitelis (2004) suggests that four major factors interact to explain value-added (through efficiency and/or differentiation) at the firm level: firm strategy and infra-structure; unit cost economies/increasing returns; resources, notably human ones; and technology and innovativeness. The importance of all four factors is well rehearsed in the literature, which involves virtually all all-time classics in economics and management. Important, however, in this framework is that the same four factors

[1] It could be argued that "utility" suffices and that cost production is of no additional use, as neoclassical economists do, see Robbins (1935). However, this would preclude one route through which perceived utility may increase; for business this is important. In any event, most neoclassical textbooks use the Demand-Cost Curve apparatus, which incorporates both a utility (through Demand) and cost (through the Cost curve) element.

can be re-interpreted to apply to the meso (region, industry, sector) and macro-levels (Pitelis, 2004), thus allowing a relatively smooth aggregation, based on micro-foundations.

The emergent "Wheel of Value" is shown in Figure 1;

Figure 1. The wheel of value – wealth creation at the firm, meso and macro – levels.



The "wheel" has the added advantage that one can examine in its context, the role of FDI, clusters and government (policy) as well as their interrelationships, as these interact and impact on all three levels. For example, Figure 1 shows that large size, and FDI by MNEs as well as clusters (by SMEs and/or MNEs), and the "government" (policies) are interrelated (with clusters attracting FDI and FDI creating and/or being linked to clusters, and government policy affecting and/or being affected by both), and they all impact on the determinants of value-added. The impact, however, need not always be positive or beneficial. FDI can do harm, or good; clusters can lead to congestion effects, or wither away (see Martin/Sunlay 2003; Jovanovic, 2009);

governments can be corrupt and/or ineffective and (thus) create (as opposed to solving) market failures see Krueger (1974), Shapiro and Taylor (1990) and Stiglitz (1998) for discussions.

Identifying the major determinants and actors of potential value added need not lead to realized value and wealth. This is where strategic management becomes crucial in informing policy makers. In particular, the determinants of value added in the "wheel of value" impact on potential value, not realized value, with one exception: that of firm (sector, industry and/or national) strategy. At the macro economic level, there has been limited interest on the issue of strategies for capturing value. Instead, in IO and strategic management, there is extensive discussion on strategies for value realization/capture. There are four major types of such strategies: integration, diversification, and cooperation strategies; "generic strategies"; entry deterrence strategies (through strategic or "innocent"-technological barriers to entry); and "firm differentiation/heterogeneity" strategies - see Pitelis (2009) for an account. There is some overlap and extensive interaction between these strategies (for example, Porter's (1985) "generic strategies" include two out of the four barriers to entry of Bain (1956), namely product differentiation and cost advantages). It is also arguable that such strategies are co-determined and co-evolving. Nevertheless, crucial about them is that in their interaction with product promotion and competitive strategies they help firms to realize potential value as profit, and capture more value than their competitors (sometimes even by capturing potential value created by their competitors, see Pitelis 2009, and Research Policy 2006).

It is arguable, that such strategies for value realization and value capture are applicable at the meso and national levels, albeit to different degrees. For example, countries can use strategic trade/protectionist policies. In addition, countries (and regions) may adopt regional/national differentiation strategies by strengthening, engendering and/or promoting their comparative or competitive advantages. In some cases, integration (or dis-integration) strategies are adopted by nations (for example, the integration of Germany, or the de-integration of countries from the former Soviet Union). Regional integration of countries, such as the EU, NAFTA or ASEAN, is common. The concept of generic strategies is also of much relevance to nations, who may choose (or turn out) to be cost leaders (e.g. China in manufacturing, India in IT services) differentiation (e.g. Italian design), or niche strategies (for example, Switzerland in banking and/or watches). More complex cases, could involve attempts

to combine elements of niche (cost leadership and/or product differentiation) in specific activities (like for example, Finland in the case of mobile telephony). Such strategies, in addition, can be partly history-determined, partly the result of policy initiatives, or usually a combination of both, such as the Finnish case - see Hill (2006). Fagerberg et al (2005), Freeman (1995) and Shapiro and Taylor (1990) provide discussion of various cases.

An awareness of the determinants of potential value added and the factors that can help realize/capture value can provide useful insights to policy makers who seek to achieve superior economic performance to that of their peers. At the broadest possible level, a superior ability to create and, especially, capture value in international markets is tantamount to superior economic performance by a particular nation. The mix of market/hierarchy/cooperation, private-public-hybrid, institutional, micro and macroeconomic policy, and the effectiveness and innovativeness of institutions, organisations and policies, will tend, in their interaction, help the "leaders" and "laggards", in this game, see Abramovitz (1986) and, for a critical survey, Fagerberg and Godinho (2005). It is not possible to go into further detail on exact policies here. This would, in effect, be the economic equivalent of searching for the "holy grail" (but see Shapiro and Taylor (1990), Solow (1997), Rodrik (2004) and Serra and Stiglitz (2008) for more on this.[1]) Instead, our aim here is to draw on the discussion above in order to discuss the relationship between FDI and economic integration in the context of our framework and discussion.

5.2 Competitive advantage, competitive positioning and vehicles to competitiveness and catching-up

Countries need to diagnose their comparative advantages, and reach a decision on whether they wish to "compete" on their basis, or to try to develop new competitive advantages, in activities, where they perceive to have more potential for the country and in international markets. Countries, that is, need to diagnose their "productive opportunity" (Penrose 1959), (the dynamic interaction between their internal resources and competencies and the external opportunities and threats). Sometimes,

[1] Shapiro and Taylor (1990) discuss seven "boundary conditions" that can help devise and implement successfully state developmental policies, country size being one of them-see below. Rodrik (2004) distinguishes between first principles (market-based competition, property rights, incentives, sound money) and the plethora of specific policies that can be in line with the first principles, in an attempt to explicate the failure of "Washington consensus-type policies", while salvaging the core of the neoclassical agenda.

potential advantages are latent and hard to identify. For example, in many transition economies post-1989 in Eastern Europe, people found themselves with ample time at their disposal and few opportunities for employment. Many were educated with mathematical and computing aptitudes. Some originally used these for quasi-illegal or outright illegal IT-related activities. In time accumulated expertise could be applied to legitimate activities, and help create IT clusters (for example in Romania). This latent IT cluster was possible to diagnose already in the early 1990s, and indeed it was diagnosed in some studies (see Pitelis 1997). The desired mix of comparative and competitive (comparative-to-be) advantages for each country and for each case requires in-depth investigation and cannot be decided on a priori grounds without analysis on the ground.

Once the comparative or competitive advantages have been diagnosed, selected and pursued (in the case of competitive ones), the next decision is the positioning stance. Building on our earlier analysis, countries, like firms, could choose to position themselves along the relative cost-differentiation ("Image") spectrum. This is shown in Figure 2.

Figure 2. The relative costs/differentiation ("image") matrix and country positioning.

		Relative Differentiation ("Image")	
		High	**Low**
Relative Costs	**Low**	Competitive	Stuck in the middle (In need of direction)
	High	Stuck in the middle (Losing ground)	Non-competitive

In the relative cost-differentiation spectrum, the best position to be in is low cost/high differentiation. This is normally effected by countries with a high innovation culture and performance – with strong "systems of innovation", so to speak. This allows them to simultaneously reduce costs (through organizational and institutional innovation), and produce products, services and an "image" (country differentiation)

of a leader, an innovator, a quality player. Small European players such as Sweden and Finland may be cases in point, see Freeman (1995) and Fagerberg et al. (2005).

Countries with high costs and low differentiation are laggards, they produce expensive goods and services, and the image of the country is one of low quality. High relative costs can be due to low innovative capability, poor infrastructure, lack of increasing returns, poor organizational and institutional configuration. Greece in the 1980s is an example.

Countries with high costs and high differentiation are likely to be developed ones with high technical and operational competencies, but without a strong innovation system, at least not presently. These countries can have relatively high costs, because, for example, of high labour costs, themselves the result of distributional and welfare policies, that resulted from a "glorious past". Lack of innovative capabilities can be the outcome of organisational and institutional sclerosis, an insistence on doing already proven things in already proven ways. This lack of curiosity and innovation could result in this "stuck in the middle"/question-mark position. It is likely to characterize developed economies that somehow have lost their way, their incentive to compete and innovate. Germany in the 1990s may be a case in point; so is Britain in the 1970s (and it looks like in the 2010s).

Low cost, low differentiation economies are also stuck in the middle, but are likely to be at an earlier stage of their development, perhaps transition or emerging economies. Here unit costs can be low because of very cheap labour and resource costs, but the lack of differentiation/comparative or competitive advantages also place them in the question-mark category. Eastern European transition economies are cases in point.

There can be intermediate situations, for example, in more recent years, the positioning of many South European countries, for example Greece, South Italy, Portugal and Spain, has been characterised by a very sui-generis model – that of low costs/moderate or even high skills/competencies. Relative costs have been kept low, through the creation of the so called 1,000 Euro generation, usually well educated, skilful and competent graduates who, however, have to work (often far in excess of the 8 hour working day), for Euro 1,000 a month (and indeed in Greece or Portugal for as low as Euro 600!). This helps the competitive positions of these countries vis-à-vis, for example, low cost/low differentiation ones. It is sustained through a sui-generis, inter-generational transfer of resources (the savings-wealth the parents

accumulated in previous years), and/or through multiple jobs (when feasible) and grey market activities. All these help engender their competitiveness despite the absence of a strong innovation culture/system. At one level, they represent a form of indirect subsidisation of locally-based firms and industries, which under normal circumstances (namely if individuals earned more, the state taxed them and used the taxes to subsidize industry), they would be considered as anti-competitive practices, for example by the European Commission. They are a form of Non-direct taxation of the countries' middle classes.

The relative costs/differentiation matrix does not make an explicit distinction between stages of development although it is likely that countries in the first column are likely to be developed, while the other less so, or emerging. The matrix can be of help to all countries, to identify ways to improve their competitiveness by reducing unit costs, improving differentiation, strengthening their innovation capabilities. For example, a small country (let's say island economy), with excellent climate, low costs of labour and little manufacturing (thus production costs too), can aim to effect high country differentiation (let's say as a tourist destination), with good service (which need not require much higher costs, if effected through cultural/educational means) and low costs. Small countries, with ample time to spare, due to lack of employment opportunities, could aim to effect differentiation through emphasising service provision, e.g. call centres, IT services etc. These are in effect "niche-differentiation" strategies. They are likely to be more appropriate for smaller countries which cannot compete with an across the board differentiation strategy.

This prescription is supported by the excellent account by Shapiro and Taylor (1990), who point to the "importance of specialized, niche-oriented industrial strategies for small, open economies" (p. 869) and go on to conclude that "There is no reason why production for appropriate niches should not initially be supported by import barriers and export subsidies; … full industrialization only occurs when infant firms grow up and can compete more or less effectively on international terms" (p. 873).

A third issue that all countries need to assess is the vehicles and policies through which competitiveness can be improved. Discussing specific policies is beyond the scope of this paper - see for example Shapiro and Taylor (1990), Rodrik (2004), Fagerberg and Gondinho (2005), Pitelis (2007) for more detailed discussions. By "vehicles" we refer to "FDI" and "clusters", as per Figure 1. Both independently can

impact on all determinants of value creation, see Pitelis et al (2006) for a more extensive account. However the sustainability of value capture requires embeddedness. This means that countries should preferably aim to create linkages between clusters and FDI, so that FDI does not "fly" when conditions change, (e.g. costs go up), because margins have also gone up through higher differentiation, effected through embeddedness.[1]

The need for embeddedness is emphasized in the work of Abramovitz (1986), albeit he uses the term "social capability". Abramovitz suggests that differences between the levels of development between countries do present opportunities for catching-up and convergence, but only provided that these countries have developed a social capability adequate to absorb existing more advanced technologies. The concept is very similar to that of "absorptive capacity", on which recent research currently takes place in IB scholarship (see Kottaridi et al., 2006 for an account). From our point of view, the interest lies in the fact that the building of "social capability" and/of "absorptive capacity" is something that involves by definition (viz the word "social") the government and the policy at large – it is not just a matter for the private sector. In addition, in our context here, local development effected through clusters represents one way through which "social capability" and "absorptive capacity" can be enhanced. Indeed the presence of clusters can also be seen as a manifestation of the existence of social capability that can be fostered through appropriate government measures.

The three issues raised above can and should be considered simultaneously. Competitive advantages could be linked to the positioning, clusters should be diagnosed and upgraded and FDI attracted, in a way that is in line with advantages and supports the pursued positioning.[2]

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[1] Jomo et al. (1997) comments on the issue of FDI and sustainability in the context of the development of the first-tier East Asian countries (like Singapore, South Korea, Taiwan and Hong Kong) and the second-tier ones, like Thailand, Malaysia and Indonesia as follows: "While the Northeast Asian economies have been open to foreign investment, they have also been more selective and have emphasised developing national (not necessarily state-owned, except perhaps in Taiwan) industrial, technological, marketing and related capacities. In contrast, most rentier entrepreneurs in Southeast Asia have not been obliged to deploy their rents at such ends" (p. 163).

[2] The requisite conditions for achieving these are not easy, and are arguably becoming more stringent for reasons related to technological changes (Fagerberg and Verspagen , 2002), but also institutional and international governance-related ones. At the time of its economic development, for example, Japan could get away with pursuing policies that would be considered as anti-competitive under current WTO regulations, and even received US support to implement them. When Washington-consensus-type free markets, free-trade policies are imposed on catching-up countries, this may be viewed as an attempt to "kick away the ladder" (see Stiglitz, 2001; Chang, 2002; and Fagerberg and Godinho, 2005;

Another consideration concerns adaptation. Detected advantages and positioning should be reviewed regularly to ensure consistency with evolving circumstances/stages of development. For example, in order to attract high knowledge intensive FDI, it may be useful to discourage some FDI, which may require rendering such FDI expensive to firms, through for example a high-wage policy – pursued for example by Singapore, Pitelis, (1994), Lall (2000), Fagerberg and Godinho (2005). In addition, care should be taken to achieve a coincidence between what (selected) MNEs require in their quest to optimize locational advantages (see Buckley and Ghauri, 2004), and what the country finds consistent with its advantages/positioning strategy. Such policies may become possible, in an era of "fragmentation" (see Venables 2003) that allows MNEs to separate the value-chain and choose "optimal" locations for each part of their production process.

It is arguable that smaller developing countries have advantages in pursuing such a strategy. Small size may help render identification of competitive advantages and positioning easier. It could also help with implementation – for example diagnose clusters, identify missing linkages, build an innovation system, effect country differentiation. Countries like Albania (for example, through the "Albania 1 Euro" initiative), Serbia (through its high-tech IT cluster in Vojnodina), Slovenia and even Greece through their nation-wide cluster diagnosis and upgrading strategies, help show that relatively smaller size can be an advantage - see Pitelis et al (2006). In addition smaller countries are less likely to invite retaliatory moves, as they are too small to impact on world prices. Importantly smaller countries may only be required to make one single choice right, in order to jump-start the process of growth. This could involve developing a single leading cluster and/or MNE, such as Nokia in Finland or Teva in Israel. The success of such companies in turn can allow smaller countries to move faster from a comparative advantage to a competitive one. Last, but not least, in an era characterised increasingly by knowledge-intensity and the importance of intellectual assets, it is arguable that a smaller country can institute faster and easier a successful programme of skill/capability/knowledge-upgrading for its people – sometimes by also drawing on its diaspora. Greece, Israel, Ireland are cases in point.

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for a discussion). Boltho and Allsopp (1987) showed that in the 1980s protectionism in the form of non-tariff barriers, was on the increase. On the other hand, the WTO can help participant countries to gain market access, partly offsetting these problems.

Another potential advantage of smallness is that it renders community links stronger. This could help with creating conditions of trust that can facilitate clustering (albeit that could be moderated by cultural factors, as "closeness" can also engender inter-personal rivalries). In any event, however, smallness is likely to lead to higher per capita remittances, due to stronger family links, thus helping smaller transition economies. For example, in an IMF (2005) study, countries with remittances higher than 10% of GDP were invariably smaller ones and included labour-exporting transition economies, such as Albania and Moldova. With remittances flows only second to FDI, this issue is surprisingly under-researched; it could well serve as an extra competitive (albeit transitory) advantage for smaller countries.

Clearly the above is not to suggest that small is only beautiful. It is arguable that a major liability of smallness is that it renders the incentive to be corrupt higher, as it can increase substantially the per capita payoff of corruption. We argued elsewhere that corruption which involves not only local politicians, but also MNEs, and which can take many different forms, to include regulatory capture, by local monopolies and foreign MNEs and rent seeking, can be a potent brake to development (Pitelis, 2004). It happens that this is more likely to plague smaller countries, which may offset other advantages of smallness. In addition, Nolan et al. (2008) argue that the "global business revolution" implies that "firms from low-income countries" access to developed country markets has become increasingly dependent upon entering into the global commodity chains of core firms based in high-income countries" (p.33)[1]. This and increasing non-tariff barriers, support the observation of new emerging difficulties for catching-up.

