Lorenzo Bini Smaghi: Has the financial sector grown too big?

Speech by Mr Lorenzo Bini Smaghi, Member of the Executive Board of the European Central Bank, at the Nomura Seminar "The paradigm shift after the financial crisis", Kyoto, 15 April 2010.

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Introduction

I would like to thank Nomura for inviting me at this conference in this historical and prestigious city of Kyoto. I am particularly happy to be here today for at least two reasons.

First it gives me the opportunity to finally deliver a speech at a Nomura Conference, after my previously failed attempt, in October 2006 when I was unable to deliver my prepared speech, because of a knee surgery. In that speech which I ultimately sent to the organisers to be distributed to the participants (the title was: "Three Questions on Monetary Tightening") I asked the following three questions related to the process that central banks have to go through in tightening monetary policy: When to start tightening? At what speed tighten? When to stop tightening?

Less than four years later, after having gone through a full tightening and loosening cycle these questions might still look pertinent. I looked back at what I was writing at that time concerning the answer to the first question, i.e. when to start tightening monetary policy. I made at that time three recommendations:

1. Don't wait too long, especially if the signs of recovery are apparent and interest rates are at very low levels. The sooner tightening starts, the less tightening might be needed later on.
2. To be sure, don't wait to see inflation rising before raising rates. It will be too late.
3. Use a wide set of indicators and arguments to explain to market participants and the public at large why tightening is needed. Money and credit aggregates, asset prices and the level of interest rates might be useful indicators of why the time has come to reduce accommodation.

I leave it to you to judge how valid these recommendations are for the current conjuncture.

The second reason for being pleased to be here today is that I am back in this beautiful city nearly after ten years. In May 2000 I attended a meeting of the G7 deputies, preparing for the Okinawa Summit in July that year. Among the participants whom you might know were Haruhiko Kuroda, from the Japanese Finance Ministry (now President of the Asian Development Bank), and Tim Geithner, at that time US Finance deputy. I was attending as Italian Finance deputy.

The discussion in those days was largely focussed on strengthening the financial architecture after the 1997 Asian crisis. The focus was very much on strengthening the resilience of Emerging Markets in order to equip them for a possible next crisis. The other main focus was debt forgiveness for the poorest countries. Looking back to that work agenda, it seems to me that much has been achieved in these countries. Where we have been slightly less performing is in our own financial systems. The implementation of the reform agenda agreed at the Cologne summit, in June 1999, concerning the advanced economies has been disappointing.

Let me quote parts of the report of the G7 Finance Ministers to the Cologne Summit:

"The past two years have reminded us that investors and creditors often tend to underestimate risks as they reach for higher yields. In periods of market euphoria, market participants can make credit and investment decisions that might not otherwise have been

made. In hindsight, the failures on the part of lenders and supervisors in the major countries include poor risk management practices, inadequate information as well as inadequate attention to available information, and capital standards that provide unintended incentives to lend to risky borrowers. Such excessive risk taking, combined with high degrees of leverage, can magnify the negative effects of any event or series of events."

Doesn't it sound familiar? The risks inherent in financial markets were well known ten years ago. The problem was in identifying the right remedies. Let me read the part on recommendations:

"Measures to induce creditors and investors to act with greater discipline (i.e., to analyse and weigh risks appropriately in their lending and investment decisions), should aim at avoiding excessive leverage and encouraging more prudent assessment of the risks associated with lending to …. ***emerging markets***!*"*

The main concern ten years ago was that the international financial system would be put under stress again by emerging markets, not by the core of the system, as if the underestimation of risks could not happen in advanced economies. We had to learn the hard way that sophisticated financial markets are also prone to exuberance and contraction phases which hamper their proper functioning. We thus have to ask ourselves some difficult questions on how these markets can function better and better serve economic development.

Before getting to the main topic of my speech today, which concerns the size of financial markets, let me say a few words about some recent events in European financial markets, which may be of interest to you, also to underline how complex and sometimes irrational these markets tend to behave.

Last week-end the euro area member states agreed on the procedure, mechanism and financial amount to support Greece in its fiscal adjustment programme, with a defined burden sharing mechanism and non-concessional pricing scheme. This will enable Greece to implement its adjustment programme without loosing market access and ensuring a sustainable burden of the debt.

This announcement makes it clear what the euro area authorities have said since many months, i.e. that a scenario of default and exit from the euro area, which some market participants and observers had toyed with, was simply absurd. The cost of such a doomed scenario, on which not many have really thought thoroughly, is immensely larger than implementing the adjustment that the Greek society has to do in any case. This has been recognized not only by the Greek Government but also by its citizens.

If it was so obvious – one might ask – why wasn't the decision by the euro area countries and the Greek government taken earlier? It is indeed a good question. The answer has much to do with the political process and the time that it sometimes takes in our democracies to take certain decisions. It took months for the Greek Government to realise that, in light of the new data on the budget deficit, it had to backtrack from its election promises and reverse its budgetary policy by 180 degrees. It took time for the other euro area governments to realise that a support package was needed to ensure the credibility of the adjustment in the eyes of financial markets.

While democracies need time to take decisions, financial markets act quickly, accelerating their position-taking at any sign of indecision by the policy authorities. Furthermore, the Lehman Brothers case shows that democracies are not always able to deliver the most rational and efficient solution. Under certain circumstances it is thus rational for markets to bet on the irrationality of the democratic decision-making process. It was irrational to let Lehman Brothers fail, but it happened. Those who bet on that failure earned a substantial amount of money. So why not bet on a possible irrationality of European decision-making?

European policy makers may have underestimated the self reinforcing nature of market trends. If a speculative strategy based on a certain hypothesis, such as the default of Greece, delivers capital gains over time – as has been the case since the fall of 2009 – it is

bound to attract an increasing number of investors. As a result, the market pressure increases, making the hypothesis more realistic. The action needed to convince market participants that the hypothesis is unrealistic and to stop the mounting speculative wave has to be firm. Vague statements that some event, such as a default, will not occur, are not sufficient to calm the markets. Concrete actions are needed. This was not fully understood over the last few months.

But there is another element which might have been underestimated and needs to be further considered in thinking about how our democracies can cope with certain financial market developments. As an increasing number of investors take positions based on the same hypothesis, their ability to influence the final outcome increases. The incentive to do all that is needed to ensure that the outcome coincides with their underlying assumption is enhanced by the substantial capital gain that these investors would obtain if their strategy is successful and, conversely, the substantial loss they would suffer if their underlying hypothesis is not realised. In other words, it is in the interest of those who bet on a sovereign default that ultimately the country defaults. They have thus the incentive to do what is in their power to induce the country to default. This applies not only to countries but also to individual companies or financial institutions.

In a competitive financial market, with many players unrelated to each other, such incentives do not necessarily create distortions. However, in markets characterised by conflict of interest, collusive behaviour and lack of transparency, actions by individual agents may lead to outcomes which do not reflect market efficiency and an optimal allocation of resources. Just to give concrete examples of what may and has happened recently, we have seen rating agencies not acting as rating agencies, when they stated that they had to wait for the reaction of the markets before assessing whether the corrective measures taken by Greece were sufficient to change their view. Market analysts and observers' views have been widely publicised without revealing potential conflicts of interest, such as sitting in advisory boards or acting as consultants for major investment houses or hedge funds. This above is not an excuse for the slow decision making in the euro area, which is partly constrained by national processes. But the fact that financial markets may take undue advantage of any sign of weakness, using all instruments at their disposal to transform uncertainty into profit, has been underestimated.