6. Summary and conclusion

We discussed the issue of competitiveness and catching-up in general and for catching-up countries in particular, paying attention to the role of FDI and clusters in this context. We suggested that extant frameworks for competitiveness lack micro-(firm-level) foundations, which we aimed to provide. In addition, we claimed that competitiveness and catching-up include a value capture (not just value creation) element, usually lacking in the predominantly macro-economic approaches to competitiveness. In this context, lessons can be derived from strategic management to

[1] Recent research by Monteiro et al (2008), that "subsidiary isolation" can hinder knowledge transfer to more "isolated" MNE subsidiaries. One could surmise that more isolated are likely to be subsidiaries in more distant, smaller developing economies.

include the issues of positioning, diagnosis and creation of competitive advantages and alignment between objectives and means to achieve selected strategies. FDI and clusters can serve a country's competitiveness, especially when they are combined and aligned with the country's competitive advantages and selected competitive stance/positioning. Emerging and transition economies may implement such strategies. Transition economies could devise strategies for FDI and/in relation to clusters that can be aligned to their created competitive advantages and competitive positioning to serve the purpose of superior competitiveness, and thus catching-up and economic integration.

At the same time the margins of opportunity may becoming narrower – not least because of the shifting landscape concerning globalization and global governance, see Dunning and Pitelis (2008). It is arguable that successful catching-up could be made much easier for emerging economies, were the international community to appreciate that such catching-up is good for global economic sustainability.

References

Abramovitz, M. (1986), 'Catching Up, Forging Ahead and Falling Behind', *Journal of Economic History,* 46(2), 385-406.

Aiginger, K. (2006a), 'Revisiting an Evasive Concept: Introduction to the Special Issue on Competitiveness'*, Journal of Industry, Competition and Trade,* 6, 63-66.

Aiginger, K. (2006b), 'Competitiveness: From a Dangerous Obsession to a Welfare Creating Ability with Positive Externalities'*, Journal of Industry, Competition and Trade,* 6, 161-177.

Alchian, A.A. and Demsetz, H. (1972), 'Production, Information Costs, and Economic Organization', *The American Economic Review*, 62(5), 777-795.

Amsden, A. H. (1989), *Asia's Next Giant: South Korea and Late Industrialization*. Oxford: Oxford University Press.

Amsden, A. H. (1997), 'Korea: Entrepreneurial Groups and Enterprising Government'. In A.D. Chandler Jr., F. Amatori and T. Hikino (eds.), *Big Business and the Wealth of Nations*. Cambridge: Cambridge University Press.

Amsden, A. H. (2009), *Escape from Empire: The Developing World's Journey through Heaven and Hell*. Boston, MA: MIT Press.

Aoki, M. (2001), *Toward a Comparative Institutional Analysis*. Boston, MA: MIT Press.

Aoki, M. (2004), An Organizational Architecture of T-form: Silicon Valley Clustering and Its Institutional Coherence, *Industrial and Corporate Change*, 13(6), 967-9.

Arikan, A.T. (2009), 'Interfirm Knowledge Exchanges and the Knowledge Creation Capability of Clusters', *Academy of Management Review*, 34(4), 658-676.

Audretsch, D. B. (1989), *The Market and the State*. London: Harvester, Wheatsheaf.

Audretsch, D.B. (1998), 'Agglomeration and the Location of Innovative Activity', *Oxford Review of Economic Policy*, 14(2): 18-29.

Augier, M., and Teece, D. (2008), 'Strategy as Evolution with Design: Dynamic Capabilities and the Design and Evolution of the Business Enterprise', *Organization Studies*, 29, 1187-1208.

Axelrod, R. (1984), *The Evolution of Cooperation*, New York: Basic Books.

Axelrod, R. (1997), *The Complexity of Cooperation: Agent-Based Models of Competition and Collaboration*. Princeton University Press: Princeton, New Jersey.

Baddeley, M. (2006), 'Convergence or Divergence? The Impacts of Globalisation on Growth and Inequality in Less Developed Countries', *International Review of Applied Economics*, 20, (3), 391-410.

Bain, J. S. (1956), *Barriers to New Competition: Their Character and Consequences for Manufacturing Industries*. Boston, MA: Harvard University Press.

Barney, J. B. (1991), 'Firm Resources and Sustained Competitive Advantage', *Journal of Management*, 17(1), 99-120.

Barro, R. J. and Sala-i-Martin, X. (2004), *Economic Growth*, 2nd edition. Cambridge, MA: MIT Press.

Baumol, W. J. (1982), 'Contestable Markets: An Uprising in the Theory of Industry Structure', *The American Economic Review*, 72 (1), 1-15.

Baumol, W. J. (1991), *Perfect Markets and Easy Virtue*. Oxford: Blackwell.

Becattini, G. (1978), 'The Development of Light Industry in Tuscany: An Interpretation', *Economic Notes*, 3, 107-23.

Bell, S.J., Tracey, P. and Heide, J.B. (2009), 'The Organization of Regional Clusters', *Academy of Management Review*, 34(4), 623-642.

Best, M. (1990), *The New Competition: Institutions for Industrial Restructuring*. Boston, MA: Harvard University Press.
Boltho, A. and Allsopp, C.J. (1987), 'The Assessment: Trade and Trade Policy', *Oxford Review of Economic Policy,* 3, i-xix.
Bowman, C. and Ambrosini, V. (2000), 'Value Creation versus Value Capture: Towards a Coherent Definition of Value in Strategy', *British Journal of Management*, 11(1), 1-15.
Breschi S. and Malerba, F. (2001), 'The Geography of Innovation and Economic Clustering: Some Introductory Notes', *Industrial and. Corporate Change*, 10(4), 817-33.
Brusco, S. (1982), 'The Emilian Model: Productive Decentralisation and Social Integration'. *Cambridge Journal of Economics*, 6, 167-84.
Brusco, S. (1986), 'Small Firms and Industrial Districts: The Experience of Italy'. In D. Keeble, E. Wever (eds.) *New Firms and Regional Development in Europe*. Croom Helm, Beckenham, Kent, 184-202.
Buckley, P.J. and Casson, M.C. (1976), *The Future of Multinational Enterprise*. London: Macmillan.
Buckley, P.J. and Ghauri P.N. (2004), 'Globalisation, Economic Geography and the Strategy of Multinational Enterprise', *Journal of International Business Studies*, 35(2), 33-45.
Cantwell, J. (2000), 'A survey of theories of international production.' In C.N. Pitelis and R. Sugden (eds), *The Nature of the Transnational Firm*. London: Routledge, 10-56.
Cantwell, J.A. and Iammarino, S. (2000), 'Multinational Corporations and the Location of Technological Innovation in the UK Regions', *Regional Studies,* 34(4), 317-322.
Casson, M. (1990), 'Introduction' to *The Large Multinational Corporation* by Stephen Hymer. In M. Casson (ed.) *Multinational Corporations*. Hants: Edward Elgar.
Chandler, A.D. (1962), *Strategy and Structure: Chapters in the History of the Industrial Enterprise*. Cambridge, MA: MIT Press.
Chang, H.J. (1994), *The Political Economy of Industrial Policy*. New York: St. Martin's Press.
Chang, H.J. (2002), *Kicking Away the Ladder: Development Strategy in Historical Perspective*. London: Anthem Press.
Chesier, S. and Penrose, J. (2007), *Top 200 Industrial Strategies of Viet Nam's Largest Firms*, United Nations Development Programme, Viet Nam.
Child, J. and Faulkner, D. (1998), *Strategies of Cooperation: Managing Alliances, Networks, and Joint Ventures*. Oxford, UK: Oxford University Press.
Coase, R. (1937), 'The nature of the firm,' *Economica*, 4(16), 386-405.
Coase, R (1960), 'The problem of social cost,' *Journal of Law and Economics*, 3(1), 1-44.
Coase, R.H. (1972), 'Industrial Organization: A Proposal for Research', in *Policy Issues and Research Opportunities in Industrial Organization. Economic Research: Retrospect and Prospect Vol. 3*. New York: NBER, 59-73.
Coase, R. (1991), 'The nature of the firm: influence,' in O. Williamson and S. Winter (eds), *The Nature of the Firm: Origins, Evolution and Development*. Oxford University Press: Oxford.
Cohen, W.M. and Levinthal, D.A. (1990), 'Absorptive Capacity: A New Perspective on Learning and Innovation', *Administrative Science Quarterly*, 35, 128-152.

Colombo, M.G. (2003), 'Alliance Form: A Test of the Contractual and Competence Perspectives', *Strategic Management Journal*, 24 (12), 1209-1229.
Cowling, K., and Sugden, R. (1987), *Transnational Monopoly Capitalism*. Hempstead: Wheatsheaf Hemel.
Cowling, K. and Waterson, M. (1976), 'Price-Cost Margins and Market Structure', *Economica*, New Series, 43(171): 267-274.
Cyert, R.M. and March, J.G. (1963/1992), *A Behavioral Theory of the Firm*, 2nd ed. Englewood Cliffs, NJ: Prentice Hall.
de la Mothe, J. and Paquet, G., (eds.) (1997), *Evolutionary Economics and the New International Political Economy.* London: Pinter.
Demsetz H (1973), 'Industry Structure, Market Rivalry and Public Policy', *Journal of Law and Economics*, 16, 1-9.
Deraniyagala, S. and Fine, B. (2001), 'New Trade Theory versus Old Trade Policy: A Continuing Enigma', *Cambridge Journal of Economics*, 25, 809-825.
de Rond, M. (2003), *Strategic Alliances as Social Facts: Business, Biotechnology, and Intellectual History.* Cambridge, UK: Cambridge University Press.
Dobb, M. (1973), *Theories of Value and Distribution since Adam Smith: Ideology and Economic Theory.* Cambridge, UK: Cambridge University Press.
Dooley, P.C. (1990), 'Value'. In Creedy, J. (ed.) (1990) *Foundations of Economic Thought*. Oxford: Basil Blackwell, 124-158.
Dosi, G. (1995), 'Hierarchies, Markets and Power: Some Foundational Issues on the Nature of Contemporary Economic Organisations', *Industrial and Corporate Change*, 4(1), 1-19.
Dosi, G. and Marengo, L. (2007), 'On the Evolutionary and Behavioral Theories of Organizations: A Tentative Roadmap', *Organization Science*, 18(3), 491-502.
Dosi, G., Nelson, R. and Winter S. Eds. (2000), *The Nature and Dynamics of Organizational Capabilities*. Oxford, UK: Oxford University Press.
Dosi, G., Faillo, M. and Marengo, L. (2008), 'Organizational Capabilities, Patterns of Knowledge Accumulation and Governance Structures in Business Firms: An Introduction', *Organization Studies*, 29(8/9), 1165-85.
Doz, Y.L., Santos, J. and Williamson P. (2001), *From global to metanational: how companies win in the knowledge economy*. Boston: Harvard Business School Press.
Dunning, J.H. (1958), *American Investment in British Manufacturing Industry*. London: Allen and Unwin.
Dunning, J.H. (1993), 'Internationalising Porter's Diamond', *Management International Review*, 33(2), 715.
Dunning, J.H. (1997), *Alliance Capitalism and Global Business*. London and New York: Routledge.
Dunning, J.H. (1998), 'Location and the Multinational Enterprise: A Neglected Factor?', *Journal of International Business Studies,* 29(1), 45-66.
Dunning, J.H. (2000), 'The Eclectic Paradigm as an Envelope for Economic and Business Theories of MNE Activity', *International Business Review*, 9(1), 163-90.
Dunning, J.H. (2001), 'The Key Literature on IB Activities: 1960-2000'. In Rugman, A.C. and Brewer, T.L. (eds.), *Oxford Handbook of International Business*. Oxford: Oxford University Press, 36-68.
Dunning, J.H. (2003), 'The Contribution of Edith Penrose to International Business Scholarship', *Management International Review*, 43(1).

Dunning, J.H. (2005), 'Towards a New Paradigm of Development; Implications for the Determinants of International Business Activity', *Mimeo*, Universities of Reading and Rutgers.
Dunning, J.H. (2006), 'Towards a New Paradigm of Development: Implications for the Determinants of International Business Activity', *Transnational Corporations*, 15(1), 173-228.
Dunning, J.H. and Lundan, S. M. (2006), 'The MNE as a Creator, Fashioner and Respondent to Institutional Change', *Mimeo*, Universities of Reading, Rutgers and Maastricht.
Dunning J.H. and Pitelis, N.C. (2008), 'Stephen Hymer's Contribution to International Business Scholarship: An Assessment and Extension', *Journal of International Business Studies*, 39, 167-176.
Dyer, J.H. and Nobeoka, K. (2000), 'Creating and Managing a High-Performance Knowledge-Sharing Network: The Toyota Case', *Strategic Management Journal*, 21(3), 345-367.
Dyer, J.H. and Singh, H. (1998), 'The Relational View: Cooperative Strategies and Sources of Interorganizational Competitive Advantage', *Academy of Management Review*, 23(4), 660-679.
Edquist, C. (2005), 'Systems of innovation: Perspectives and Challenges'. In Fagerberg, J., Mowery, D.C. and Nelson, R.R. (eds.), *The Oxford Handbook of Innovation*. Oxford, UK: Oxford University Press, 181-208.
Enright, M.J. (1996), 'Regional Clusters and Economic Development: A Research Agenda. In Staber U.H., Schaefer N.V., and Sharma, B. (Eds.) *Business Networks: Prospects for Regional Development*. Berlin: Walter de Gruyter.
Fagerberg, J. and Srholec, M. (2005), *Catching up: What are the Critical Factors for Success?* Industrial Development Report, UNIDO.
Fagerberg, J. and Verspagen, B. (2002), 'Technology-gaps, Innovation-Diffusion and Transformation: An Evolutionary Interpretation', *Research Policy*, 31, 1291-1304.
Fagerberg, J. and Godinho M.M. (2005), 'Innovation and Catching-up'. In Fagerberg, J., Mowery, D.C. and Nelson, R.R. (eds.), *The Oxford Handbook of Innovation*. Oxford: Oxford University Press.
Fagerberg, J., Mowery, D. and Nelson, R.R. (eds.) (2005), *The Oxford Handbook of Innovation*. Oxford: Oxford University Press.
Feenstra, R.C. (1996), 'Trade and uneven growth', *Journal of Development Economics*, 49, 229-256.
Feldman, M.P. (2001), 'The Entrepreneurial Event Revisited: Firm Formation in a Regional Context', *Industrial and Corporate Change*, 10(4), 861-891.
Feldman, M.P, Francis, J. and Bercovitz, J. (2005), 'Creating a Cluster While Building a Firm: Entrepreneurs and the Formation of Industrial Clusters', *Regional Studies*, 39(1), 129-141.
Fine, B. (2000), 'Endogenous Growth Theory: A Critical Assessment', *Cambridge Journal of Economics*, 24(2), 245-65.
Foss, N.J. and Loasby, B.J. eds. (1998), *Economic Organization, Capabilities and Co-ordination Essays in Honour of G.B. Richardson.* Routledge Studies in Business Organization and Networks. London and New York: Routledge.
Foucault, M. (1980), *Power/knowledge: Selected interviews and other writings by Michel Foucault, 1972-77*. C. Gordon (Ed.). Brighton: Harvester.
Freeman, C. (1995), 'The 'National System of Innovation' in Historical Perspective', *Cambridge Journal of Economics*, 19, 5-24.

Gordon, I.R. and McCann, P. (2000), 'Industrial Clusters: Complexes, Agglomeration and/or Social Networks?', *Urban Studies*, 37 (3), 513-532.
Grabowski, R. (1994), 'The Successful Developmental State: Where Does it Come From?' *World Development,* 22(3), 413-422.
Grant, R.M. (2005), *Contemporary Strategy Analysis*. Oxford: Blackwell Publishing.
Gulati, R. (1998), 'Alliances and Networks', *Strategic Management Journal*, Special Issue: Editor's Choice, 19(4), 293-317.
Gulati, R., Nohria, N., and Zaheer, A. (2000), 'Strategic Networks', *Strategic Management Journal*, 21(3): 203-215.
Henderson, J.V. (2005), *New Economic Geography.* Northampton, MA: Elgar Publishing Inc.
Hennart, J.F. (1991), 'The Transactions Cost Theory of Joint Ventures: An Empirical Study of Japanese Subsidiaries in the USA', *Management Science*, 37, 483-497.
Hill, C. (2006), *International Business.* McGraw Hill, 6th Edition.
Horaguchi, H. and Toyne, B. (1990), 'Setting the record straight: Hymer, internalization theory and transaction cost economics', *Journal of International Business Studies,* 21(3), 487-495.
Hymer, S.H. (1968), 'The Large Multinational 'Corporation''. In Casson, M. (1990) (ed.), *Multinational Corporations*. Hants: Edward Elgar, 6-31.
Hymer, S.H. (1970), 'The Efficiency (Contradictions) of Multinational Corporations', *American Economic Review Papers and Proceedings*, 60, 441-48.
Hymer, S.H. (1972), 'The Multinational Corporation and the Law of Uneven Development'. In Bhagwati, J.N. (ed.), *Economics and World Order*. London: Macmillan.
Hymer, S.H. (1976), *The International Operations of National Firms: A Study of Foreign Direct Investment*. Cambridge, Mass: MIT Press.
Hymer, S.H. (1979), in R.B. Cohen et al (eds.), *The Multinational Corporation: a Radical Approach. Papers by Stephen Herbert Hymer*. Cambridge University Press: Cambridge.
Jackson, G. and Deeg, R. (2006) "How Many Varieties of Capitalism? Comparing the comparative institutional analyses of capitalist diversity", MPIfG Discussion Paper No. 06/2.
Jomo, K.S., Chung, C.Y, Folk, B.C., ul-Haque, I., Phongpaichit, P., Simatupang, B. and Tateishi M. (1997), *Southeast Asia's Misunderstood Miracle: Industrial Policy and Economic Development in Thailand, Malaysia and Indonesia*. Oxford: Westview Press.
Jovanovic, M.N. (2009), *Evolutionary Economic Geography. Location of Production and the European Union.* London; New York: Routledge.
Kaldor, N. (1972), 'The Irrelevance of Equilibrium Economics', *Economic Journal,* 82(328), 1237-1255.
Kale, P., Dyer, J.H. and Singh, H. (2002), 'Alliance Capability, Stock Market Response, and Long-term Alliance Success: the Role of the Alliance Function', *Strategic Management Journal,* 23, 747-767.
Kay, N. (1999), 'Hercules and Penrose', *Contributions to Political Economy,* 18, 67-86.
Keynes, J.M. (1936), *The General Theory of Employment, Interest and Money.* London: Macmillan.
Kim, K. and Park, J. (2002), 'The Determinants of Value Creation for Partner Firms in the Global Alliance Context', *Management International Review*, 42 (4), 361-384.

Kogut, B. (1988), 'Joint Ventures: Theoretical and Empirical Perspectives', *Strategic Management Journal,* 9(4), 319-332.
Kogut, B. and Zander, U. (1993), 'Knowledge of the Firm and the Evolutionary Theory of the Multinational Corporation', *Journal of International Business Studies*, 24(4), 625-645.
Kor, Y.Y., and Mahoney, J.T. (2000), 'Penrose's Resource-Based Approach: The Process and Product of Research Creativity', *Journal of Management Studies*, 37(1), 99-139.
Kottaridi C., Papanastassiou M., Pitelis C.N. and Thomakos D. (2006), *The Multinational Corporation and the Global Sourcing of Knowledge: Remodelling Absorptive Capacity'*, Third Annual JIBS/AIB/CIBER/ERIM Invitational Conference on Emerging Research Frontiers, Erasmus University, Rotterdam, September 2006.
Kottaridi, C., Papanastassiou, M. and Pitelis, C.N. (2010), 'Determinants of MNE Subsidiaries' Decision to Set up Own R&D Laboratories – The Choice of Region', in P. Nijkamp and I. Siedschlag (eds.) *Economic Growth, Innovation and Competitiveness in a Knowledge-Based World Economy*, Edward Elgar, forthcoming.
Krueger, A. (1974), 'The Political Economy of the Rent-Seeking Society', *American Economic Review,* 64, 291-303.
Krugman, P.R. (1986), *Strategic Trade Policy and the New International Economies*. Cambridge, MA: MIT Press.
Krugman, P.R. (1987), 'Is Free Trade Passe?', *Journal of Economic Perspective,* 1(2), 131-44.
Krugman, P.R. (1989), 'Economic Integration in Europe: Some Conceptual Issues'. In A. Sapir (ed.), *The European Internal Market.* Oxford, UK: University Press.
Krugman, P.R. (1991a), *Geography and Trade.* Cambridge, MA: MIT Press.
Krugman, P.R. (1991b), 'Increasing Returns and Economic Geography', *Journal of Political Economy*, 99, 483-499.
Krugman, P.R. (1992), 'Does the New Trade Theory Require a New Trade Policy?', *The World Economy*, 15(4), 423-442.
Krugman, P.R. (1994), 'Competitiveness a Dangerous Obsession', *Foreign Affairs*, 73(2), 28-44.
Krugman, P. R. (1998a), 'What's New about the New Economic Geography?', *Oxford Review of Economic Policy*, 14(2), 7-17.
Krugman, P.R. (1998b), 'Space: The Final Frontier', *Journal of Economic Perspectives*, 12(2), 161-174.
Lall, S. (2000), 'Technological Change and Industrialization in the Asian Newly Industrialising Economies: Achievements and Challenges'. In Kim L./Nelson R.(eds.), *Technology, Learning and Innovation: Experiences of Newly Industrialising Economies*. Cambridge: Cambridge University Press.
Langlois, R.N. and Robertson, P.L. (1995), *Firms, Markets, and Economic Change: A Dynamic Theory of Business Institutions*. Abingdon and New York: Routledge.
Lawson, C. (1999), 'Towards a Competence Theory of the Region', *Cambridge Journal of Economics*, 23, 151-166.
Lawson, C. and Lorenz, C. (1999), 'Collective Learning, Tacit Knowledge and Regional Innovation Capacity', *Regional Studies*, 33, 305-317.
Lin, J.Y. (2004), Reform and Development in China: A New Institutional Economics Perspective', *Seoul Journal of Economics*, 17(3), 335-381.

Loasby, B.J. (1996), 'The Organisation of Industry'. In Foss, N.J. and Knudsen, C. (Eds), *Towards a Competence Theory of the Firm*. London: Routledge, 38-53.
Loasby, B. (1999), 'The Significance of Penrose's Theory for the Development of Economics', *Contributions to Political Economy, Special Issue on Edith Penrose*, 18, 31-45.
Locke, R. (1995), *Remaking the Italian Economy*. Ithaca, NY: Cornell University Press.
Lorenzen, M. and Maskell, P. (2004), 'The Cluster as a Nexus of Knowledge Creation'. In P. Cooke and A. Piccaluga (Eds.) *Regional Economies as Knowledge Laboratories*, London, UK: Edward Elgar, 77-92.
Lorenzoni, G. and Ornati, O. (1988), 'Constellations of Firms and New Ventures', *Journal of Business Venturing*, 88(1), 41-57.
Lucas, R.E. (1988), 'On the Mechanics of Economic Development', *Journal of Monetary Economics,* 22(1), 3-42.
Lundvall, B.A. (1988) "Innovation as an Interactive Process from User-producer Interaction to the National System of Innovation", in Dosi G./Freeman C./Nelson R.R./Silverberg G./Soete L.L.G.(eds.), *Technical Change and Economic Theory*. London: Pinter.
Lundvall, B.A. (2007) "National Innovation Systems – Analytical Concept and Development Tool", *Industry and Innovation*, 14(1), 95-119.
Mahoney, J.T. (2005), *Economic Foundations of Strategy*. Thousand Oaks, CA: SAGE Publications Inc.
Mahoney, J.T., and Pandian, J.R. (1992), 'The Resource-Based View within the Conversation of Strategic Management', *Strategic Management Journal*, 13, 363-80.
Malmberg, A. and Maskell, P. (2002), 'The Elusive Concept of Localization Economies: Towards a Knowledge Based Theory of Special Clustering', *Environment and Planning A*, 34, 429-449.
Markusen, A. (1996), 'Sticky Places in Slippery Space: A Typology of Industrial Districts', *Economic Geography*, 72, 293-313.
Marris, R., Edith Penrose and Economics, *Contributions to Political Economy,* 18 (1999), 47-65.
Marshall, A. (1920/1961), *Principles of Economics,* 9th edition, (Guillebaud, ed.) London: Macmillan.
Martin R. (1999), 'Critical Survey. The New "Geographical Turn" in Economics: Some Critical Reflections', *Cambridge Journal of Economics*, 23, 65-91.
Martin, R. and Sunley, P. (2003), 'Deconstructing Clusters: Chaotic Concept or Policy Panacea?', *Journal of Economic Geography,* 3(1), 5-35.
Martin, R. and Sunley, P. (2006), 'Path Dependence and Regional Economic Evolution', *Journal of Economic Geography*, 6(4): 395-437.
Maskell, P. (2001), 'Towards a Knowledge Based Theory of the Geographical Cluster', *Industrial and Corporate Change*, 10, 921-943.
Ménard, C. (2004), 'The Economics of Hybrid Organizations', *Journal of Institutional and Theoretical Economics,* 160(3), 345-376.
Menzel, M.P. and Fornahl, D. (2010), 'Cluster life Cycles—Dimensions and Rationales of Cluster Evolution', *Industrial and Corporate Change*, 19, 205-238.
Mesquita, L.F. (2007), 'Starting Over When the Bickering Never Ends: Rebuilding Aggregate Trust Among Clustered Firms through Trust Facilitators', *Academy of Management Review*, 32, 72-91.

Metcalfe, J.S. (2002), 'On the Optimality of the Competitive Process: Kimura's Theorem and Market Dynamics', *Journal of Bioeconomics*, 4(2), 109-133.
Monteiro, L.F., Arvidsson, N., and Birkinshaw, J. (2008), 'Knowledge Flows within Multinational Corporations: Explaining Subsidiary Isolation and its Performance Implications', *Organization Science*, 19(1), 90-107.
Nelson, R.R. (1993), *National Innovation Systems: A Comparative Analysis*. Oxford, UK; New York, NY: Oxford University Press.
Nelson, R.R. (1995), 'Coevolution of Industry Structure, Technology and Supporting Institutions, and the Making of Comparative Advantage', *International Journal of the Economics of the Business*, 2, 171-84.
Nelson, R.R., Winter, S.G. (2002), 'Evolutionary Theorizing in Economics', *Journal of Economic Perspectives*, 16(2), 23-46.
Nohria, N., and Eccles, R.G. (Eds.) (1992), *Networks and Organizations*. Boston, MA: Harvard Business School Press.
Nolan, P. (2001), *China and the Global Economy*. London: Palgrave.
Nolan, P., Zhang J. and Liu C. (2008), 'The Global Business Revolution, the Cascade Effect, and the Challenges for Firms from Developing Countries', *Cambridge Journal of Economics*, 32, 29-47.
Nooteboom, B. (2004), *Inter-Firm Collaboration, Networks and Strategy: An Integrated Approach*. New York: Routledge.
Nooteboom, B. (2008), 'Learning and Innovation in Inter-organizational Relationships'. In M. Ebers and P. Smith Ring (Eds.), *Handbook of Inter-organizational Relationships*. Oxford: Oxford University Press, 607-634.
North, D.C. (1994), 'Economic Performance Through Time', *The American Economic Review,* 84(3), 359-368.
Oxley, J.E. (1997), 'Appropriability Hazards and Governance in Strategic Alliances: A Transaction Cost Approach', *Journal of Law, Economics and Organization*, 13, 387-409.
Papanastassiou, M. and Pearce, R.D. (2009), *The Strategic Development of Multinationals*. Basingstoke, UK: Palgrave Macmillan.
Parkhe, A. (1993), 'Strategic Alliance Structuring: A Game Theoretic and Transaction Cost Examination of Inter-firm Cooperation', *Academy of Management Journal*, 36(4), 794-829.
Penrose, E.T. (1956), 'Foreign Investment and the Growth of the Firm', *Economic Journal*, 66, 220-235.
Penrose, E. (1959), *The Theory of the Growth of the Firm*. Oxford: Basil Blackwell.
Penrose, E.T. (1960), 'The Growth of the Firm – A Case Study: the Hercules Powder Company', *Business History Review*, 34(1), 1-23.
Penrose, E.T. (1987), 'Multinational corporations'. In Eatwell, J., P. Newman and M. Milgate (eds.), *The New Palgrave: A Dictionary of Economics*, 562-564.
Penrose, E.T. (1995), 'Foreword' to the Third Edition of *The Theory of the Growth of the Firm*, Oxford: Oxford University Press, i-xxi.
Penrose, E.T. (2008), 'Strategy/Organization and the Metamorphosis of the Large Firm', *Organization Studies,* 29(8/9), 1117-1124.
Peteraf, M. (1993). 'The Cornerstone of Competitive Advantage', *Strategic Management Journal*, 14, 179-191.
Peteraf, M.A. and Barney, J.B. (2003), 'Unravelling the Resource Based Tangle', *Managerial and Decision Economics*, 24(4), 309-323.
Pitelis, C.N. (1991), *Market and Non-Market Hierarchies: Theory of Institutional Failure*, Oxford, UK: Blackwell.

Pitelis, C.N. (1994), 'Industrial Strategy: for Britain, in Europe and the World', *Journal of Economic Studies,* 21(5), 2-92.
Pitelis, C.N. (1997), *Economic Integration through Foreign Direct Investment in (the Less Favoured Countries of) Central and Eastern Europe and Impact on the (Less Favoured Countries of the) European Union*, ACE Project No 94-0719-R.
Pitelis, C.N. (2000), A Theory of the (Growth of the) Transnational Firm: A Penrosean Perspective, *Contributions to Political Economy,* 19, 71-89.
Pitelis, C.N. (2001), 'Industrial Strategy'. In M. Warner (ed.), *International Encyclopedia of Business and Management*, Routledge/ITBP.
Pitelis, C.N. (ed.) (2002a), *The Growth of the firm: the legacy of Edith Penrose.* Oxford: Oxford University Press.
Pitelis, C.N. (2002b), 'Stephen Hymer: Life and the Political Economy of Multinational Corporate Capital', *Contributions to Political Economy,* 21, 9-26.
Pitelis, C.N. (2004), '(Corporate) Governance, (Shareholder) Value and (Sustainable) Economic Performance', *Corporate Governance: An International Review,* 12(2), 210-223.
Pitelis, C.N. (2004), 'Edith Penrose and the resource-based view of (international) business strategy', *International Business Review*, 13, 523–532.
Pitelis, C.N. (2007a), 'Edith Penrose and a learning-based perspective on the MNE and OLI,' *Management International Review*, 47(2), 207–220.
Pitelis, C.N. (2007b), 'European Industrial and Competition Policy', *Policy Studies*, 28(4), 365-381.
Pitelis, C.N. (2009), 'The co-evolution of organizational value capture, value creation and sustainable advantage,' *Organization Studies*, 30(10), 1115–39.
Pitelis, C.N. and Boddewyn, J. (2009), 'Where is the "I" in "IB" Research?', *mimeo* University of Cambridge and City University New York.
Pitelis, C.N. and Sugden R. (2002), 'Preface', *Contributions to Political Economy*, Special Issue on Stephen Hymer, 21, 1-4.
Pitelis, C.N. and Taylor, S. (1999), 'From Generic Strategies to Value for Money in Hypercompetitive Environments', *Journal of General Management*, 21(4), 45-61.
Pitelis, C.N. and Teece D.J. (2009), 'The (new) nature and essence of the firm,' *European Management Review*, 6, 5–15.
Pitelis, C.N. and Teece, D.J. (2010), 'Cross-border Market Co-creation, Dynamic Capabilities and the Entrepreneurial Theory of the Multinational Enterprise', *Industrial and Corporate Change*, 19(4).
Pitelis, C.N. and Wahl M.W. (1998), 'Edith Penrose: pioneer of stakeholder theory', *Long Range Planning,* 31(2), 252-261.
Pitelis, C.N., Sugden, R. and Wilson J. (eds.) (2006), *Clusters and Globalisation: The Development of Urban and Regional Economies*, Cheltenham: Edward Elgar.
Porter, M.E. (1980), *Competitive Strategy: Techniques for Analyzing Industries and Competitors.* New York: The Free Press.
Porter, M.E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance.* New York: The Free Press.
Porter, M.E. (1990), *The Competitive Advantage of Nations.* Macmillan, Basingstoke.
Porter, M.E. (1998a), 'Clusters and the New Economics of Competition', *Harvard Business Review*, November-December: 77-90.
Porter, M.E. (1998b), 'The Adam Smith address: Location, clusters and the "new" microeconomics of competition', *Business Economics*, 3(1), 7-13.
Porter, M.E. (2000), 'Location, Competition, and Economic Development: Local Clusters in a Global Economy', *Economic Development Quarterly*, 14 (1), 15-34.