The agreement reached over the last week-end is very important and marks a key turning point in the crisis. But this experience should now be used to create a more efficient decision making process within the euro area aimed in particular at preventing similar situations from occurring in the future and eventually at solving them more efficiently.

Let me turn now to the main topic of my speech today, which relates to the size of financial systems. There is an emerging consensus that while financial markets are generally conducive to economic growth, in the run-up to the recent crisis they were operating on an excessive scale. While policy-makers' efforts to prevent a systemic meltdown and mitigate the negative impact on the real economy after the bubble burst have been largely successful, the crisis caused the deepest recession since the 1930s, and imposed large fiscal and social costs on economies throughout the world.

We need to re-examine our all-too-easy assumptions that a large financial sector invariably benefits the real economy. We have to acknowledge that the financial sector, not to mention some of its components, may sometimes become "too large". It can end up posing a threat to both economic and financial stability, so we have to enhance our understanding of where the optimal threshold lies. We also need to identify the regulatory measures that can address the problem best: namely, preventing the financial industry from becoming too large and taking excessive risks, leading to the emergence of bubbles, and to the proliferation of complex and opaque financial instruments. And we should avoid imposing restrictive measures that will prevent the financial sector from channelling resources towards productive opportunities. In doing so, we need to make sure that our measures target non-traditional financial markets as

much as traditional banking, in order not to encourage regulatory arbitrage and a return to "business as usual" outside the auspices of regulators.

Today my remarks will revolve around four main points. First, I will claim that efficient financial markets enhance growth. However, if they grow "too large," then they may lead to a misallocation of resources and cause costly crises. Second, I will present evidence showing that in the build-up to the crisis, the size of the financial sector outgrew its trend. Third, I identify some of the main reasons why this occurred and discuss how to avoid that such imbalances materialise again. To this end, regulation and supervision can play an important role. Fourth, while ensuring that the financial sector does not grow beyond its optimal size, the new regulatory framework should not reach the point of financial repression.

1. The optimal size and role of the financial sector

The debate on the relationship between financial markets and the real economy habitually occupies the intellectual space that exists between Joseph Schumpeter's insights into the ability of well-developed financial systems to stimulate economic growth, and Joan Robinson's observation that *"where enterprise leads, finance follows".*[1] The experience of recent decades from emerging as well as industrialised countries has mostly confirmed the first claim, namely, that deeper financial markets improve economic efficiency, lead to a better allocation of productive capital, and increase long-term economic growth. However, the frequent financial shocks associated with dynamic financial industries, and in particular the recent economic crisis, also highlight the role large financial markets play in downside risk. This combined evidence implies that there is a trade-off between a highly vibrant financial sector and the overall stability of the financial system. In fact, some scholars have gone as far as to claim that financial instability can only be eliminated by restricting the same productive forces which are responsible for long-term growth.[2]

What I will argue in this speech is that one aspect of the financial sector which can give us key insights into this trade-off is its size. When reasonably large, financial markets promote economic efficiency by identifying productive opportunities and transforming savings into the investment necessary to finance those opportunities. However, when they become "too large", relative to what is implied by economic fundamentals, problems like financial complexity, poorly understood financial innovation, herding behaviour, and endogenous risk-taking – to name just a few – suddenly outweigh the benefits. The recent financial and economic crisis is a stark example of that. The pre-crisis period was characterised by the growing size, complexity and interconnectedness of financial markets, with subsequent detrimental effects on the global economy. In order to address the problem, regulatory measures are being taken to impose limits on the propensity of the financial sector to create downside risk. But a fine balance needs to be reached: these measures must be effective but not punitive; they need to address the crux of the problem without unduly limiting the ability of financial markets to sustain economic growth.

In general, the gradual growth of the financial sector is driven by both structural and conjunctural factors. On the one hand, higher relative productivity, resulting in higher profits and wages, and the necessity to service ever increasing global savings are fundamental reasons why the financial industry has gradually expanded. These are structural issues, and they will hardly go away in the future – it is conceivable that emerging market economies will keep exhibiting high savings rates, and thus large and efficient financial markets will be

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[1] Robinson, J. "The Generalization of the General Theory." The rate of interest and other essays. London: Macmillan, 1952, 67–142.

[2] Ranciere, R., Tornell, A., and F. Westermann, 2008. Systemic crises and growth. *Quarterly Journal of Economics* 123, 359–406.

required to service them. On the other hand, there are cyclical deviations from this trend, driven by risk-taking, excessive leverage, the search for yield as well as the proliferation of opaque financial instruments, among other things. It is therefore essential to think of the optimal "threshold" beyond which the financial sector is "too large" – not in absolute terms, but in terms of deviations from the trend. At such a point, the size of the financial industry starts to become detached from what economic logic would imply.

Before I go into further detail on this front, it is perhaps useful to explain why we still need a large and dynamic financial industry. In general, deep and efficient financial markets improve economic performance both by raising the level of growth[3] and by allocating productive capital[4] more efficiently, ultimately generating benefits for the society as a whole. Consider, for example, the long-standing point in academic and policy discussions on the differences in average GDP growth between the US and continental Europe. It has been suggested that deeper financial markets across the Atlantic are to a large extent responsible for the larger increases in productivity, the faster pace of industrial innovation, and the generally more dynamic economy of the US compared with that of Europe. For example, deeper credit markets probably account for the higher rate of business start-ups in the US. The difference is especially visible when it comes to the financing of innovative ideas, where the much larger US venture capital industry has been credited over the years with the emergence of whole new industries and such innovative corporate giants as Microsoft, Cisco Systems, Google (to name just a few). Out of the world's 500 largest companies, 26 American ones have been founded since 1975, compared with only 3 European ones, showing a larger turnover of industry leaders.[5] These two aspects of "creative destruction" – new business creation and innovation – are crucial when we come to think of why deeper financial markets can benefit economic growth.

The same pattern is seen when we compare European economies. Econometric estimations suggest that improvements in corporate governance, in the efficiency of legal systems in resolving conflicts in financial transactions and in some structural features of the less developed European banking sectors are all factors that are likely to help the financial system reallocate capital faster from declining sectors to those with good growth potentials.[6] In addition, recent ECB research has pointed to the fact that large differences persist among European countries in terms of new business creation and patenting activity. It has concluded that much of this difference can be attributed to the existence of more developed credit markets and risk capital markets.[7]

All this evidence has led most financial economists to think of the relationship between finance and growth as one in which "more is better". However, the recent crisis has revealed that a financial sector which goes beyond a certain threshold (or breaking point) can harm the economy and society as a whole. In particular, we have seen that an oversized financial industry tends to exacerbate information asymmetries, moral hazard problems, and the hunt for yield, leading to excessive risk-taking and over-leveraging of the system. The events of 2007–2008 suggest that when financial sectors are "too large", the allocation of resources may become inefficient. Examples of such misallocation were abundant during the dot-com

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[3] Rajan, R., and L. Zingales, 1998. Financial dependence and growth. *American Economic Review* 88, 559–586.

[4] Wurgler, J., 2000. Financial markets and the allocation of capital. *Journal of Financial Economics* 58, 187–214.

[5] Philippon, T., and N. Veron, 2008. Financing Europe's fast movers. Bruegel Policy brief 2008/01.

[6] Hartmann, P., Heider, F., Lo Duca, M, and E. Papaioannou, 2007. The role of financial markets and innovation in productivity and growth in Europe. ECB Occasional paper 72.