Pyke, F., Becattini, G. and Segerberger, W. (1990), *Industrial Districts and Inter-Firm Co-Operation in Italy*. International Institute for Labour Studies, Geneva.
Radner, R. (2000), 'Costly and Bounded Rationality in Individual and Team Decision-Making', *Industrial and Corporate Change*, 9(4), 623-658.
Research Policy (2006), *Special Issue Commemorating the 20th Anniversary of David Teece's Article, 'Profiting from Innovation'*, H. Chesbrough /H., Birkinshaw J./Teubal M. (eds.) Research Policy, 35(8).
Reuer, J.J., Zollo, M. and Singh, H. (2002), 'Post-formation Dynamics in Strategic Alliances', *Strategic Management Journal*, 23, 135-151.
Ricardo, D. (1817), *The Principles of Political Economy and Taxation*, London: John Murray; reprinted, Dent: Dutton, 1973.
Richardson, G.B. (1972), 'The Organisation of Industry', *Economic Journal,* 82, 883-896.
Robbins, L. (1935), *An Essay on The Nature and Significance of Economic Science*. London: Macmillan.
Rodrik, D. (2004), 'Growth Strategies', Working Paper, Kennedy School of Government, Harvard University.
Romanelli, E. and Khessina, O.M. (2005), 'Regional Industrial Identity: Cluster Configurations and Economic Development', *Organization Science*, 16(4), 344-358.
Romer, P.M. (1986), 'Increasing Returns and Long-run Growth', *Journal of Political Economy*, 94(5), 1002-37.
Romer, P.M. (1990), 'Endogenous Technological Change', *Journal of Political Economy*, 98, 71-101.
Rugman, A.M. and Verbeke A. (1993), 'Foreign Subsidiaries and Multinational Strategic Management: an Extension and Correction of Porter's Single Diamond Framework', *Management International Review*, 33(2), 71-84.
Rugman, A.M. and Verbeke, A. (2002), 'Edith Penrose's Contribution to the Resource-Based View of Strategic Management', *Strategic Management Journal*, 23, 69-78.
Sabel, C. (1989), 'Flexible Specialization and the Re-emergence of Regional Economies'. In P. Hirst, J. Zeitlin, (Eds.) *Reversing Industrial Decline? Industrial Structure and Policy in Britain and Her Competitors*. Oxford, UK: Berg, 17-70.
Sacchetti, S. and Tomlinson, PR (2006), 'Globalisation, Governance and Clusters: North Staffordshire Ceramic and Prato Textile Industries'. In C.N. Pitelis, R. Sugden and J.R. Wilson (Eds.) *Clusters and Globalisation: The Development of Urban and Regional Economies*. Cheltenham: Edward Elgar.
Samuelson, P. A. (1962), 'The Gains from International Trade Once Again', *The Economic Journal*, 72(288), 820-829.
Saxenian, A. (1994), *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, MA: Harvard University Press.
Schumpeter, J. (1942), *Capitalism, Socialism and Democracy*, New York: Harper & Row, 25th ed., London: Unwin Hyman, 1987.
Serra, N. and Stiglitz J. (2008), *The Washington Consensus Reconsidered: Towards a New Global Governance*. Oxford: Oxford University Press.
Shapiro, H. and Taylor, L. (1990), 'The State and Industrial Strategy', *World Development,* 18(6), 861-878.
Simmie, J. and Martin, R. (2010), 'The Economic Resilience of Regions: Towards an Evolutionary Approach', *Cambridge Journal of Regions, Economy and Society*, Advance Access published January 6, 2010, 1-17.

Simon, H.A. (1995), 'Organisations and Markets', *Journal of Public Administration Research and Theory* (Transaction), 5(3), 273-295.
Smith, A. (1776), *An Enquiry into the Nature and Causes of the Wealth of Nations*, 1st edn. 1776; in The Glasgow Edition of the Works and Correspondence of Adam Smith, R. H. Campbell, A. S. Skinner, and W. B. Todd (eds.) Vol. II. Oxford: Oxford University Press.
Solow, M.R. (1956), 'A Contribution to the Theory of Economic Growth', *Quarterly Journal of Economics*, 70, 65-94.
Solow, M.R. (1997), *Learning from 'LEARNING BY DOING': Lessons for Economic Growth*, Stanford, California: Stanford University Press.
Solow, M.R. (2000), *Growth Theory: An exposition*. Oxford: Oxford University Press.
Spender, J.C. (1994), 'Organizational knowledge, collective practice and Penrose rents', *International Business Review*, 3, 353-367.
Stiglitz, J. (1989), 'Markets, Market Failures and Development', *American Economic Review,* 79(2), 197-203.
Stiglitz, J. (1998), 'The Private Uses of Public Interests: Incentives and Institutions', *Journal of Economic Perspectives*, 12(2), 3-22.
Stiglitz, J. (2001), 'Foreword' in K Polanyi (ed.) *The Great Transformation. The Political and Economic Origins of Our Time.* Boston: Beacon Press.
Storper, M. and Venables, A.J. (2004), 'Buzz: Face to Face Contact and the Urban Economy', *Journal of Economic Geography*, 4, 351-370.
Tallman, S., Jenkins, M., Henry, N., and Pinch, S. (2004), 'Knowledge, Clusters, and Competitive Advantage', *Academy of Management Review*, 29, 258-271.
Teece, D.J. (1986a), 'Profiting from technological innovation,' *Research Policy*, 15(6), 285-305.
Teece, D.J. (1986b), 'Transaction cost economics and the multinational enterprise: an assessment,' *Journal of Economic Behavior and Organization*, 7, 21-45.
Teece, D.J. (2006), 'Reflections on the Hymer thesis and the multinational enterprise', *International Business Review*, 15(2), 124-139.
Teece, D.J. (2007), 'Explicating dynamic capabilities: the nature and micro-foundations of (sustainable) enterprise performance,' *Strategic Management Journal*, 28, 1319-50.
Teece, D.J. (2009), *Dynamic Capabilities and Strategic Management: Organizing for Innovation and Growth*. Oxford: Oxford University Press.
Teece, D.J., Rumelt, R., Dosi, G. and Winter, S. (1994), 'Understanding Corporate Coherence: Theory and Evidence', *Journal of Economic Behavior and Organization*, 23(1), 1-30.
Teece, D.J., Pisano, G. and Shuen, A. (1997), 'Dynamic Capabilities and Strategic Management', *Strategic Management Journal,* 18, 509-533.
The Economist, (2005), 'Face value: The master builder', 15th October 2005, 88.
Tirole, J. (1988), *The Theory of Industrial Organization.* Cambridge, MA: MIT Press.
Venables, A.J. (2003), 'Gainers and Losers from Regional Integration Agreements', *Economic Journal*, 113(490), 747-761.
Verbeke, A. (2009), *International Business Strategy*. Cambridge: Cambridge University Press.
Verbeke, A. (2003), 'The evolutionary view of the MNE and the future of internalization theory', *Journal of International Business Studies*, 34, 498-504.
Verbeke, A. and Yuan, W. (2007), 'Entrepreneurship in Multinational Enterprises: A Penrosean Perspective', *Management International Review,* 47(2), 139-149.

Vernon, R. (1966), 'International Investment and International Trade in the Product Cycle', *The Quarterly Journal of Economics*, 80(2), 190-207.
Verspagen, B. (2005), 'Innovation and Economic Growth'. In Fagerberg, J., Mowery, D.C. and Nelson, R.R. (eds.), *The Oxford Handbook of Innovation*, Oxford: Oxford University Press.
Wade, R. (1990), *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*. Princeton: Princeton University Press.
Wernerfelt, B. (1984), 'The Resource-based View of the Firm', *Strategic Management Journal*, 5, 171-180.
Wignarajah, G. (ed.) (2003), *Competitiveness Strategy and Industrial Performance in Developing Countries: A Manual Policy Analysis*. Oxford: Routledge.
Williamson, O.E. (1975), *Markets and Hierarchies: Analysis and Antitrust Implications. A Study in the Economics of Internal Organization*. New York, NY: The Free Press.
Williamson, O.E. (1981), 'The Modern Corporation: origins, evolution, attributes', *Journal of Economic Literature,* 19(4), 1537-69.
Williamson, O.E. (1985), *The Economic Institutions of Capitalism: Firms, Market, Relational Contracting*, The Free Press: New York and London.
Williamson, O.E. (1996), 'Efficiency, Power, Authority and Economic Organization'. In Groenewegen, J. (Ed.), *Transaction Cost Economics and Beyond*. Boston; Dordrecht; London: Kluwer Academic Publishers, 11-42.
Young, A. (1928), 'Increasing Returns and Economic Progress', *Economics Journal,* 38(152), 527-542.
Zollo, M., Reuer, J.J. and Singh, H. (2002), 'Interorganizational Routines and Performance in Strategic Alliances', *Organization Science*, 13(6), 701-13.
Zollo, M. and H. Singh (2004), 'Deliberate Learning in Corporate Acquisitions: Post-Acquisition Strategies and Integration Capability in U.S. Bank Mergers', *Strategic Management Journal*, 25, 1233-56.

Discussion

Chair:
Thank you, Christos. I think we have some time for questions. Ten minutes for questions. Let me try to give a brief summary of the key points of the two speakers, so I can give you some time to think. Doctor Vrettos offered us an executive brief interpretation of the crisis at the real economy level. He gave an overview of the key factors involved in a crisis at the enterprise level, like consumer spending, demand, risk, cost of debt, liquidity squeeze, key important factors. And he drew valuable lessons from the Great Depression and from fascinating case studies, demonstrating how to capture the opportunity with a number of corporate strategies, such as cutting costs while protecting core business, building loyalty, refocusing the product portfolio, gaining new customers and developing new products. Doctor Pitelis gave us an overview of competitiveness at Southeast Europe, nations and firms, by providing a very fascinating conception framework. In this framework, one can find a wealth of ideas that are key to developing sustainable competitiveness. He mentioned value creation versus value wealth capture; he gave the distinction, the incentives' limitations; he presented the will of value wealth, presenting hierarchies and players involved in value creation; he mentioned the VRINA resources and other requirements for creating value; he discussed the important issue of national and regional positioning; he brought about issues of policy compatibility between macro and micro levels and gave a number of examples and highlights at this level, and presented the need for putting in place requisite government structures for economic sustainability.I would like to invite any questions to our two speakers. The floor is yours.

Person in the audience:
Both presentations were very-very useful and comprehensive and they touched upon the non-financial companies. I just have one question for Mr. Vrettos and one for Mr. Pitelis. For Mr. Vrettos. Niko, your examples were very useful indeed. I just wonder what happens to companies who suffer from liquidity problems. You mentioned the opportunities that exist under the crisis, but what about companies which are under this liquidity pressure? And a question for Professor Pitelis. It has to do with the structure of the Greek companies, the small and medium size of them, and how these proposals, which of those are more appropriate for that kind of companies. Thank you.

Nikos Vrettos:
In reality, most companies go into this liquidity squeeze during recession or depression times. But the first measure usually you take when you are in this situation – I speak about non-banks, I speak about normal companies – you go fast to cut costs, because this is where your cash is going and this is what you see also around the globe; but very fast. And there is also a very good analogy of companies that - I mean actually how fast you do that. When I say fast, I mean really fast. And there are companies that even take their laggards. They take about six months' or eight months' time, also with the notion "Let dust settle, let me see clearly." This doesn't help. And there are examples, even recent ones, who are actually going fast and intelligently into cost cutting to go out of this liquidity squeeze. Other companies, what they do as a mistake is sometimes they try to increase the price of the products, to get more cash in. And this is a doom scenario. Because one day or another, after some time, they will get caught up in the spiral and they are out of the market. So in general terms this is the answer,

although it is a broad answer, but it is a broad question. Because every company is different. But this is actually what American companies are doing better than European or Asian companies, in this cost-cutting mode.

Christos Pitelis:
Thank you very much. I would say that for Greek SMEs, first, the implications of what they said would be to focus on areas where we have comparative, or competitive advantages, or emerging competitive advantages, adopt strategies that are looking for value for money, differentiate their products; acquire scale, either through clustering cooperation or through mergers and acquisitions. From the point of view of government, what this means is basically to keep removing anti-incentives – and there are many – and stop financing possibly companies which have no viability. So focus on schemes and companies that actually can add value to the Greek economy. One could go on. Every particular thing I have said has an implication for small firms as well. For example, attracting inward investment automatically creates an ecosystem of small and medium sized enterprises around it. The issue about competition with cooperation is a big issue these days. There is a long discussion about to what extent competition policy takes adequately the issue of value creating cooperative agreements. There is some sort of prima facie thinking to the effect that any type of inter-firm cooperation is collusive. And this is not necessarily the case. Some types of inter-firm cooperation, like some strategic alliances, some clustering types of cooperation are not collusive; they can also promote the general interest.

Chair:
Ok. I would like to ask a question to our speakers. Let me ask Nikos Vrettos. Niko, what should be our top priority at a tactical and strategic level as a country, do you think? And I would like to ask Christos Pitelis two questions that came out of his answer right now. Christo, you mentioned about the issue of removal anti-incentives and I remember I heard a businessman in a lecture a few weeks ago. He said that Greek companies do not need incentives; they need the removal of anti-incentives, like the bureaucracy, the tremendous bureaucracy we have. I would like to focus on another point you said, about competition for innovativeness. Could you possibly give us some examples of how this could be promoted? What kind of policies and what kind of sectors these could be applicant to?

Nikos Vrettos:
Well, the question is very interesting and broad, I would say. We are caught, as a country, into the debt crisis. But also, we are caught in an economy which was de-industrialized. In reality, we don't have much of an industry in the same way that other nations think of that in Western Europe, or the US, or in Asia. So I think that at this point of time, what needs to be done is we have to fix the state finances; and through the program I think we have in place, it goes in the right direction. And the second thing is to start making the economy infrastructural changes more competitive. This has to do with labor laws, freeing up all the constraints that exist for companies to invest, and let the companies then who are left to do their own work, which they do best. Tactically, in reality Greece has two big sectors, where one can think that they can propel growth. One is tourism and the other is maybe agriculture.When I speak about tourism, I don't speak about rooms to let or getting people into Greece only. If you take the tourism sector in the second, third and fourth order, it is a much bigger sector for the economy; because when you have a touristic activity or a hotel, you need also staff there, you need paper, you need soap, you need tons of things that go together with the product itself, which is

tourism. I think, as an economy we are able to produce, also for our own sake, maybe also for the neighborhood, even small, cheap industrial products, assuming the labor costs go down and the economy is freed up, which the *μνημόνιο* actually tries to do with measures in the next two to three, or maybe four to five years. And the second sector for me is the agriculture and not in the way it is today, which is fully subsidized with no output of quality, but freeing it up into new areas of agriculture, in terms of organic products that can be exported outside. To give you an idea about the deindustrialization of Greece, I don't know whether you know, but even the paper that is used for when we go for elections, *τα ψηφοδέλτια*, which is the lowest quality paper that is produced worldwide, even that is imported. And you should know that we had a paper industry. We were producing some kind of paper in the north, but it is going down. So I think we can revert into that. It is not easy. It takes about five, six, seven years. We will never produce cars, I think Germans or French are better than us, but there is a hope that we can go away, unless we like it and we want to go that way. But it is not an easy way. And I think that the things that are happening now are the first step in the right direction. Maybe not fair sometimes, but they are in the right direction.

Christos Pitelis:
Yes, thank you very-very much. I would say about anti-incentives, this has been discussed extensively in Greece. The *Economist* ones wrote: "If the World Bank closed down tomorrow, nothing much would happen, except they should have stacked one thing that they are doing and this is the very best. Issuing this business, doing business a broad list." And we can see there that we are not doing that great. And of course we don't need the World Bank to say this. It is actually doing business in here it is almost a herculean task. I mean, the bureaucracy is an impossibility and the institutional regulatory context is such that almost everybody is illegal by definition, until they are proven legal. So, it is not an easy thing to do business. I mean, getting a license to start a business is almost itself like running a business or more difficult. All of these barriers to entry, I mean they serve other purposes. They do make some people better off; but they do need to be addressed and I think they are being addressed for a change. Concerning competition, the best example of competition is probably clusters. And if I just speak up on what Dr. Vrettos said and I follow this up, I would say that I agree. We have tourism, agriculture, shipping, health, also fruits. There are a number of things. Funny enough, one of the most competitive areas in Greece is pharmaceuticals and underwear; I find this very interesting. In all of these things, some of these things it is very-very possible to create cooperation with competition simultaneously, especially if you link things like tourism, agriculture, health together. Because if you create a cluster, for example, or if you co-create it, they are there already, it is just that you have to identify the missing links and bring people together in areas that combine, let's say, Mediterranean food with health provision, which is pretty good, and at the same time, the lovely tourism and environment, etc, you have a cluster of firms which cooperate on some things, but of course those who are in the similar activity, they also keep competing. They keep competing for customers, but they cooperate on infrastructure, vertical and horizontal linkages, on common training, on common promotion. These are things that could be examples.

Nikos Vrettos:
Before the crisis, between 2004 and 2007, we have been asked as BCG for two very big global touristic enterprises, together with them to assess the potential of investment in Greece. This was before the crisis; it was the good party times, with 4% growth. And both assessments, both feasibility studies turned out negative. And that tells you something about

how people, companies outside Greece view or have been viewing the economical environment of this economy. Now, you superimpose into that the crisis effect plus the credibility effect or the deficits that Mr. Pitelis was saying, and you can see how a CEO of a company thinks on investment. And I was thinking, if a CEO of an American company thinks like that, trust me, a Greek CEO or a Greek investor thinks the same. And this is the issue about the economy today. So, to come back, with the *μνημόνιο* I think it is on the right track, on the right measures, but it takes some time. So don't expect to see that in the next one, two or three years. It takes time to get investments into the economy with a growth potential and all the benefits that are aligned to that.

Fourth Session

Chair

Yannis Stournaras, University of Athens and Foundation for Economic and Industrial Studies

Panel participants

Charles A. E. Goodhart, London School of Economics and Morgan Stanley

Herakles Polemarchakis, University of Warwick and Greek Prime Minister's Economy Office

Philip Arestis, University of Cambridge and University of the Basque Country

Nikos Vrettos, Boston Consulting Group

The Greek economy: In the light of new developments [1]

Yannis Stournaras

General Director of the Foundation for Economic and Industrial Research

It is a great pleasure to be here with you today and I have to say that I am deeply obliged to the *Onassis Foundation* for the scholarship that I got in 1980, without which I would not be able to finish my doctorate at Oxford, because I had a very serious family problem. So I owe a lot to the *Onassis Foundation.* And also, I would like to congratulate the Foundation for today's very important conference, at a critical juncture for the Greek economy.

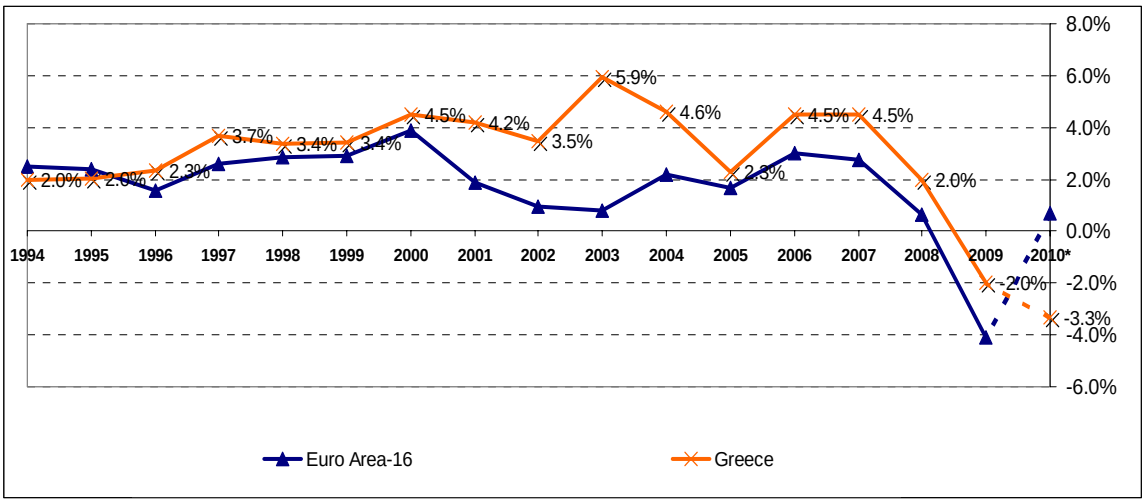
So, if you allow me, I will open up the discussion with a small presentation. I will start with Greece and I will say a few things about the euro zone as well. The title is "The Greek Economy in Light of the Developments." What are the crucial milestones?

If somebody is to see Greece at a glance, he would observe 15 years of over-performance; that is, a growth rate of two percentage rates higher than the rest of the euro zone. Of course, the serious fiscal derailment in 2008 and 2009, and he would observe a paradox; that between 2004 and 2009, we had a conservative government, but which expanded the limits of the state. So it added circa 100,000 new public sector employees. We have large two in deficits and a high public debt, but we have relatively small private debt. However, Greece is not alone in this. We have a non viable social security system. I will try later to show you some numbers, if I have time. We have low competitiveness and structural problems. It is true also that the new government delayed to understand the problem and to take the corrective measures. Spreads remain very high, despite tough fiscal measures. We have, obviously, a credibility problem. But, having said all that, I will show you that we have a very large growth potential and opportunities for cutting deficits. Greece also has now access to a combined euro zone - IMF substantial bridge loan, 110 billion euro, the highest bailout program ever in modern history, subject of course to implementing a comprehensive reform program. To paraphrase an expression that

[1] The report was prepared in collaboration with Stelina Chatzichristou, Aggelos Tsakanikas and Michalis Vassiliadis of the Foundation for Economic and Industrial Research.

Carl Marx was fond of, Greece has turned out to be the midwife of history. Because of Greece the euro zone has now something very close to the European Monetary Fund. It has a special purpose vehicle, which is a rescue package actually, of the order of 750 billion euro, available to all members in potential trouble; and also the ECB has used its nuclear option; that is, the purchase of government bonds from the secondary market. If you have not realized it, the euro zone has proceeded to a step forward closer to a fiscal union, due to Greece mainly and also due to the European south.

Figure 1: GDP growth in Greece exceed that in the euro zone 1995-2009.

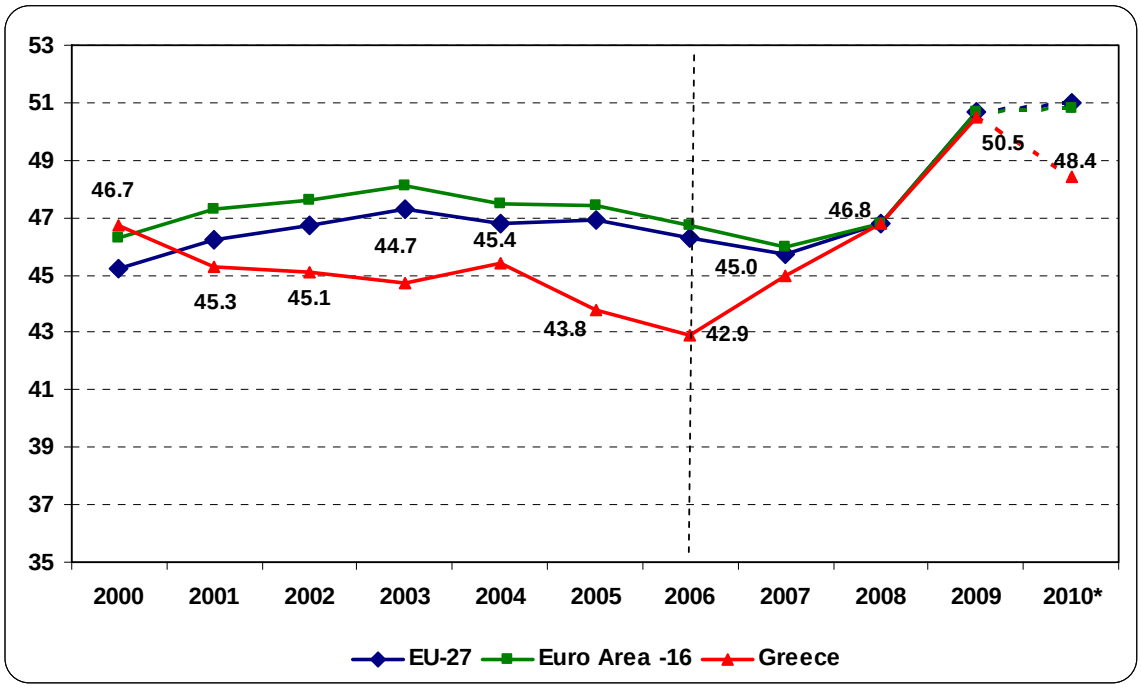


2010: European Economic Forecast-Spring 2010, European Commission for the EA-16, IOBE unpublished forecast for Greece.*
Source: AMECO database

This picture shows that Greece had for a long time a growth rate much higher than those in the euro zone. I will go very quickly.

The next picture shows the fiscal derailment, which started from general government expenditure. It actually started in 2007. We used to be much lower in expenditure, compared to the euro zone, but suddenly, after 2007, we have converged to expenditure as a percentage of GDP. But that, combined with falling revenue, we have this result, which is a very high public sector deficit in 2009, minus 13.6% of GDP, compared to the euro zone average of about 7% of GDP. As you see, both in the euro zone and in Greece, the deficit increased. But in Greece, we also have a very high public debt. Of course, with the new program we aim to cut the deficit down to the European Union average again, and I will show you later that the first results of the year are rather favorable.

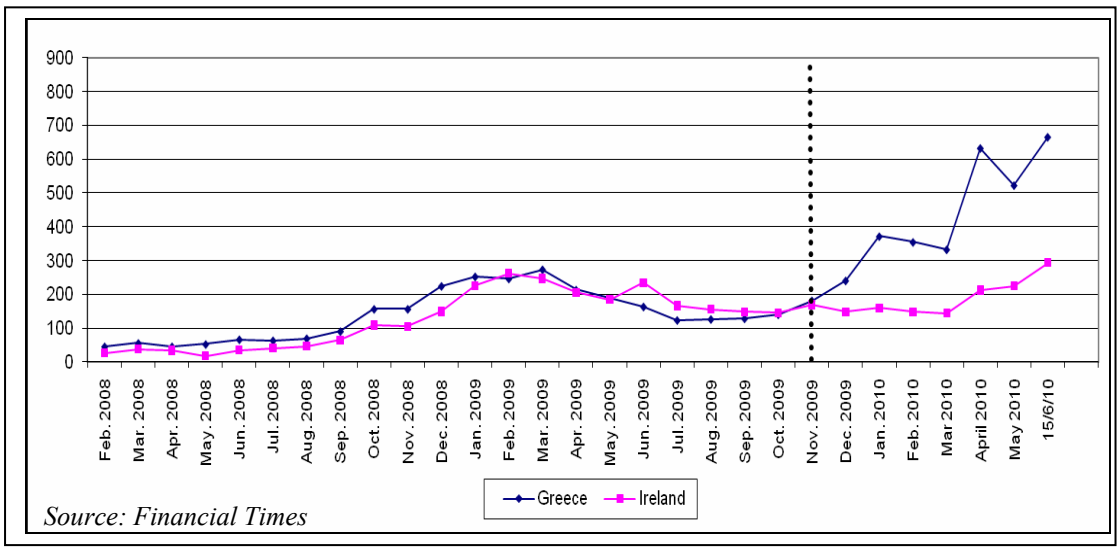
Figure 2: General government expenditure (% of GDP).



2010: European Economic Forecast-Spring 2010, European Commission.*
Source: *Eurostat*

I will go quickly to certain basic points. This is part of the fiscal problem, the dynamically more toxic: The un-sustainability of the social security system. From 2007 up to today, Greece spends about 12% of GDP on pensions, which is roughly equal to the euro area average. But in 40 years' time, Greece will spend 24% of GDP in pensions, compared to only 14% in the euro area. This is, in my view, the most toxic problem for the long-term sustainability of Greek public debt. And this is not so much because of the aging of the population, because aging is a common feature in Europe, but it is mostly because of a very high replacement ratio.

Figure 3: Interest rate spreads, basis points (10-year bonds).



Source: Financial Times

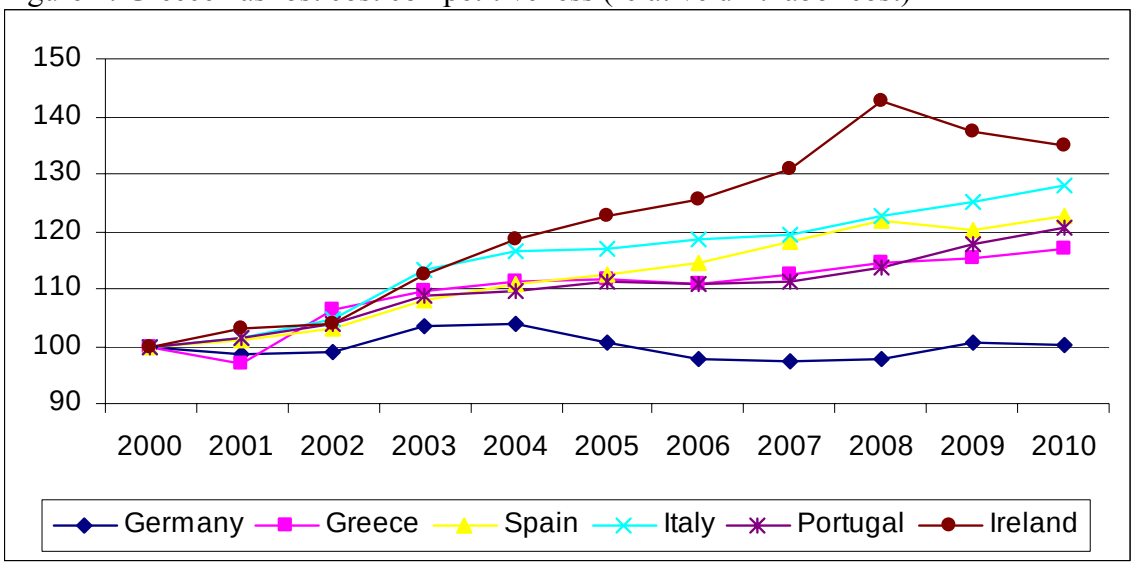
These are the spreads of the Irish Republic and Greece. We had the same spread with Ireland, until November 2009. In November, we revealed the true deficit of 2009, but we have not explained how we are going to reduce it. Ireland, on the contrary, took very early measures to cut back an even higher deficit than Greece's and so the lights of attention fell on Greece and they left Ireland alone. This is exactly the revolution of spreads, after the revelation of the problem in Greece and Ireland.

The second big problem of Greece is loss of competitiveness. We have lost ground in structural competitiveness, according to all models. Here are the findings of the "Doing Business Report". Also, according to the World Economic Forum, the IMD. Greece has lost about 30 positions between 2004 and 2009 in structural competitiveness, in the facility to open up a new company, etc.

- IMD: 46th position in 2010 (out of 58 countries). 37th position in 2004, 42nd in 2008, 52nd in 2009
- World Economic Forum: 71st position in 2009 (out of 133 countries). 67th position in 2008, 35th in 2004
- Doing Business Report (World Bank): 109th position among 183 countries in 2009. 100th position in 2008.

However, in terms of competitiveness measures in unit labor costs, despite all the analysis of my friend Martin Wolf in the *Financial Times*, the situation is not as bad. As you see, the blue line is Germany. Germany has retained competitiveness. The other lines are the competitiveness of the so-called PIGS, that is Portugal, Italy, Greece and Spain, and they are not that bad. We have lost competitiveness, but compared to Ireland, Italy and Portugal, we are slightly better off. Greece's problem is not unique in the European south.

Figure 4: Greece has lost cost competitiveness (relative unit labor cost)



2010: European Economic Forecast-Spring 2010, European Commission.*
Source: *Eurostat*

If I were to explain to you in one table Greece's problem, this is it. This is the structure of GDP on the demand side. We consume too much. No other small open economy consumes 90% of its GDP; that is 70% private consumption, 20% public consumption. And of course, no other small open economy exports too little. We export only 20% of GDP, about 8% in goods, 12% in services. The second worse is Portugal, which exports almost 30% of GDP. So, combined these things together we have the current account problem. But if you look at it carefully, all the southern European countries have a current account deficit. The blue line is the euro zone current account. So you see here that despite the very large deficits of the European south in the current account, the euro zone is about balanced. Which means that the deficits of the European south are being equal to the surpluses of the European north.

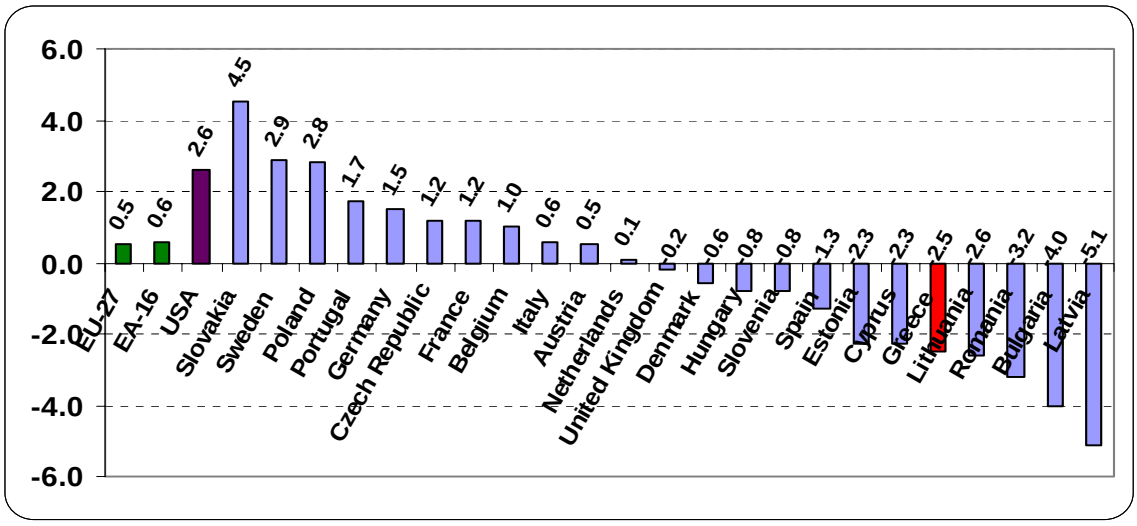
Table 1: EU-15 GDP structure (demand side), 2000-2007 average.