[7] Popov, A., and P. Roosenboom, 2009. On the real effects of private equity investment: Evidence from new business creation. ECB Working paper 1063.

expansion, when many high-tech projects of little value were generously financed. Numerous examples of misallocation were associated with the credit growth of the early 2000s as well, of which the expansion of the US sub-prime mortgage market is just the most obvious one. We can think of examples in Europe too – for instance, growth in Spain relied for years on an ever-expanding real estate sector fuelled by increasing borrowing.

Looking at specific market segments, there are plenty of examples showing the excesses of the financial sector, and also illustrating the importance that the "shadow" banking system has played in this crisis. For example, the growing use of securitisation by banks led to a distinctly lax screening of loans.[8] As a result, mortgage credit growth became disconnected from both relative and absolute income growth in the sub-prime market.[9] The crisis itself started not as a traditional bank run on deposits, but as a securitized-banking run driven by the withdrawal of repurchases ("repo") agreements from the balance sheets of investment banks, which had been funding roughly half of their assets through repo markets.[10]

During financial bubbles, the search for yield intensifies, risk-taking is everywhere, and leverage in the system may increase at unsustainable rates. The exponentially rising volume of financial assets and transactions, especially by highly leveraged and interconnected institutions, can increase financial instability. Shocks to the system can lead to fire sales and asset price decreases, resulting in liquidity spirals and widespread bankruptcies.[11]

On the "real" side, the aftermath of the busts which follow unsustainable booms are frequently associated with falling housing prices, collapsing equity prices, and lasting declines in output and employment. Under certain circumstances, the negative impact on potential output could be long-lasting rather than transitory (see Figure 1). In addition, financial crises like the recent one tend to worsen the fiscal position of many countries. Government debt explodes in the wake of banking crises, fuelled not so much by the cost of recapitalising the banking systems but by collapsing tax revenue.[12]

As can be seen from this rather sketchy argumentation, the damage caused by "oversized" financial markets can be quite substantial. But even if we are aware that there are limits to the "optimal" size of financial markets, we still run into practical problems if we try to establish the right "threshold", and research in this field has been very limited. Just a handful of researchers in recent years have studied the non-linearities in the relationship between the size of financial markets and economic growth using cross-country evidence[13], and they have concluded that at "too high" levels of finance, the effect of finance on growth substantially weakens. But this line of research needs to be pursued much further, incorporating the pre-crisis years, looking at various types of financial markets, and better motivating our analysis in terms of theory.

Establishing an "optimal" threshold above which the size of the financial sector is harmful and below which it is beneficial for society is much more complicated than identifying multiples

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[8] Keyes, B., Mukherjee, T., Seru, A., and V. Vig, 2010. Did securitization lead to lax screening? Evidence from subprime loans. *Quarterly Journal of Economics* 125, 307–362.

[9] Mian, A., and A. Sufi, 2009. The consequences of mortgage credit expansion: Evidence from the U.S. mortgage default crisis. *Quarterly Journal of Economics* 124, 1449–1496.

[10] Hordahl, P., and M. King, 2008. Developments in repo markets during the financial turmoil. BIS Quarterly Review (December), 37–53.

[11] Adrian, T., and H. Shin, 2010. Liquidity and Leverage. *Journal of Financial Intermediation* (forthcoming); Brunermeier, M. and L. Pedersen, 2009. Market liquidity and funding liquidity. *Review of Financial Studies* 22, 2201–2238.

[12] Reinhart, C., and K. Rogoff, 2009. The aftermath of financial crises. *American Economic Review* 99, 466–472.

[13] Deidda, L., and B. Fattouh, 2002. Non-linearity between finance and growth. *Economic Letters* 74, 339–345; Rioja, F., and N. Valev, 2004. Does one size fit all? A reexamination of the finance and growth relationship. Journal of Development Economics 74, 429–447.

that deviate from their long-run trends. While some parameters of financial markets – like total loans outstanding, stock market capitalisation, or foreign financial flows – are relatively easy to observe and quantify, many are not. The financial system consists of a number of activities that do not necessarily involve credit expansion. Examples include proprietary trading, or some of the activities which – especially in the US and the UK – investment banks, broker dealers, hedge funds and the like have been engaged in.

That "the financial sector is too large" simply cannot be an *absolute* claim. While it is true that, for example, financial sector employment as a share of total employment in the US has doubled in the past 50 years, this may be an efficient development associated, for example, with the necessity to manage ever increasing savings from booming East Asian countries like China. Therefore, we can only make the claim that the financial sector is too big *relative* to a certain well-defined benchmark. For instance, what is the size of financial markets beyond which further enlargement leads to lower economic growth because of the emergence of bubbles? Or to lower innovation because highly skilled labour is drawn away from the R&D sector? Or to sub-optimal diversification because of herding by uninformed investors?

Recent research at the ECB has shown that while a deep financial sector leads to more optimal economic diversification, when it becomes "too large", its contribution to diversification is substantially weakened.[14] And in an emerging strand of academic literature, some authors have looked at such secondary measures of "financial market size" as excessive profits. They have shown that excessive rents reaped by the financial industry lead to increased risk-taking which can endogenously generate boom and bust episodes.[15] Others have argued that high relative wages in the financial sector can lead to lower rates of long-term economic growth by attracting "talent" away from the productive sectors of the economy.[16] Continuing work in this direction is critical, not as an abstract intellectual exercise, but because of the very tangible negative consequences of a "too large" financial sector, as recent experience has highlighted.

2. Facts

After discussing the negative consequences on financial stability and economic growth that a "too large" financial sector can generate, in this section I will analyse available evidence to show that the financial industry as a whole has grown to a sub-optimal size.

While illustrating this point, it is important to keep in mind the difference between a beneficial long-term trend of gradual deepening of financial markets and the sizeable cyclical deviations towards "too large" that were at the root of the recent crisis. Let us look first at one development within the long-term trend. Figure 2 shows the development since WWII of a very intuitive measure of US financial market "size", namely its share of value added, compensation and employment. In the past 60 years, its share of GDP has almost quadrupled, to 8%, and so has financial sector compensation as a share of total compensation. Based on such shares in value added and total production for the 20 major industrial countries, some observers have made the point – drafted before the outbreak of the crisis – that financial instability may nowadays have more severe real effects than in the

[14] Manganelli, S., and A. Popov, 2010. Financial markets, diversification, and allocative efficiency: International evidence. ECB Working paper (forthcoming).

[15] Biais, B., Rochet, J.-C., and P. Wooley, 2009. Rents, learning, and risk in the financial sector and other innovative industries. FMG Discussion paper 632.

[16] Kovrijnykh, A., and A. Popov, 2010. Financial vs. real innovation. ECB mimeo.

past.[17] And although the financial sector hasn't grown in terms of employment since the late 1980s, it is still more than twice as big as it was in the 1950s.

If we, however, choose to focus more on compensation, an interesting development can be seen regarding financial sector wages relative to an economy-wide benchmark which illustrates the cyclical component of the "too much finance" concept. Figure 3 shows data on return to equity (ROE) for all domestic US and EU banks between 1994 and 2006. Clearly, bank profitability has been rising gradually for quite some time. In the US, it has been an average of 14% since the early 1990s, up from an average of 9% in the 1980s. And in Europe, with the exception of the dot-com bust in the early 2000s, which was associated with a fall in profitability, the return on equity increased from 7% in 1994 to almost 19% in 2006, and in fact it doubled in only 5 years, between 2002 and 2006. Turning to another measure of financial sector profit – average compensation – Figure 4 demonstrates that while on average wages in the financial sector have been higher than average US non-farm wages throughout the twentieth century, they have been higher by 30% only on two occasions – prior to the Great Depression and during the 2000s. In that second period, financial sector compensation actually decoupled from benchmark compensation by more than 40%. It is important to note that this is not due to rising compensation in "traditional" financial sectors like credit and insurance, but due to the large increase in compensation in non-traditional financial activities like investment banks, hedge funds and the like (Figure 5). This is another reason why any changes to the regulatory environment aimed at preventing systemic crises in the future will have to deal not just with the traditional banking sector, but with the so-called "shadow" banking sector as well.