	Consumption (%)	**Investment(%)**	**Exports (%)**	**Imports (%)**
Belgium	75.54	20.15	85.12	81.37
Denmark	74.2	20.27	48.14	43.33
Germany	77.56	18.64	38.83	34.64
Ireland	61.65	23.92	87.91	73.98
Greece	**88.42 (90.83%[1])**	**23.68 (20.21%[1])**	**22.21 (20.04%[1])**	**34.61 (31.18%[1])**
Spain	75.73	28.02	26.88	30.9
France	79.76	19.64	26.82	26.75
Italy	78.63	20.65	26.6	26.18
Luxembourg	55.36	20.77	152.52	129.51
Netherlands	73.14	19.99	68.66	61.8
Austria	74.2	21.11	51.18	46.99
Portugal	84.34	23.69	29.44	37.9
Finland	71.96	18.95	41.95	34.87
Sweden	75.08	17.37	47.54	40.23
United Kingdom	85.23	17.32	26.62	29.6

[1] *data for 2009.*
Sources: Y. Stournaras and M. Albani (2008), The Greek economy after the crisis: In search of a new strategy, *IOBE, Athens - Quarterly National Accounts, ELSTAT (March 2010)*

This gives me the opportunity to talk about the sustainability of the bailout mechanism that I talked about before, this 750 billion euro. We can come into that later. In the meanwhile let us note that GDP changed. So despite all that has been said, Greece hasn't performed that badly. We have a -2.5% growth rate in the first quarter, compared to a target of -4%. In my view, we are going to be slightly better than -4%, perhaps we are going to be closer to -3%. So the situation in the depth of recession is not as bad as thought in the beginning of the year

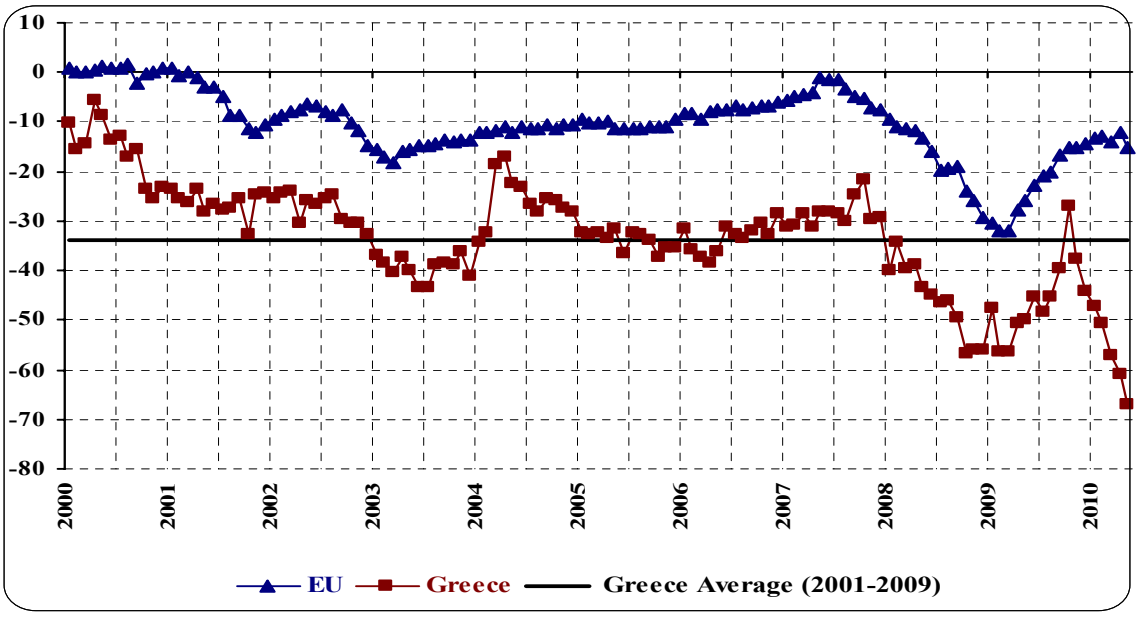
Figure 5: GDP % change (first quarter of 2010 vs 2009)



Source: Eurostat.

Of course, consumer confidence is still very bad and falling. In the euro zone it has stabilized, as you can see in the diagram.

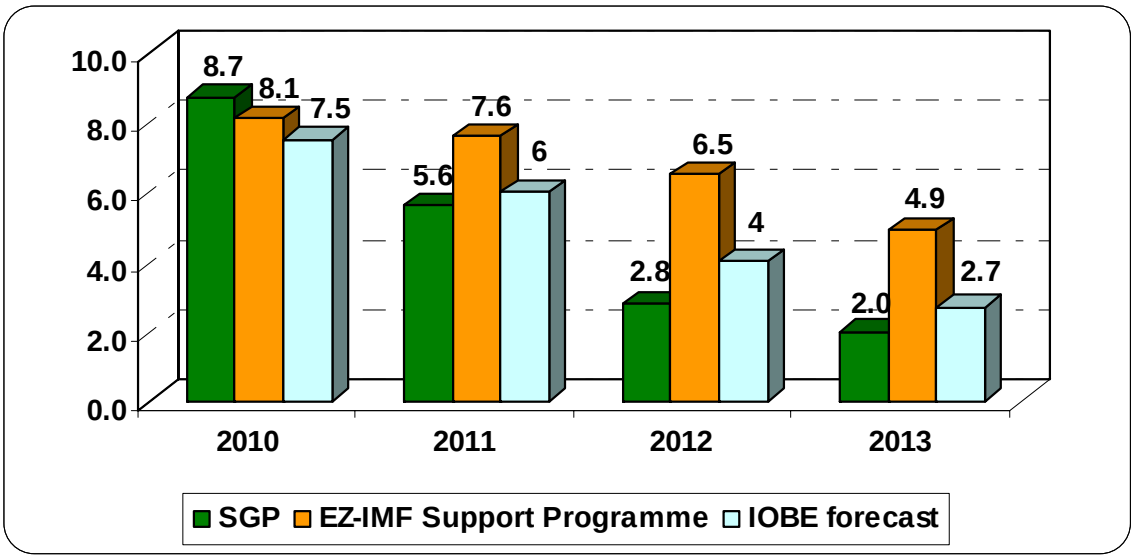
Figure 6: Consumer confidence



Source: IOBE, Business and Consumer Survey, May 2010

Extraordinary circumstances call for extraordinary measures. Greece needed a strong medicine, but the political system was unwilling to provide it and the comprehensive reform program imposed by the IMF, the European Commission and the ECB is a must, given the above mentioned imbalances. This is a front loaded fiscal adjustment program, with very high safety margins. I will show you why. And all imbalances are being addressed. Fiscal, pension system and structural. And the government has already passed the necessary legislation.

Figure 7: Alternative scenarios for the evolution of the General Government Deficit.



Sources: *Stability and Growth Programme, MFIN, January 2010 – Note on the Economic Policy Programme for the Eurogroup-IMF support mechanism, MFIN, May 2010 – IOBE unpublished forecasts, based on Economic Policy Programme outlook for key macroeconomic figures*

If all measures are implemented, then the fall of the deficit will be much speedier than the forecast in the microeconomic scenario of the memorandum. This is the blue line. The orange line is the microeconomic scenario of the memorandum. The blue line is our forecast. The green line is the original government program. The same is true for the general government debt. In my view, we will never arrive at the famous 150% debt in 2013. The maximum will be 137%, but then it will fall very rapidly. The good news is that the world economy recovers, but the positive surprise in Greece will come from the large potential benefits from structural reform. Actually, we have tried to quantify these benefits. We have used a general equilibrium model, developed by the IMF, it is called GIMF: Global Integrated Monetary and Fiscal model we have calibrated in our Foundation, and we have found that due to all these Soviet style

constraints we have in the Greek economy, from cabotage, from lorry drivers' licenses, from fixed profit margins for pharmacists' drugs - the average margin in the non traded good and services sector is 15% higher than in the rest of the euro zone. So if we assume that this margin will converge to the average in the euro zone in the next four to five years, then the benefit in terms of GDP, private consumption, investment, will be huge. This is the benefit coming only from the liberalization of the product market, 13%. This has not been priced in in the microeconomic scenario of the memorandum. In conclusion, we have the worst economic crisis since 1974. The euro zone and the Greek government delayed in their response; delayed, but fortunately not lethally, we are still alive.

Table 2: Structural measures could produce benefits.

	Overall Effect
GDP	**13,2**
Private Consumption	**15,5**
Investment	**11,3**
Real wage	**10,8**
Employment (hours)	**0,6**
General Government Deficit, % of GDP	**-0,1**

Source: *IOBE, Estimations by adjusting the IMF DSGE model (GIMF) to Greek/Euro Area economy conditions.*

The government has now taken fiscal and structural measures to meet the fiscal targets and improve competitiveness; and the measures are all front loaded. There are encouraging signals from the state budget implementation of the first five months of the year. Actually, we are on target. We have a deficit now less than last year's at about 38%, compared to an annual target of 40%, so we are very close to the target.

Of course, there are potential risks, but in my view it is on the implementation, the management and the durability, rather than the microeconomic conditions. I see no risks, actually, from the microeconomic conditions. Social acceptance is an issue and effective crack on tax evasion will help social acceptance. Of course, we need political consensus. There is no place for populous now. Of course, the euro zone

environment and the world economy recovery will help. This is a crisis I see as an opportunity to correct past mistakes and adjust the economy to a sustainable growth path; and this crisis should not be wasted. The critical factor for success is leadership, mostly by the government and the political system, accountability, responsibility and guidance.

Thank you very much. Allow me now to give the floor to Professor Goodhart.

Panel Discussion

Charles Goodhart:
Thank you very much. What I would like to do is to make one point, which has not in my knowledge been made in this conference so far today. And that is that the economic crisis of southern Europe has been mentioned many times. What I think has not been mentioned is what I would describe as a political crisis of the euro zone as a whole. That is, a vision of where the euro zone might be going. And I think, to some extent, you and other southern European countries or peripheral countries have actually been the victim of the failure of the euro zone to get its political act together.Now, this has very-very deep roots. It goes right back to the discussions between the French monetarists and the Germany economists at the time when the Delors Committee was doing its work. The French monetarists, I might add, have absolutely nothing whatsoever with the Chicago monetarists. What is meant by the French monetarists is that it was perfectly well understood that a well functioning single monetary system really required a degree of overall federal control of the fiscal policy and a degree of political cohesion. And it was believed by the French monetarists, and in particular Jacques Delors himself, who coined the phrase that being loosely translated means that Europe will be made by having a single currency or it won't come together at all. And the French monetarists believed that the pressures arising from asymmetric shocks and other factors on a single monetary currency, as fiscal policy was left to national authorities, would inevitably put pressure on the system as a whole to move towards much more federal centralism at the fiscal and the political level. I should add that I was on a committee set up by the European Commission in about 1991, to ask what fiscal measures would be necessary to support a single monetary system. And we argued that if it was sufficiently well focused, you could actually have a mechanism that would provide as much stabilization as the American system, with an overall federal budget at the heart of the euro zone, of no more than two and a quarter to two and a half per cent of euro zone GDP.

This particular commission's proposal was pigeonholed - the first time it has ever happened to me - and when it was put before the nation's states, it was roundly put down, particularly by the big northern European countries. The German approach, which was the economists' approach, was that in order to get a single euro zone, what you needed was to have a much more convergence between all the economies, until they have moved together so much that they didn't have differences in behavior, they had common industries, and you could really treat them for all practical purposes as a single country. Well, as you know the French monetarists won the initial battle, because Helmut Kohl needed the support of Francois Mitterrand for the reunification of Germany; and the price for that was to adopt the French single monetarists and single central bank. The problem, of course, was that the French monetarists hoped that this would lead to much more federalism, both at a fiscal and a political level, but it never came true.

Now, for a long time, from the start of the euro zone in 1999 until very recently, the regime was actually always relevant successful. It has revived now and it has revived in a way that I think has been very unhelpful during this crisis. What has actually happened has been that certain elements in the euro zone, particularly the French and the European Commission, have tried to seize on this, to move more quickly towards a single federal system, with much more in the way of fiscal transfers. The idea here is going back to the old French ideal that really we must make euro zone a single overall, political and economic system, with much more central control over the budget mechanism. And every time that one of the peripheral

countries has got into trouble, the immediate reaction of people who want this particular approach to go ahead has been to say "We cannot possibly allow Greece, or Spain, or Portugal, or Ireland, or whatever to run into difficulties. Of course, we will provide whatever is necessary." And that usually is a statement that is made after some meeting of the finance ministers or whatever, usually over a weekend. And then, two days later what one gets is a statement from groups who don't like this, who like the German economists, who say "What we do not want is a crunch fair union. We cannot move towards a crunch fair union, because politically it is impossible in Germany, and in any case it doesn't run under the constitutional court and we will only do it up to a very limited degree and up to a very limited extent." At which point, the difference between these views and visions about where the euro zone as a whole is going become patently obvious and the markets don't know which way to turn, because they don't know which vision is going to win. All they can see is that there are effectively two warring visions and this is getting into difficulties. And that I think has been one of the problems that actually neither markets nor yourselves actually really know where you or they stand.

And that I think is a very serious problem and I think that until euro zone actually sorts itself out, the possibility of some disorderly result as the result of the conflict between these two competitive visions is much more likely than you or I would actually like to see.

Herakles Polemarchakis:

I wanted to start by expressing, like many other speakers did, my gratitude to the Foundation, not only for this conference, but more importantly – especially for those of us who are in academia – for the support the Foundation offers to students and the opportunity to study abroad. Now, I realize that there is a bit of a contradiction, however, in this statement, because on the one hand we thank the Foundation for the opportunities it gives, on the other we hear concerns expressed all over the place about the possible brain drain. So I was wondering what it was exactly that we were saying. Of course, it is clear what we have in mind. We want people to be happy and willing to return to Greece, or not have them here as a captive audience; so I understand there is no contradiction, but it seemed a bit funny, since both things are being said at the same time.

Now, a lot has been said already and I would like to limit my remarks to actually three rather specific points concerning the crisis, in which Greece and the euro zone and areas beyond that find themselves right now. As many of us, at least those old enough to have lived through periods where reading Marxist texts was, if not an academic, at least a social requirement, may remember that the opening line of the Communist Manifesto is a statement to the effect that there is a specter that goes around Europe and this is the specter of communism. That is how Marx opened the Manifesto. Now, if one wanted to paraphrase this in today's terms, one would say that it is national debt, it is public indebtedness that seems to be the ghost or the specter that seems to plague all the European countries and of course the problem extends beyond the European south and further west.

Now, the point that I want to make is that we have to be a little bit careful about vilifying debt and considering it as an unquestioned evil, which I don't think it is. And I want to make two points. So my first point concerns debt and concerning debt, I want to make two points. The first point is that debt plays an important role. It plays the role of transferring resources across generations in parallel physical investment. And the optimal mix of physical investment and debt in transferring resources from one generation to the next leaves a very active role for debt to play. So we stop thinking of debt as an evil to be eliminated. It has to be appropriately managed and it has to be sustainable, but it is not a disease from which we

should try to cure our economies. Second, debt itself does not only play the role of transferring wealth across generations. It also plays the role of offering inter-generational insurance. Different generations face different risks, there are productivity shocks, there are catastrophes, if you want to talk about more dramatic events, and the carryover of debt from one period to the next can smooth and distribute the costs of these adjustments more evenly and more efficiently across generations. So again, debt has an important role to play. That is the first point. That debt is not an evil; it has to be correctly managed and correctly understood to play the positive role it can play. There is, however, a more specific point that one can make, concerning the measurement of debt. When the Maastricht criteria were adopted and the famous, probably soon-to-be-forgotten if not already, targets of a 3% deficit and a 360% debt, if I am not mistaken, as the criteria were stated, involved an accounting assumption which can be questioned. And this has to do with the accounting of investment in the government's account and the government budget constraint. When the Maastricht criteria are set in terms of debt and deficit they did not distinguish between debt incurrent for wasteful or government consumption - whatever term you want to use for purely short-term consumption expenses; and investment expenditures, which are going to produce socially productive capital. So there is an argument to be made for restating the Maastricht criteria to take account to eliminate investment expenditures from the government budget constraint. So there has to be a reworking of the Maastricht criteria, even when we go beyond the current crisis and we look into more long-term rules, sustainable situation that would correct the accounting practices and take appropriate account of investment as opposed to consumption expenditure. This was the point that was made by a number of economists when the Maastricht criteria were put forward. I know that Charles has contributed to this debate with a slightly different formula, but I think given the results to which the criteria have led, or have been lead to, it is an issue that should be reopened probably. The second point that I want to make has to do with the policy of quantitative easing that was followed by central banks; first by the Federal Reserve and by the European Central Bank, in response to the crisis. The point was even made earlier that when the capital markets froze as a consequence of the events in 2008, then the Federal Reserve proceeded to accept all sorts of commercial paper, in exchange for which it printed dollar bills.

The way that monetary policy is traditionally carried out is that the Treasury and the private banks exchange t-bills. This is an attempt to separate monetary from fiscal policy. Fiscal policy, which an increase of decrease of the public sector deficit is pieces of paper, Treasury bills traded between the Treasury and the private sector. And monetary policy, on the other hand, is conducted by the Federal Reserve or the European Central Bank, which is the purchase of these t-bills from the private banks, in exchange for money that is printed. These are the two aspects of fiscal and monetary policy. But, more importantly, the open market operations, through which the central banks, be it the European Central Bank or the Federal Reserve, adjust and control the money supply and as a consequence the rate of inflation, involves the exchange of short-term treasury bills for currency, for dollars, for euro. Quantitative easing involves open market operations between currency on the one hand and any kind of commercial paper on the other. Now, the danger that is involved in this expansion of the scope of monetary policy is that the central bank loses its grip on the process of inflation. By controlling the short-term rate of interest for corresponding to the money supply, it can still control the average rate of inflation between today and tomorrow, the future. But it allows for possible fluctuations of the rate of inflation around this average, which may not be welcome. And it is precisely the expansion of the scope of monetary policy and open market operations from t-bills to all sorts of commercial paper that deprives the monetary authority

from its control over the inflation process, which after all is one of the main targets – one may ask whether it should be the only target of monetary policy, but it is definitely one of the targets of monetary policy and losing its grip on this is something that one should look at very carefully. The last point that I want to make concerns a dilemma or a debate that is a recurring theme in discussions about the economic policy in Greece, especially after the European support pack and this special arrangement with IMF were put into effect. And the dilemma, as it is usually presented, is to say that "Fine. We have started on the road to macroeconomic balance. We have started on the road to putting our public finances in order, but how about the other side of the economic policy, which involves growth and development?"

The dilemma that is presented is as if the economic policymakers have two competing targets. One being public finance and macroeconomic stabilization and the other being growth and development. I think this distinction is false. I think that macroeconomic balance is a crucial ingredient of a policy of growth and development. After all, one purpose of the economic policy is to aid markets and prices to contain the right information, based on which private agents will make the right decisions. Budget constraints are precisely the vehicle through which prices convey information, in particular the scarcity of commodities that private agents need in order to make their decisions; and the macroeconomic balance is precisely introducing these kinds of imposing this constraint and this discipline, without which the private markets cannot operate. So it is not one or the other; both are parts of one integrated whole that the government has to work for. Thank you.

Phlip Arestis:
I am not going to repeat what I said earlier, but what I was trying to say in my very brief remarks about the problems we are going through now, was that we have a European problem. I also liked very much what I heard earlier from Charles about the importance of history. The question is then can we learn anything from history? In terms, especially, of the successful or the probability of successful monetary unions. And I think that the answer is a very positive yes; that we can learn an awful lot about monetary unions and if you go back even to Roman years up to more recently, in terms of the success of monetary unions, I think two conclusions emerge. The first is the need to have economic integration; without it, you will not succeed. And secondly, if you don't have economic integration, then you have to have political integration. If we are to apply these two conclusions to the case of the European Monetary Union, then we know that economic integration, as things stand at the moment, is very difficult, in the sense that we cannot have labor mobility as we would like to probably, nor do we have a federal fiscal policy, which is very important if you are to have a successful economic integration. So what is left is probably political integration. And the question is, therefore, are we going to have that political integration, which will begin to solve the problem we are going through in a more positive way, as it is now a European problem. I think that looking at the last couple of months, in terms of what has been happening in our Monetary Union, the answer would probably be no, because we keep changing our minds all the time about what precisely we should do and shouldn't do, nonetheless, more recently. In fact, there was a meeting the week before last of our leaders in Europe and the conclusion that one can see from the newspapers is that now people begin to think that maybe we should act in a kind of different way, a more concentrated way and hopefully in a way that would begin to promote the notion of political integration in Europe. And I think without that, without initially the political integration and subsequently the economic integration, I am afraid in purely historical reasons which are very-very important and I agree with Charles; we might really lead the European Monetary Union to a failure. Thank you very much.

Nikos Vrettos:
I want to make a comment on your comments. You are right that debt is not bad, assuming it goes into investments; because then you produce wealth, which produces the ability to pay it off, and etc. Actually we may want to say a number of things about chancellor Merkel and Germany, but if this happens it is in the interest of Germany. It has in there that you can increase your debt, as long as you put your money into investments.

Phlip Arestis:
But that is not true for Maastricht.

Nikos Vrettos:
No, no, I talk about Germany in order to give an example to make a point. The problem with Greece was that we used the debt for consumption to a great-great extent; and that was actually what Yannis was showing us before. I don't know if it is 90%, but it is a humongous percentage, compared to the money we have brought into the country. I don't want to be pessimistic, but there is something that bothers me. Usually, when you analyze a company, you look at EBIDA to debt ration; so you look at the ability of a company to repay its debt, either interest, etc. Now, this is not the GDP that you compare to a state, because it is a state debt. Usually, it is the revenue which actually should be in the equation as is the EBIDA or any other measure which is in a company. So if you take this assumption and you take revenue to debt or debt to revenue, this ratio today, assuming that it is about 300 billion more or less - and I don't include in there guarantees of the state, for example, for OSE. OSE has a 10 billion debt, with a probability to repay zero. So in reality you should add up to the debt. Assuming it is 300-350 billion, this ratio is about 7.

Person in the audience:
Provided the revenue can all go to paying back the debt, which is a big assumption.

Nikos Vrettos:
Let's say the revenue is whatever the state has. Now, if you look at the history of the last 100 years of countries that went in default or whatever, this ratio was something between 2 and 5. 80% of all the defaults were on a ratio smaller than 5. Argentina had 2.6. We are at 7 and this is to me the issue. And the issue of the state, if I translate that to reality, what it means for our government, for all of us, it is not the cost cutting of the expenses side. This will reduce the deficit, which means that next year you might have less debt, but you will have more debt in reality. To me, the question is how do I increase the revenues. This is the key of the success of this memorandum. Because if we don't have this, the added revenues, which in reality is taxes, I think we have a difficulty. I want to put that into the equation, because this is the reality from the microeconomic view and not from the macro or the politician view. And because we spoke before about leadership, etc, and because this program has a three to five years horizon, it is not something you do in the next two months, the program we have imposed on us. It is about skills of implementation. Ability to implement it. Ability to raise the taxes. Ability to make all these and change structurally and change the plan and hardwire IKA and get data. So it is a tremendous job and as your name is Herakles, I would say Herculean job; and this is where we should focus: the ability to make this plan implementable in the next three-four years.

Person in the audience:
I agree with what you said. I wanted to add that the issue of history has been brought up on at least two occasions. I thought that as it is getting late and probably time for lighter remarks, I wanted to point out a historical fact that I thought was interesting. Because of the current discussions about financial instruments and the like, new financial instruments and the role they play in the crisis, it is interesting to ask the question when was securitization first practiced. And people might think of it as an invention of the '70s or the '80s, of the new finance culture, well actually a friend of mine told me that the first securitization was practiced in 1364, when the Venetian Republic securitized the proceeds on the Rialto market. So as exactly as it was done with Attiki Odos and other public works in Greece, it was not an innovation, neither was it an innovation of Wall Street, because it was carried out 600-700 years ago in Venice.

Chair:
Actually, the Byzantine emperors had done it even before. Είναι τα χρυσόβουλα. It is a part of securitization.

Anthony Papadumitriou:
I would like to once again take opportunity to express the views of the practitioners and the views of the late participants in this conference. We have had a very many professors and doctors, all speaking more or less ex cathedra and I want to speak up for the rest of us. And what the rest of us got out from this marvelous day, first of all I will give you a small personal touch, and that is that I did not fall asleep. I was tempted from time to time, but did not. And that says a lot, because I just came from New York through London and I am quite jetlagged. So, that I think speaks for something. Now, what do we practitioners say? According to Vasilis Constantakopoulos, who is sitting here, when you start a project you are on time and on budget only once, on the first day. And that I think applies to economic projects like the European project, like the European Monetary Union and many other projects. They are on time and on budget only the first day; thereafter, anything can happen. Now, what did we practitioners get from this? I think we got many things. I will not do the work of Professor Alexakis in drawing the conclusions, but I would like to say just a few things. History has been mentioned a couple of times, and in fact to give you just a live example again, what the Romans did and it was copied successfully by the Byzantines and then by the Ottomans was that tax collection was privatized, in the sense that the emperor sold the tax collection of certain provinces to wealthy people. So the wealthy people, businessmen of the time, *τελώνες* we call them, they would buy out a whole province's taxes for one year and they would pay the emperor cash; and then it was their job to go with the governor of that province and collect the taxes. And of course, the penalty was that if the tax collections they went too heavy handedly with it, then the province would arise in resurrection and would kill the governor and the tax collectors or they would be demoted by the emperor, who would keep the proceeds and sell the tax collection privilege province to somebody else. Anyway, that is an idea that is not practical today, but it shows that the ancients had some initiatives. Now, everything seems to be clear. We have heard a lot about the causes of this crisis, what has happened, etc. What lessons did we learn from our failure in fact to foresee the crisis? This was, I think, the most topical matter which we discussed today. What were the lessons? How can we deal with the crisis, first to mitigate it and then to go back to growth? I think we got a lot of things. First of all, we got proposals. We got ideas about what to do and that is a rare thing in a conference. Conferences usually are stale. I liked this conference and I didn't fall

asleep, because we had a number of useful proposals. Some of them quite provocative and maybe the most provocative ones were the most useful. Some of them, like the idea that central banks should change their focus from monetary stability to financial stability, that was something which did strike me. The change of the herd theory or the sailing with the wind behavior, of riding the bubble rational for a short time, that is something which I think is very useful for all of us practitioners, because we are faced with such problems. When do we start investing or when do we start selling and when do we start buying again? These are questions which all of us have to face in our daily businesses.

The main questions of course have remained unanswered, and I don't think it was the purpose of this conference to answer such questions as whether the US financial crisis is going to find its way more into a European depression. We did have a US financial crisis, which lead into a European Union sovereign debt crisis. What lies in the future? Shall we have the US deficits becoming such a huge problem that cannot be resolved? What about the Japanese situation, where the deficit is so huge? I don't need to remind you that Japan did fail in the past. What is going to happen with China? Is it in a bubble, as I believe, or is it a country which, as I hope, will continue growing for the foreseeable future? Is the European Union going to get into recession? Will there be other firms who are too big to fail except banks? And I remind you that Enron walked on capital and did fail. It was a huge company. AIG did fail. Will other too big to fail companies fail in some other area of industry? General Electric, for example? That is an excellent example: General Electric or General Motors, huge companies that survived the Great Depression. We don't know. What will be the causes of defects of such an eventuality? The answers, of course, cannot be given and nobody expects such answers to be given. But the takeaway from this Conference was of course that we are now more informed and in particular that we have more analytical tools that will help us make decisions.

The main contributing factors supplied by Professor Arestis, the ideas about the European Union supplied by Professor Goodhart, and I will surprise him by saying that I happen to agree with him on that, I think these are the main things to keep. And to end with an optimistic note, I would just want to say my personal opinion. Greece and more generally the European Union are facing a problem, but they are trying to resolve the problem and they are taking, all of us, Greece in particular, we are all taking severe steps. We are trying our best to go ahead, to resolve the crisis.

And I am an optimist and I do believe that the European Union has been built on the aftermath of crises. I do hope and believe that his particular crisis will help the European Union to deepen and expand itself. Thank you very much.

Closing Remarks

Panagiotis Alexakis

Athens University and Scholars' Association
of the Alexander S. Onassis Publlic Benefit Foundation

Good evening ladies and gentlemen. I will be very brief as the President has covered most of the important conclusions of this Conference. I just want to add one more, with respect to the crisis in the euro zone and Greece, namely that the economic problems of Greece are not an issue of Greece only, but also of Europe. So we need both Greek and European solutions to face the economic problems of Greece; and not only Greece, but also Portugal, Spain and the countries that face more or less similar problems. This important result of this conference implies that a lot of things have to happen, both in our country and in the European Union, in what we call today Monetary Union, which is not a complete monetary union so far, in order to have a lasting solution in the euro area. So, ladies and gentlemen, we have come to the end of this conference, and having followed the presentations and the discussions, we believe that the conference touched upon the important issues of the current economic problems of the world, of the euro zone and our country, Greece. Furthermore, all the speakers responded positively to our invitation and put their effort to present all matters, both those that one would wish that they should be achieved and those that one would wish that they should be avoided, and we listened very carefully to what they said to us.

I would also like to thank the Chairmen of the Conference, who did a fantastic job, and although they presented all the speakers, nobody presented the Chairmen. So, I would like to thank Professor Korliras for chairing the first session, Professor Thomadakis for chairing the session on the financial issues, also Professor Prastakos, and finally Professor Stournaras. I would also like to say that we shall try to communicate all these important conclusions and policy implications to the relevant bodies and our Association will see to that. In addition, the conference proceedings

will be prepared in electronic form, and they will become available to everybody. We have asked all of you to fill a participation form, so that you can be informed of the developments about this event, as well as for other events that our Association will organize in the future. I would like to say that our deep gratitude goes to the *Onassis Foundation*, its President and the Board of Directors, for continuously encouraging and supporting the activities of the *Onassis Scholars' Association* and we are really grateful to them; throughout all these years, since 1986 that this *Scholars' Association* was created at the initiative of the scholars. I would also wish to thank very much the program committee, and in particular Professor Grammenos, Mr. Thomopoulos from the Bank of Greece, as well as Professor Constantinides, who continuously supplied us with information and their comments and advice in preparing all this program and having this conference. Moreover, I would like to say that this conference would not become a reality without the tireless effort and professionalism of the personnel of the direction of the *Onassis Foundation*. We are very grateful to them. So, ladies and gentlemen, on behalf of the *Onassis Scholars' Association,* thank you very much. Thank you.

Σύνοψη των βασικών σημείων του συνεδρίου για την Χρηματοπιστωτική-Οικονομική Κρίση και την Επιστροφή στη Σταθερότητα

Ολοκλήρωσε με επιτυχία τις εργασίες του τη Δευτέρα 21 Ιουνίου 2010 το διεθνές επιστημονικό συνέδριο που διοργάνωσε ο Σύνδεσμος Υποτρόφων του Κοινωφελούς Ιδρύματος Αλέξανδρος Σ. Ωνάσης, με θέμα την χρηματοπιστωτική και οικονομική κρίση και την επιστροφή στη σταθερότητα. Το συνέδριο πραγματοποιήθηκε υπό την αιγίδα του Ιδρύματος Ωνάση, στο αμφιθέατρο του Μεγάρου Καρατζά της Εθνικής Τραπέζης της Ελλάδος.

Οι εισηγητές του συνεδρίου ήταν διακεκριμένοι ακαδημαϊκοί και επαγγελματίες από την Ευρωπαϊκή Ένωση και τη Βόρειο Αμερική. Συμμετείχε ο Διοικητής της Τραπέζης της Ελλάδος, καθηγητής κ. Γιώργος Προβόπουλος. Το ακροατήριο αποτελείτο από εκπροσώπους του πολιτικού κόσμου, πρέσβεις, στελέχη του χρηματοπιστωτικού τομέα και των επιχειρήσεων γενικότερα, ακαδημαϊκούς και φοιτητές, από τον Πρόεδρο και μέλη της διοίκησης του Ιδρύματος Ωνάση και από υποτρόφους του Ιδρύματος. Ο πρώην Πρόεδρος της Βουλής κ. Δημήτρης Σιούφας, ο Ευρωβουλευτής του ΠΑ.ΣΟ.Κ. και Αντιπρόεδρος του Ευρωπαϊκού Κοινοβουλίου κ. Σταύρος Λαμπρινίδης και ο πρώην Υπουργός Υγείας κ. Δημήτρης Αβραμόπουλος χαιρέτισαν τις εργασίες του συνεδρίου, στο οποίο παρευρέθηκαν ο Υφυπουργός Υποδομών, Μεταφορών και Δικτύων κ. Νίκος Σηφουνάκης, ο βουλευτής επικρατείας της Ν.Δ. κ. Ευάγγελος Αντώναρος, ο πρώην Υπουργός Εξωτερικών κ. Πέτρος Μολυβιάτης και άλλοι.

Δόθηκε έμφαση στο πώς διαμορφώνεται σήμερα το παγκόσμιο σκηνικό και ακολούθησαν συμπεράσματα και προτάσεις πολιτικής για μία σταθερή και αναπτυσσόμενη παγκόσμια οικονομία. Ιδιαίτερη έμφαση δόθηκε κατά τη διάρκεια του συνεδρίου στην οικονομική κρίση στην ευρωζώνη και στην Ελλάδα.