Another troublesome parallel with the Great Depression is the level of credit market debt. Figure 6 shows that during the twentieth century total credit market debt in the US was on average around 1.5 times GDP, standing at 2.5 times GDP in the 1930s, and at 3.5 times GDP in 2008. It is important to note the differences in the reason for this expansion: while in the 1930s debt rose in order to combat the 25% unemployment rate in the US at the time, its rise in the 1980s, 1990s and 2000s was unrelated to crisis management. Thus the accumulation of pre-crisis credit market debt stands as a stark example of the downside of financial market expansion.

Of course, these developments are not confined to the US. Figure 7 shows the evolution of banking sector assets in the UK during the twentieth century. While they stood at around 50% of GDP until the 1970s, they rose to 300% by 2000, and to 550% by 2007. While part of this development is a natural consequence of being an international financial centre, it is difficult to justify such a dramatic expansion merely on the grounds of the rising importance of finance as a tool to fuel growth. In addition, the explosion in the size of the financial sector has posed major problems for regulators in the wake of the financial crisis, when they were faced with addressing the systemic implications of very large, individual banks. For example, in 2007 the liabilities of Barclays exceeded the UK's GDP, the liabilities of Deutsche Bank stood at 80% of Germany's GDP, and the liabilities of Fortis were several times larger than the GDP of its home country, Belgium.[18] As some observers rather provocatively remarked, such financial institutions may not just be "too big to fail", but in fact "too big to exist".[19]

These observations point to the fact that the expansion of the financial sector in the pre-crisis years was not an Anglo-American phenomenon. Indeed, as Figure 8 demonstrates, only in the past 20 years, the broad financial sectors (including real estate and business services) in France and Germany have expanded by about 25% in terms of share of GDP. These

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[17] Ferguson, R., P. Hartmann, F. Panetta and R. Portes, 2007. International financial stability. 9th Geneva Report on the World Economy, November.

[18] Gros, D., and S. Micossi, 2008. The beginning of the end game. Voxeu column, 20 September 2008.

[19] Ibid.

developments have been very similar in magnitude to the ones in the US and the UK. While they may simply be part of the process of gradual financial deepening, they bring to mind a similar financial sector expansion in Japan in the 1980s. As you will surely recall, by 1990 the world's ten largest banking corporations were headquartered in Japan, and Japanese branches and subsidiaries accounted for almost 20% of all commercial and industrial loans to borrowers located in the US.[20] This expansion is rivalled in magnitude only by the rapid decline of Japanese banking overseas during the 1990s.

A crucial question in this respect is: to what degree was this worldwide expansion of finance, preceding the recent crisis, driven by fundamentals? Part of this process was most certainly associated with the growing global imbalances, fuelled by fast growth and a rapid accumulation of savings in emerging markets, like China. As Figure 9 demonstrates, while in the last 25 years the share of industrialised countries in world trade gradually declined, their share in cross-border financial positions quickly increased. But growth rate gaps are just one aspect of the story behind these uneven advances in trade and financial globalisation. Another, perhaps more important, one was the fact that developed countries engaged in rapid innovation in the field of financial products, allowing them to channel domestic and global savings more efficiently towards productive investments, while emerging countries remained openly sceptical about this process. Two of the most striking developments in recent decades in this respect occurred in credit default swaps (CDSs) and securitised products. In principle, these instruments allow for insuring, pooling and spreading of idiosyncratic credit risk, and so for a long period they were hailed as top examples of how financial innovation can contribute to real economic activity. However, as Figures 10 and 11 show, the enormous jump in their issuance should, in hindsight, have been viewed more cautiously. In particular, the value of global outstanding CDSs rose from less than USD 1 trillion in 2001 to more than USD 60 trillion in 2007. And in the context of the originate-and-distribute model widely adopted by banks in the 1990s, the value of securitised loans went from close to 0 in 1990 to almost USD 700 billion on the eve of the crisis.

Unfortunately, it is not clear whether the crisis has imposed discipline on the financial sector. In theory, one would have expected the crisis to have resulted in, for instance, a new bonus structure with smaller rewards for short-termist behaviour, less proprietary trading and more trading on own resources, greater aversion to the accumulation of debt, etc. Some of this we have seen – for example, proprietary trading now accounts for 10% of the profits of the remaining investment banks (now transformed into bank holdings), down from 20% in 2005. Moreover, many financial players have shunned risk, and leverage has declined dramatically – for example, almost 80% of hedge funds in 2009 were borrowing a dollar or less for each dollar of investor capital.[21] However, in January the largest investment banks in the London city paid GBP 40 billion in bonuses, suggesting that rewards in the industry have not been shifted to long-term performance. In addition, while many banks have paid back the bailout money they received in 2008 or 2009, the fact that these bailout funds were distributed in the first place has certainly increased the level of moral hazard in an industry for which the concept of "too big to fail" has been applied to a variety of market players. All these arguments suggest that it could easily be "business as usual" for the financial industry, both traditional and non-traditional, unless our regulations are appropriately modified.

For the sake of fairness, one should also mention that the reduction in some of the pre-crisis developments is not necessarily a positive change – for instance, the severe decline in the securitisation market (globally from almost USD 5 trillion in 2006 to USD 1 trillion in 2009, which was less than in 2000) has been blamed for the continuing reluctance of banks to

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[20] Peek, J., and E. Rosengren, 1997. The international transmission of financial shocks: The case of Japan. *American Economic Review* 87, 495–505.

[21] "Europeans Favor Regulating 'Shadow Banks'", NY Times, 23 February 2009.

extend business loans.[22] This is one – perhaps isolated – case in which a return to some form of "business as usual" would be welcome.

3. Causes and remedies

To find possible remedies to the "excessive" size of the financial sector, it is important to understand the factors that have allowed it to grow too big. As mentioned before, one obvious reason is excessive profits. There is an emerging literature which links financial sector profit – in terms of ROE and compensation – to the sub-optimality of financial sector size. While a gradual trend in higher return to equity and higher wages in the sector in recent decades has reflected natural developments like increased productivity, the dramatic increase in profit in the immediate pre-crisis years should have served as a cautionary message. Obviously, in the context of competitive financial markets, increased profits will tend to come hand in hand with the increased hunt for yield and risk-taking, expanding financial intermediaries' balance sheets even further. In the run-up to the crisis, this process was especially visible in the shadow banking sector, which was making record profits and paying record wages, unseen in relative terms since the 1920s. Not only did rapid financial innovation enable Wall Street to encourage risk-taking through record pay, but this process also diverted human resources away from more traditional productive occupations towards the shadow banking system. Anecdotal evidence suggests that, lured by record compensation, "30–40% Duke Masters of Engineering Management students […] chose to become investment bankers or management consultants rather than engineers".[23]

Of course, an equally important reason for the increase in the size of the financial sector is the global accumulation of savings over time. It has been argued[24] that the pre-crisis boom in US real estate and securitisation markets reflected high foreign demand for safe US assets resulting from "excess world savings" in the context of persistent global imbalances. According to this interpretation, foreign asset demand not only pushed down the risk-free interest rate in the US but also compressed the risk premia on risky assets. The low cost of financing, in turn, fostered an increase in the level of leverage of the domestic financial sector which exacerbated systemic risk. And while in the aftermath of the crisis the global imbalances have somewhat improved, with savings rates in the western world slightly increasing, I expect that in the future emerging market economies will continue to accumulate foreign reserves and invest them in advanced economies, in the process depressing long-term interest rates and intensifying again the search for yield.

This combination of structural and conjunctural factors, manifested in the extraordinary nature and consequences of the global financial crisis, has clearly revealed the need to revamp the regulatory and supervisory framework, both along the traditional micro-prudential dimension and the new, complementary, macro-prudential approach. To be clear, with the exception of a few proposals (for instance the so-called Volcker rule), the new regulatory framework does not directly address the issue of downsizing a too large financial industry. Rather, its goal is to enhance financial stability, by reducing the riskness of the whole system via macro-prudential supervision, and by curbing the risks undertaken by single financial institutions, via micro-prudential regulation. Nevertheless, it is plausible to believe that the new measures will also have an impact on the size of the financial sector. While the recent increase in the profits of the industry was certainly due to improved financial innovation and

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[22] Gorton, G., and A. Metrick, 2009. Securitized banking and the run on the repo. Yale ICF working paper No. 09–14.

[23] Vivek Wadhwa, *Testimony to the U.S. House of Representatives Committee on Education and the Workforce*, 16 May 2006.

[24] Caballero, R., and A. Krishnamurthy, 2009. Global imbalances and financial fragility. *American Economic Review* 99, 584–588.

technology, it can also be attributed to the higher risks that the financial sector undertook.[25] By curbing these risks, it will be possible to reduce the size of the financial sector as well. For instance, suppose that risks decrease because of limits to leverage. This may imply that profits will go down as well. As a consequence, the financial sector will attract fewer resources, private capital will flow to more profitable industries, and its size will decrease.

Let me first briefly recall the concept and the rationale behind macro-prudential policy. Macro-prudential oversight concerns the monitoring and assessment of systemic risk – meaning the risk that financial instability becomes so widespread that it impairs the functioning of the financial system to the point where economic growth and welfare suffer materially. The crucial idea is the recognition that systemic risk is endogenous to the financial system as it depends on the collective behaviour and the interconnectedness of financial institutions, financial markets and market infrastructures, as well as the interaction between the financial system and the macro-economy. The ultimate aim of macro-prudential policies is thus to assess and identify the build-up of systemic vulnerabilities and to ensure that the financial system is able to withstand their unwinding, minimising potential spillovers to the real economy.[26] Therefore, macro-prudential supervision is unlikely to tackle the issue of an over-sized financial industry, while micro-prudential regulation can have a more direct impact.

Recently, there have been developments on this front. The Basel Committee on Banking Supervision (BCBS), under the aegis of the G20, has put forward a major overhaul of the micro-prudential framework. The ultimate goals of the measures under discussion are the enhancement of the capital and liquidity buffers as well as the reduction of leverage. As a consequence, the cost of funding for the financial sector is likely to increase and the returns on equity are likely to decrease. This, in turn, is likely to affect the size of the financial industry.

In addition, specific attention is given to make sure that systemic risk is not building up in unregulated sectors. To this end, the G20 leaders have agreed that all systemically important financial institutions, markets, and instruments should be subject to an appropriate degree of regulation and oversight. It is crucial to make sure that the measures designed to reduce excessive risk-taking and excessive leverage are not restricted to the "traditional" financial sector, while the shadow banking system is free to engage in the type of excessive leveraging that was common in the run-up to the crisis. In trying to reduce the probability of bank holdings engaging in speculative activities, some proposals have even gone as far as banning proprietary trading by banks (the so-called "Volcker rule"). As regards hedge funds and other "pools of capital", there is global consensus on the need for appropriate disclosure of information, including on their leverage, in order to be able to assess the systemic risks that they pose individually or collectively. At EU level, the recent proposal for a directive presented by the Commission would consistently enhance the capacity of the supervisory authorities to gather information on the exposures of hedge funds, also in cooperation with the soon-to-be-established European Systemic Risk Board.

Finally, initiatives are under way to enhance the resilience of credit derivatives markets, in particular by establishing central clearing counterparties subject to effective regulation and supervision. Recent ECB research has demonstrated that derivatives contribute to systemic risk by building up financial imbalances. In particular, derivative positions create hidden leverage and increase risk-taking incentives in the financial sector. As risk-taking entails

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[25] See for instance, Alessandri, P., and A. Haldane, 2009. Banking on the State. Mimeo, Bank of England.

[26] In Europe, following the publication of the Report of the de Larosière Group in February and a proposal by the European Commission in May, the European Council in June 2009 agreed to set up a new independent body, the European Systemic Risk Board (ESRB), which will be responsible for the macro-prudential supervision of the EU's financial system.

potential costs to third parties, financial institutions should be required to hold additional capital in relation to the size of their derivative positions. Initial margins, implemented via a central counterparty, are beneficial as they are ring-fenced from risk-taking by financial institutions. However, this has to be complemented by capital requirements, as insuring against counterparty risk can make market participants more complacent. The interplay of margin requirements, capital requirements and central clearing houses will thus reduce the incentives for risk-taking, the ability of the system to accumulate leverage, and excessive returns in the financial sector, resulting in a leaner financial industry operating on a more sustainable scale.[27]

4. Possible consequences of more stringent supervision and regulation on the real economy

A natural question is how the new regulatory framework will affect economic growth. Ultimately, the new capital requirements and leverage ratio rules might impact the credit provision. Although it is necessary to ensure financial stability and curb excessive credit, at the same time this process should not go too far and impair economic growth.

There is substantial macro level evidence that the depth of the credit markets – measured alternately as liquid liabilities and commercial bank credit to the private sector – is associated with higher economic growth.[28] Changes in the supply of credit, both in terms of volumes and credit standards, have been shown to have a significant effect on real economic activity through business lending; the evidence is stronger for the euro area than the US.[29] Studies that have gone into the mechanisms of this effect have generally concluded that the positive effect of credit markets on growth comes from reallocation of investment from dying to booming sectors[30], from higher rates of new business entry[31], and from higher growth of industries consisting mainly of small firms[32]. In that sense, credit markets are crucial to the growth of continental European economies, where the vast majority of companies consist of SMEs.

But what will be the effect of redefined capital requirements and leverage ratios on loan supply and ultimately on the economy at large? The availability of capital is vital to bank lending, and this has been highlighted by the recent crisis. There is evidence that the worldwide contraction of credit that followed the bursting of the real estate bubble in the US was led by banks with too little regulatory capital on their balance sheets.[33]

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27 Biais, B., Heider, F. and M. Hoerova, 2010. Risk-sharing or risk-taking? Financial innovation, margin requirements, and incentives. ECB working paper (forthcoming).

28 King, R., and R. Levine, 1993. Finance and Growth: Schumpeter might be right. *Quarterly Journal of Economics* 108, 717–738.

29 Driscoll, J.C., 2004. Does bank lending affect output? Evidence from the U.S. states. *Journal of Monetary Economics* 51, 451–471; Cicarelli, M., Maddaloni, A., J-L. Peydró, 2009. Trusting the bankers: A new look at the credit channel of monetary policy. ECB mimeo. Cappiello, L., Kadareja, A., Kok Sorensen, C., and M. Protopapa, 2010. Do bank loans and credit standards have an effect on output? A panel approach for the euro area. ECB working paper 1150.