Μεταξύ των βασικών συμπερασμάτων του συνεδρίου αναφέρονται:

Ανάλυση των αιτίων της κρίσης:

Η παγκόσμια οικονομική κρίση ήλθε ως αποτέλεσμα μιας μακροχρόνιας αλληλεπίδρασης σημαντικών αναδιανεμητικών τάσεων που οδήγησαν στην αύξηση

της συμμετοχής των κερδών στο παγκόσμιο προϊόν αλλά και στην αυξανόμενη συμμετοχή του χρηματοπιστωτικού τομέα σε αυτά ενώ παράλληλα μειώθηκε το ποσοστό συμμετοχής των αμοιβών των εργαζομένων στο ΑΕΠ. Ακολούθησε η αύξηση του λόγου του χρέους προς το ενεργητικό των χρηματοπιστωτικών ιδρυμάτων και η ανάληψη υψηλού κινδύνου εκ μέρους τους. Συνέβαλαν προς αυτή την κατεύθυνση η χρηματοπιστωτική απελευθέρωση και οι χρηματοπιστωτικές καινοτομίες που δεν συνοδεύτηκαν από ανάλογη προσαρμογή των ελεγκτικών μηχανισμών, οι διεθνείς οικονομικές ανισορροπίες της τελευταίας δεκαετίας, καθώς και η προκυκλική λειτουργία των διεθνών οίκων χρηματοπιστωτικής αξιολόγησης.

Περαιτέρω, μετά από δύο δεκαετίες άσκησης της νομισματικής πολιτικής με στόχο αποκλειστικά τη συγκράτηση του πληθωρισμού, που στην Ε.Ε. συνδυάστηκε με την εφαρμογή του Προγράμματος Σταθερότητας και Ανάπτυξης, ακολούθησε η εισαγωγή κεϋνσιανών πολιτικών που δίνουν έμφαση στη συνολική ζήτηση για την αντιμετώπιση της κρίσης. Ωστόσο, από το 2009 εφαρμόζονται δημοσιονομικές πολιτικές σταθεροποίησης της οικονομίας με ορατό τον κίνδυνο να επανέλθει σε ύφεση η παγκόσμια οικονομία και, ιδιαίτερα, η ευρωζώνη, καθώς οι χώρες προσπαθούν να μειώσουν τα δημοσιονομικά τους ελλείμματα. Σε συνδυασμό με την παρατηρούμενη τάση, ως απόρροια της κρίσης, οι αποταμιεύσεις να είναι μεγαλύτερες των επενδύσεων, πρέπει να εξεταστούν και επεκτατικές δημοσιονομικές πολιτικές. Μόνο όταν μία οικονομία «υπερθερμαίνεται» θα πρέπει να ενεργοποιείται η διαδικασία για την μείωση των υπερβολικών δημοσιονομικών ελλειμμάτων.

Προτάσεις για την χρηματοπιστωτική σταθερότητα και την ανάπτυξη:

Οι εξελίξεις και οι παράγοντες που έδρασαν, οδηγούν στην ανάγκη εγκατάλειψης του μοναδικού στόχου που έχουν οι κεντρικές τράπεζες ο οποίος αφορά τη σταθερότητα των τιμών, καθώς δεν φαίνεται να εγγυάται την σταθερότητα της οικονομίας συνολικά. Είναι αναγκαίος ο συντονισμός της νομισματικής με τη δημοσιονομική πολιτική, αλλά και μία νέα κατεύθυνση σε ότι αφορά τη κύρια λειτουργία κάθε κεντρικής τράπεζας που προτείνεται να είναι η εξασφάλιση της εν γένει χρηματοπιστωτικής σταθερότητας.

Οι προτάσεις για τη διασφάλιση της χρηματοπιστωτικής σταθερότητας εκτείνονται από την επιβολή ορίων στο μέγεθος που μπορεί να φθάσει ένα χρηματοπιστωτικό ίδρυμα, την εξάλειψη ή σημαντική μείωση των πράξεων για ίδιο λογαριασμό (own account trading) και γενικά των επενδύσεων για ίδιο λογαριασμό των τραπεζών και

της ιδιοκτησίας κεφαλαίων απολύτου θετικής αποδόσεως (hedge funds), έως την συνολική αναδιάρθρωση του χρηματοπιστωτικού τομέα. Τονίστηκε η προτεραιότητα που πρέπει να δοθεί από τις χώρες και τις κεντρικές τράπεζες ώστε το χρηματοπιστωτικό σύστημα να δρα εκ των προτέρων. Αυτό μπορεί να επιτευχθεί με την αύξηση των ιδίων κεφαλαίων των χρηματοπιστωτικών ιδρυμάτων κατά τις οικονομικά ανερχόμενες περιόδους ώστε να είναι ικανά να αντιμετωπίζουν αποτελεσματικά τυχόν προβλήματα κατά τις καθοδικές περιόδους. Ακόμα, προτάθηκε η ισχυρή και αποτελεσματική εποπτεία ως ουσιαστικό συστατικό στοιχείο οποιασδήποτε μεταρρύθμισης του χρηματοπιστωτικού τομέα. Συζητούνται ακόμα και προτάσεις όπως η επιβολή φόρων χρηματοπιστωτικής σταθερότητας και χρηματοπιστωτικής δραστηριότητας. Εγείρονται όμως ερωτήματα εάν, με την ανάληψη τέτοιων μέτρων, ο χρηματοπιστωτικός τομέας θα μπορεί να παρέχει τις υπηρεσίες του χωρίς να μειωθεί σημαντικά η κερδοφορία του αλλά και η πιστωτική του λειτουργία. Το τοπίο δεν είναι ξεκάθαρο ακόμα. Οι προτάσεις φαίνονται αρκετά σύνθετες, ενώ, επιπροσθέτως, θα χρειαστεί μια παγκόσμια συμφωνία για την εφαρμογή τους.

Επίσης, έγιναν αναφορές στο μη χρηματοπιστωτικό τομέα. Εκεί είναι ουσιαστική η ανάγκη εξάλειψης σημαντικών αντικινήτρων που λειτουργούν ανασταλτικά προς την ιδιωτική επιχειρηματικότητα και εμποδίζουν την οικονομική ανάπτυξη. Ειδικότερα, μέσα από τη συσσωρευμένη εμπειρία, αναφέρθηκε πώς οι επιχειρήσεις μπορούν να αξιοποιήσουν ευκαιρίες μέσα από την κρίση με τη λήψη μέτρων αμυντικού και επιθετικού χαρακτήρα και να επιτύχουν διατηρήσιμη ανάπτυξη. Για αυτό είναι αναγκαία η εστίαση σε συγκριτικά πλεονεκτήματα, σε δικτυώσεις των επιχειρήσεων, σε ποιοτικά - διαφοροποιημένα προϊόντα που προσφέρουν «αξία για χρήμα». Σημειώθηκε επίσης ο σημαντικός ρόλος των επενδύσεων από το εξωτερικό.

Τονίστηκε γενικότερα ότι τα κράτη-μέλη με δημοσιονομικά πλεονάσματα θα πρέπει να προχωρήσουν σε δημοσιονομική επέκταση ώστε να βοηθήσουν την οικονομική ανάκαμψη στην Ευρωζώνη, ενώ θα πρέπει να ενισχυθούν οι μηχανισμοί συντονισμού εντός της Ε.Ε. Αυτά ενισχύονται από το γεγονός ότι η οικονομική κρίση της Ευρωζώνης απειλεί και χώρες όπως την Ιταλία, την Ισπανία, την Πορτογαλία και την Ιρλανδία. Έτσι απαιτούνται συνολικότερες ευρωπαϊκές λύσεις οι οποίες θα στηρίζουν την οικονομική ανάκαμψη της Ευρωζώνης αλλά και θα εμβαθύνουν την οικονομική της ολοκλήρωση, συμπεριλαμβάνοντας και ουσιαστικά θεσμικά μέτρα που οδηγούν σε μια γνήσια νομισματική ένωση. Η κρίση στην Ελλάδα και σε άλλες

χώρες της Ε.Ε. δημιουργεί την ευκαιρία να προχωρήσει προς τα εμπρός η ευρωπαϊκή ολοκλήρωση, προς όφελος της πολιτικής της Ε.Ε. Η ΟΝΕ δεν μπορεί να συνεχίσει όπως είναι. Παραμένει ζωτικής σημασίας για τους ασκούντες την οικονομική πολιτική της Ευρώπης να προσδιορίσουν ευρωπαϊκές λύσεις που θα εξυπηρετούν το συμφέρον όλων των πολιτών της Ευρώπης.

Οι αιτίες της Ελληνικής κρίσης:

Σε ότι αφορά την ελληνική οικονομική κρίση, προέκυψε ότι αυτή συνδέεται με πέντε κύριες αιτίες: (α) με την δημοσιονομική αδυναμία του ελληνικού κράτους, (β) τον περιορισμό στην άσκηση εθνικής δημοσιονομικής και νομισματικής πολιτικής μεταφέροντας την πίεση της οικονομικής προσαρμογής στην αγορά εργασίας (και κατ' επέκταση στη πλευρά της συνολικής προσφορας) με μη εισέτι ικανοποιητικά αποτελέσματα σε ότι αφορά την ανταγωνιστικότητα, (γ) τη σταθερή, διαχρονική χειροτέρευση της ανταγωνιστικότητας της ελληνικής οικονομίας, (δ). την παγκόσμια οικονομική κρίση που χειροτέρευσε τα δημοσιονομικά μεγέθη και (ε) τη δραματική αύξηση του βάρους του κόστους των επιτοκίων.

Τονίστηκε ότι μόνο η πρώτη από τις πιο πάνω αιτίες συνδέεται αναμφίβολα με την προσπάθεια που πρέπει να καταβάλει η Ελλάδα μέσω του πακέτου δημοσιονομικής πειθαρχίας. Οι άλλες έχουν ισχυρή ευρωπαϊκή διάσταση και πρέπει να αντιμετωπισθούν στο επίπεδο της Ε.Ε. Για αυτό χρειάζεται και η συμβολή της ΕΚΤ στη δημοσιονομική εξυγίανση και στην προσπάθεια εξάλειψης των ανισορροπιών. Το ελληνικό πακέτο πρέπει να έχει μακροπρόθεσμο προσανατολισμό, με τις λιγότερες δυνατές επιδράσεις στη ζήτηση, να επιδιώξει τη σύλληψη της φοροδιαφυγής, το πάγωμα μισθών και τη δημιουργία του δημοσιονομικού πλεονάσματος. Τονίστηκε ιδιαίτερα η αναγκαιότητα επιτυχίας του προγράμματος δημοσιονομικής εξυγίανσης καθώς οι εναλλακτικές λύσεις δεν είναι καλύτερες και επαυξάνουν τα προβλήματα, θέτοντας σε κίνδυνο την οικονομική ανάπτυξη και την κοινωνική συνοχή της χώρας για πολλά χρόνια.

Στο πλαίσιο αυτό, από την εισήγηση του Διοικητού της Τραπέζης της Ελλάδος κ. Γ. Προβόπουλου προέκυψε ότι η πορεία υλοποίησης του μνημονίου στήριξης μεταξύ της Ελλάδας, της Ε.Ε., της ΕΚΤ και του Διεθνούς Νομισματικού Ταμείου βαίνει ικανοποιητικά και ότι τελικά θα υλοποιηθεί με επιτυχία στο χρονοδιάγραμμα που έχει τεθεί. Συγκεκριμένα, ο κ. Προβόπουλος τόνισε ότι τα μέτρα σταδιακά συμβάλλουν στην αποκατάσταση της αξιοπιστίας των δημοσιονομικών μεγεθών. Αυτό

προοδευτικά θα οδηγήσει και στην αποκατάσταση της αξιοπιστίας των αγορών για την ελληνική οικονομία, στην περαιτέρω μείωση των επιτοκίων, καθώς και στην έξοδο της χώρας από την κρίση. Τόνισε, επιπροσθέτως, ότι το συγκεκριμένο πακέτο αποτελεί μοναδική ευκαιρία για την προσαρμογή της οικονομίας, επισημαίνοντας και την ανάγκη λήψης διαρθρωτικών μέτρων. Τέλος, σημείωσε ότι η ελληνική οικονομία διαθέτει σημαντικές αναπτυξιακές προοπτικές, κάτι που απαντά και στις αιτιάσεις των αναλυτών ότι η δυναμική του χρέους είναι μη διατηρήσιμη.

Η διαχείριση του Κινδύνου – Οι εταιρίες αξιολόγησης:

Η χρηματοπιστωτική κρίση οδηγεί και σε ορισμένα βασικά συμπεράσματα σε ό,τι αφορά τη διαχείριση του κινδύνου. Ένα πρώτο μάθημα είναι ότι αναγκαίος όρος για την αποτελεσματική λειτουργία ενός συστήματος διαχείρισης κινδύνου είναι να διαθέτει επαρκή, ακριβή και έγκαιρη πληροφόρηση. Ένα ακόμα μάθημα είναι ότι το χρηματοπιστωτικό σύστημα όπως λειτουργεί σήμερα είναι «φορτωμένο» με πολλά προβλήματα που θέτουν σε κίνδυνο και χαλαρώνουν τους χρηστούς χρηματοπιστωτικούς κανόνες (moral hazard) σε κάθε βήμα. Τέλος, οι διεθνείς οίκοι αξιολόγησης πρέπει να αναγνωρίσουν ότι η χρηματοδότηση που συνδέεται με δομημένα προϊόντα διαφέρει από προϊόντα όπως είναι τα εταιρικά ομόλογα και πρέπει να αναπτύξουν εργαλεία για να εκτιμούν ορθά τους κινδύνους. Ο τρόπος αποζημίωσης αυτών των οίκων θα πρέπει να μεταβληθεί ώστε να εξαλείψει τη τρέχουσα σύγκρουση συμφερόντων μεταξύ των οίκων αξιολόγησης και των επιχειρήσεων που δημιουργούν αυτά τα δομημένα προϊόντα. Τέλος, οι τράπεζες και άλλα χρηματοπιστωτικά ιδρύματα θα πρέπει να περιορίσουν την αντοχή στον κίνδυνο των συστημάτων διαχείρισης κινδύνου που κατέχουν. Αυτό θα οδηγήσει σε αύξηση των αναγκών τους σε κεφάλαια, στην αύξηση του μετοχικού τους κεφαλαίου, του μακροπρόθεσμου χρέους τους και στην επαύξηση της διάρκειας του βραχυπρόθεσμου χρέους τους.

Άλλα συμπεράσματα:

Είναι ακόμα αναγκαίο να μειωθεί η προκυκλικότητα που παρατηρείται στο χρηματοπιστωτικό σύστημα. Ορίζεται ως η διαχρονική δυναμική του χρηματοπιστωτικού συστήματος και της πραγματικής οικονομίας να ενισχύουν η μία την άλλη, αυξάνοντας την έκταση της ανόδου αλλά και της καθόδου και επιδρώντας δυσμενώς στη σταθερότητα του χρηματοπιστωτικού τομέα και της οικονομίας. Για αυτό το λόγο χρειάζεται να προσδιοριστούν οι παράγοντες που ενισχύουν την

προκυκλικότητα και να αναληφθούν δράσεις που τη μειώνουν. Οι βασικές κατευθύνσεις αυτών των δράσεων, οι οποίες παρουσιάστηκαν διεξοδικά στο συνέδριο, βρίσκονται στο οικονομικό περιβάλλον, στο χρηματοπιστωτικό περιβάλλον, στη διαμόρφωση της οικονομικής πολιτικής και στα θεσμικά χαρακτηριστικά του χρηματοπιστωτικού συστήματος.

Τέλος, το συνέδριο ασχολήθηκε και με θέματα περιβάλλοντος και ιδιαίτερα με τις οικονομικές επιπτώσεις των εφαρμοζόμενων περιβαλλοντικών πολιτικών. Η εμπειρία δείχνει ότι, ακόμα και κατά την τρέχουσα περίοδο της οικονομικής κρίσης, οι χώρες που επενδύουν σε μέτρα περιβαλλοντικής προστασίας ωφελούνται και αναπτυξιακά από αυτές τις επενδύσεις. Επομένως, η τρέχουσα οικονομική κρίση δεν πρέπει να αποτελεί δικαιολογία μη ανάληψης τέτοιων επενδύσεων, αλλά αντιθέτως, να υλοποιούνται με μεγαλύτερη ταχύτητα κατά την τρέχουσα περίοδο. Επιπροσθέτως, η οικονομική θεωρία ασκεί με τη σειρά της θετική επίδραση στην περιβαλλοντική πολιτική καθώς με τα οικονομικά της εργαλεία δείχνει πώς η τελευταία επιδρά στην κοινωνική ευημερία

Παναγιώτης Αλεξάκης