30 Wurgler, J., 2000. Financial markets and the allocation of capital. *Journal of Financial Economics* 58, 187–214.

31 Rajan, R., and L. Zingales, 1998. Financial dependence and growth. *American Economic Review* 88, 559–586.

32 Beck, T., Demirguc-Kunt, A., Laeven, L., and R. Levine, 2008. Finance, firm size, and growth. *Journal of Money*, *Credit, and Banking* 40, 1379–1405.

33 Jimenez, G., Ongena, S., Peydró, J-L., and J. Saurina, 2010. Monetary policy and credit crunch: Identifying simultaneously the bank lending and the balance sheet channels. ECB working paper (forthcoming); Popov, A., and G. Udell, 2010. Cross-border banking and the international transmission of financial distress during the crisis of 2007–2008. ECB working paper (forthcoming); Puri, Rocholl, and Steffen, 2010. The impact of the US financial crisis on global retail lending. Duke University working paper.

It is also fairly certain that capital requirements are an efficient, albeit crude, tool to ensure the stability of the banking system. Traditionally, capital requirements tend to alleviate moral hazard problems in the banking sector in the presence of deposit insurance, and allow banks to form a "cushion" against losses for depositors. In particular, they protect depositors both by preventing bank managers from embarking on risky projects by making sure that banks have a sufficient equity at stake, and by allowing regulators to close and recapitalise banks before equity value falls to zero and debt holders start making losses.

Given the trade-off between financial stability and growth, what are the correct capital requirements? And would "getting them wrong" endanger the economy? Comparisons between countries have shown that bank systems are capable of performing their intermediation role with very different levels of capital. In both the UK and the US, for example, banks in the past had much higher capital ratios and much lower leverage, and still managed to sustain growing market economies. Of course, capital requirements that are too high will impose a cost on the banking system as bank capital is more expensive than senior debt or deposits. But even if "too high" capital requirements result in less lending, this is not necessarily detrimental to the whole economy. As I mentioned above, the expansion of sub-prime lending clearly imposed a negative externality on the whole economy, and so in hindsight regulatory measures that would have prevented such credit expansion could in fact have been beneficial.

To summarise, capital requirements, and leverage ratios serve well to illustrate the trade-off between stability and growth I mentioned at the beginning. The examples I provided earlier show that the costs incurred when an "oversized" financial system unwinds are very large and outweigh any pre-crisis gains. Therefore, prudent regulatory action to restore the balance between stability and growth is perfectly justified.

5. Conclusions

Financial markets are crucial players in a dynamic modern economy, channelling resources from savers to borrowers and allocating them to productive investment opportunities. At the same time, our experience in the past decade has highlighted the dangers of allowing financial sectors to become "too large". In doing so, negative developments like the hunt for rents, the propensity to herd and create bubbles, the misalignment of incentives, and the proliferation of complex innovative financial instruments may outweigh the benefits of finance. There are plenty of examples pointing to the fact that before 2007 the financial sector may indeed have grown "too large", mainly due to developments outside of the traditional banking system. The consequences of this expansion have been disastrous and will perhaps be felt for years to come.

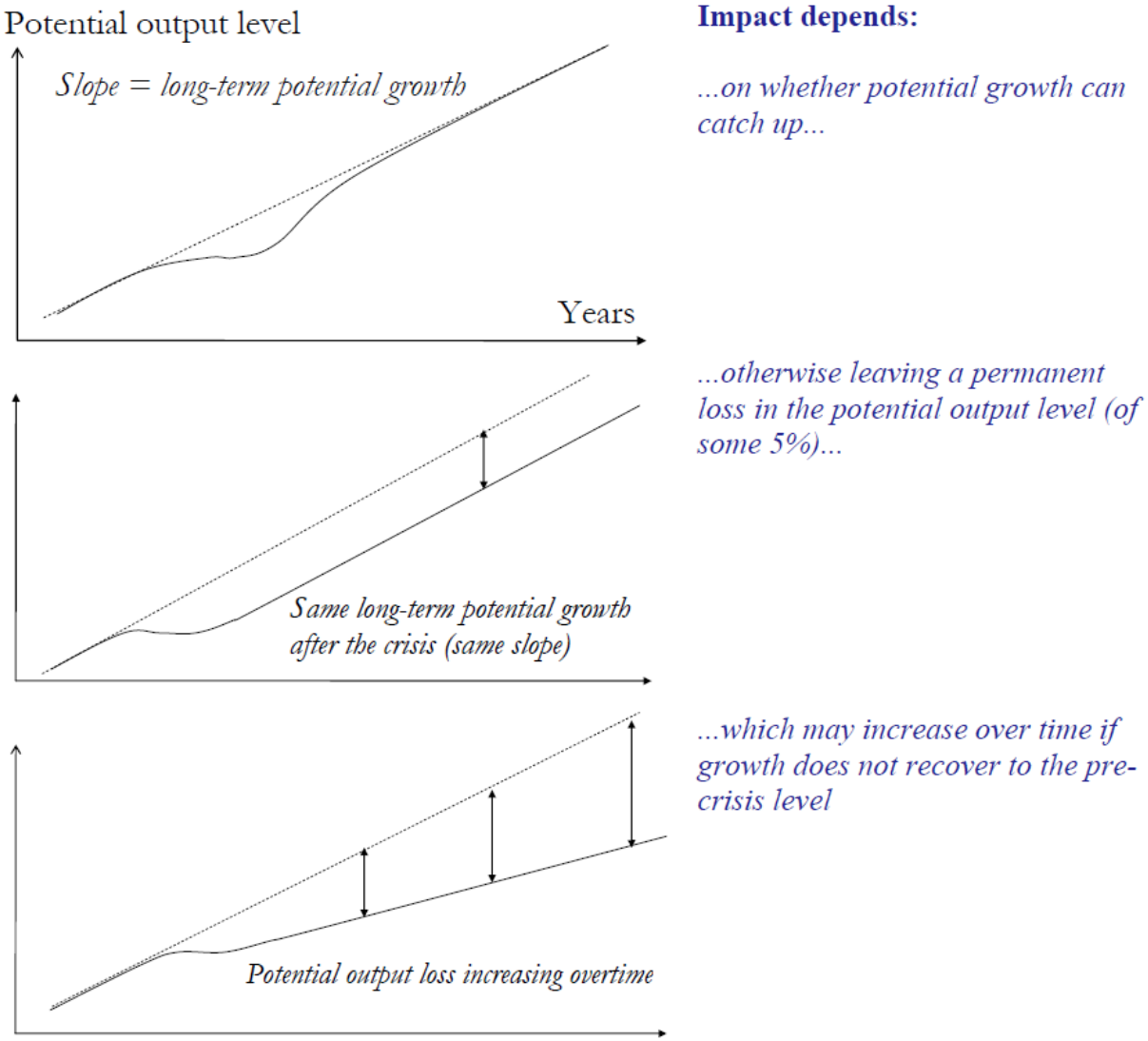
Given the obvious negative impact of an excessively large financial industry, we keep asking ourselves whether limits should be imposed on the size of the financial sector itself. I hope it is clear from the evidence I have presented that the answer to this question is yes. However, it is also essential to make sure that we do not repress financial markets to the point of jeopardising their contribution to growth. Therefore, the measures I outlined are aimed at making the industry safer rather than weaker, and should not be considered "punitive." Their goal is to "re-direct" the financial sector so that it avoids embarking on unsustainable patterns. These actions are aimed at commercial banks as well as at non-traditional financial players to make sure that excessive risk-taking is not taking place outside the auspices of regulators. Ensuring that the financial sector is large enough to strengthen the economy while not being "too large" is a task that we take very seriously. There is a clear trade-off between economic growth and financial stability, and it is a difficult but critical task to strike a good balance, ensuring that we end up neither with too little growth nor with too little stability.

It is my firm belief that the recent reforms to the regulatory and supervisory process, as well the ECB's new role in systemic risk management will contribute greatly to this process.

Thank you very much.

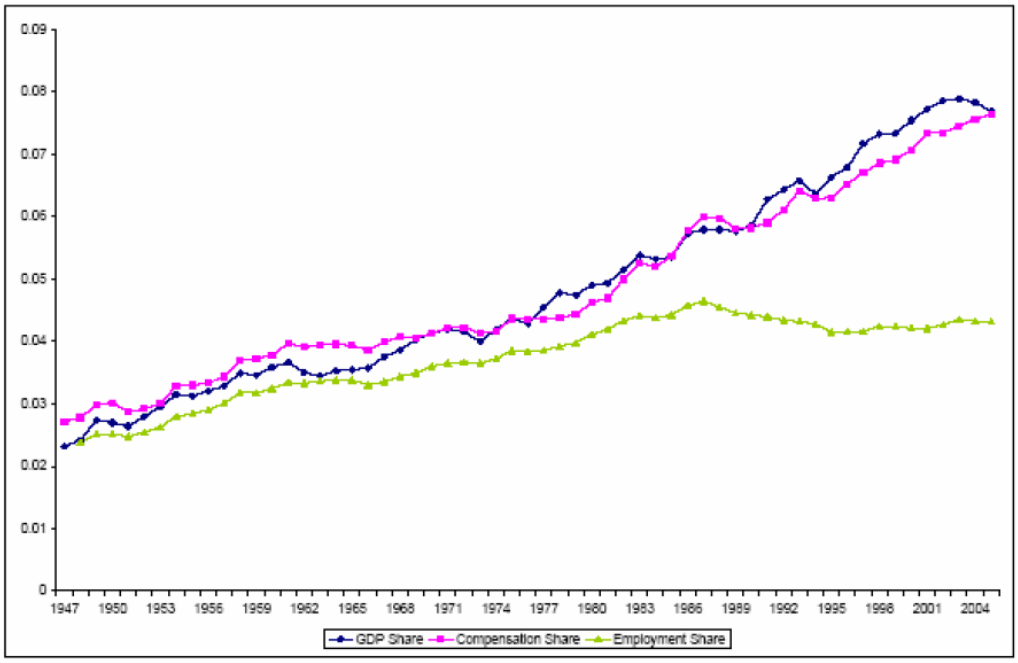
The charts are also to be found on the website of the European Central Bank.

Figure 1:
Impact of the crisis on potential output



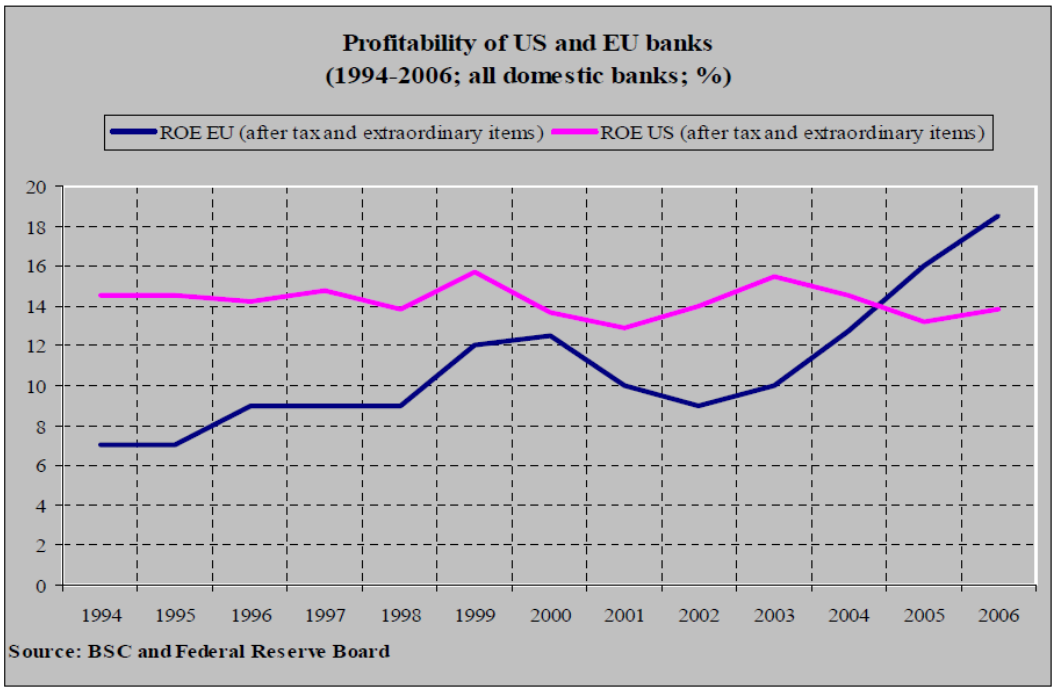
Source: European Commission, Occasional papers. 49, Jun. 2009 by Hobza, Mc Morrow and Mourre

Figure 2:
GDP, wage, and employment share of the financial sector in the US



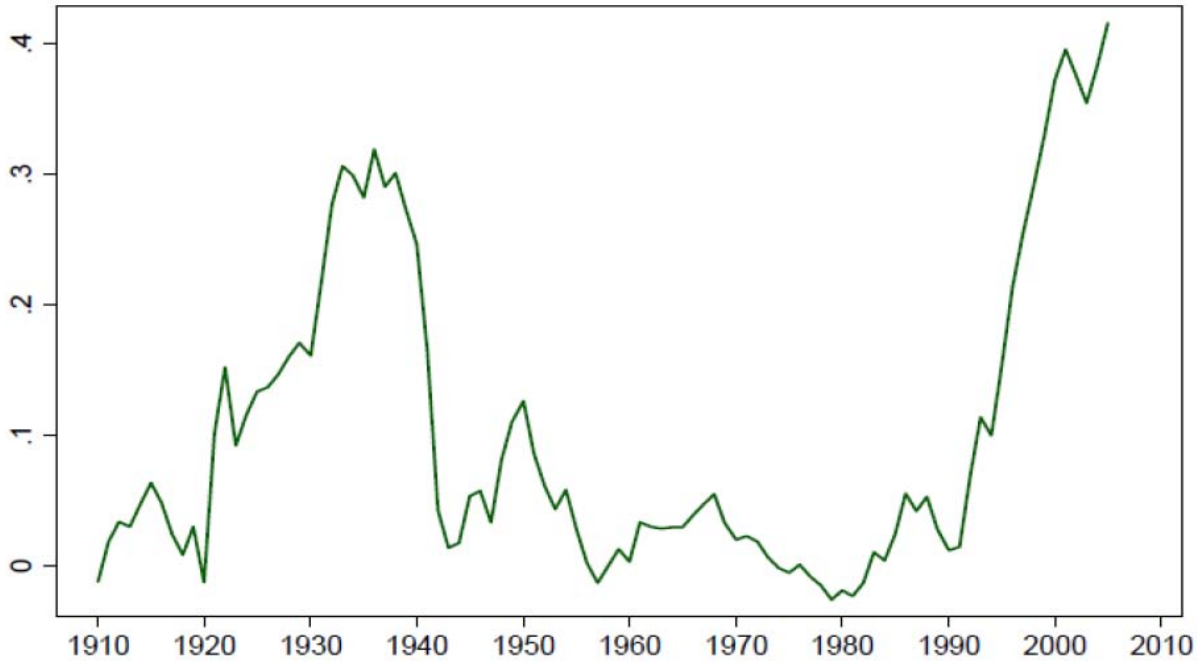
Source: Philippon and Reshef, 2007, "Skill biased financial development: Education, wages, and occupations in the US financial sector", NBER working paper 13437

Figure 3:
ROE for EU and US banks, 1994-2006



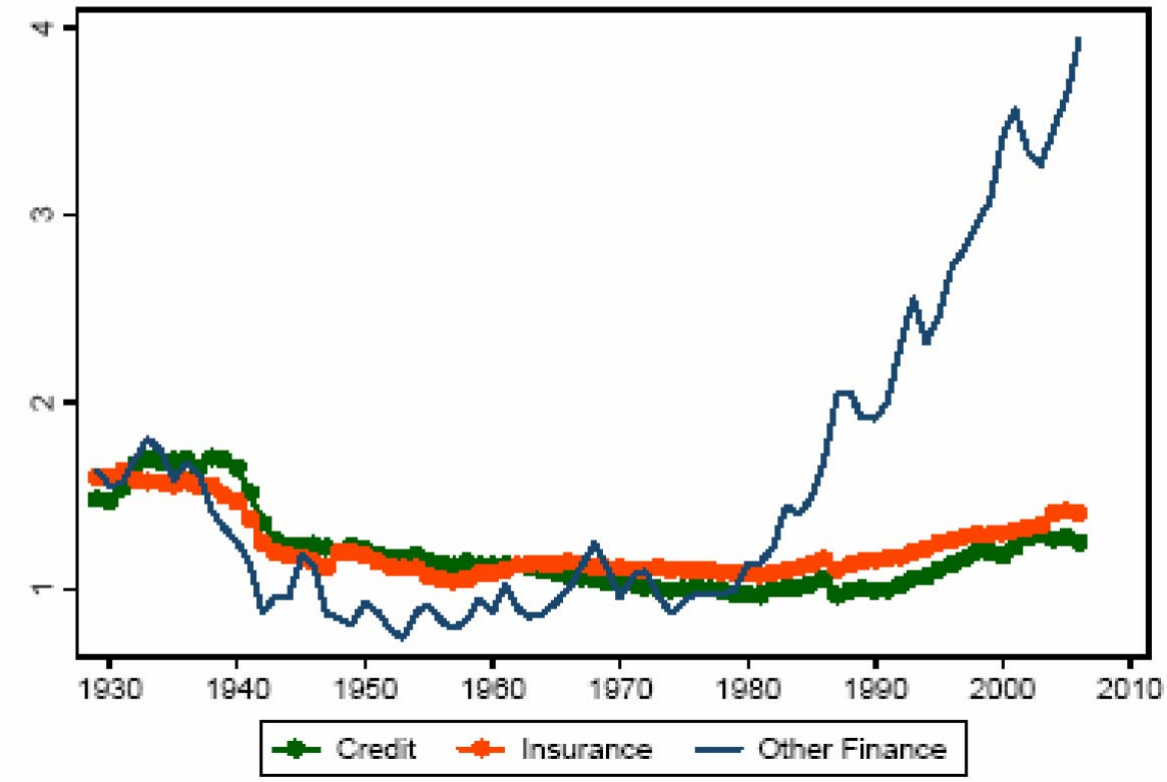
Sources: BSC, the "EU Banking Stability Report", 2004-2007, and the Federal Reserve Board

Figure 4:
Excess wage in the US financial sector relative to non-farm private wage



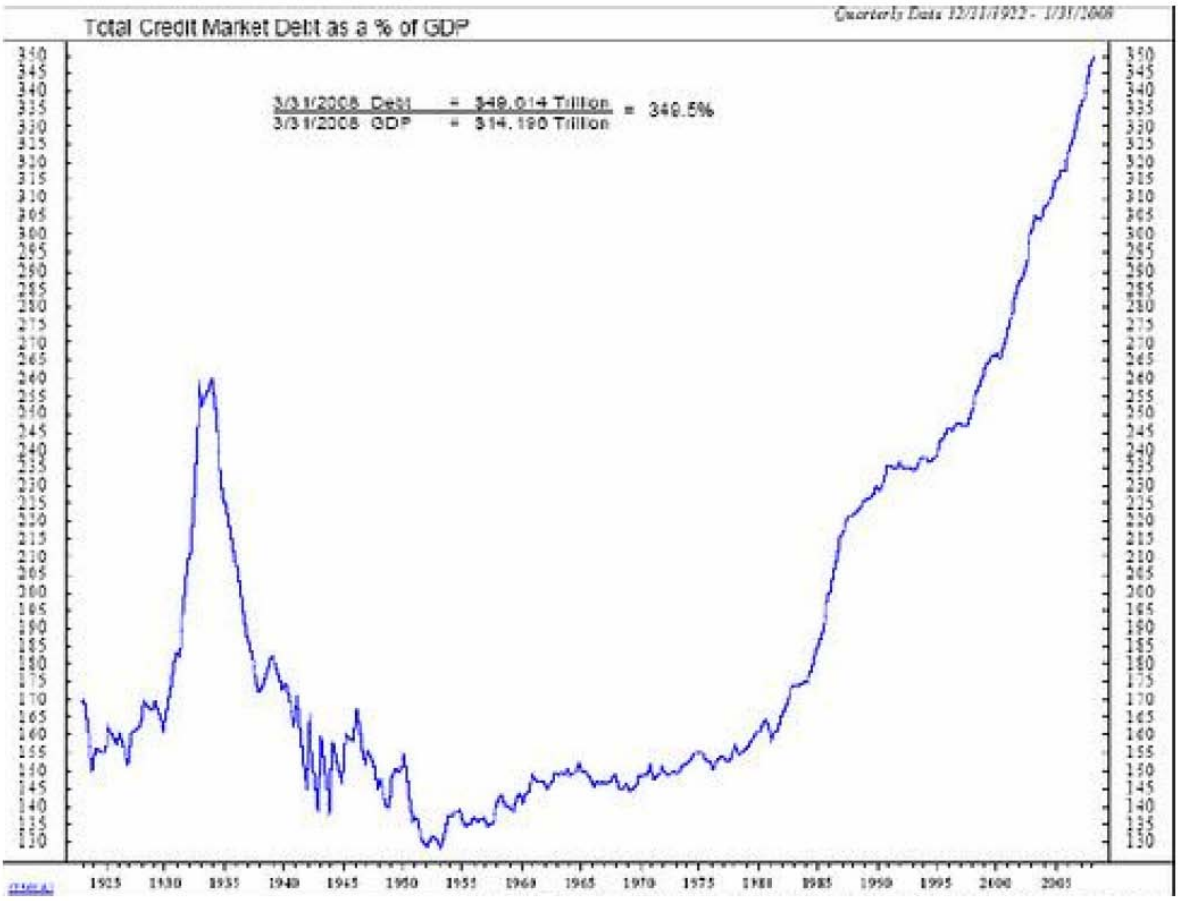
Source: Philippon and Reshef, 2009, "Wages and human capital in the US financial industry: 1909-2006", NBER working paper 14644

Figure 5:
Excess wage in the US financial sector relative to non-farm private wage, by type of financial industry



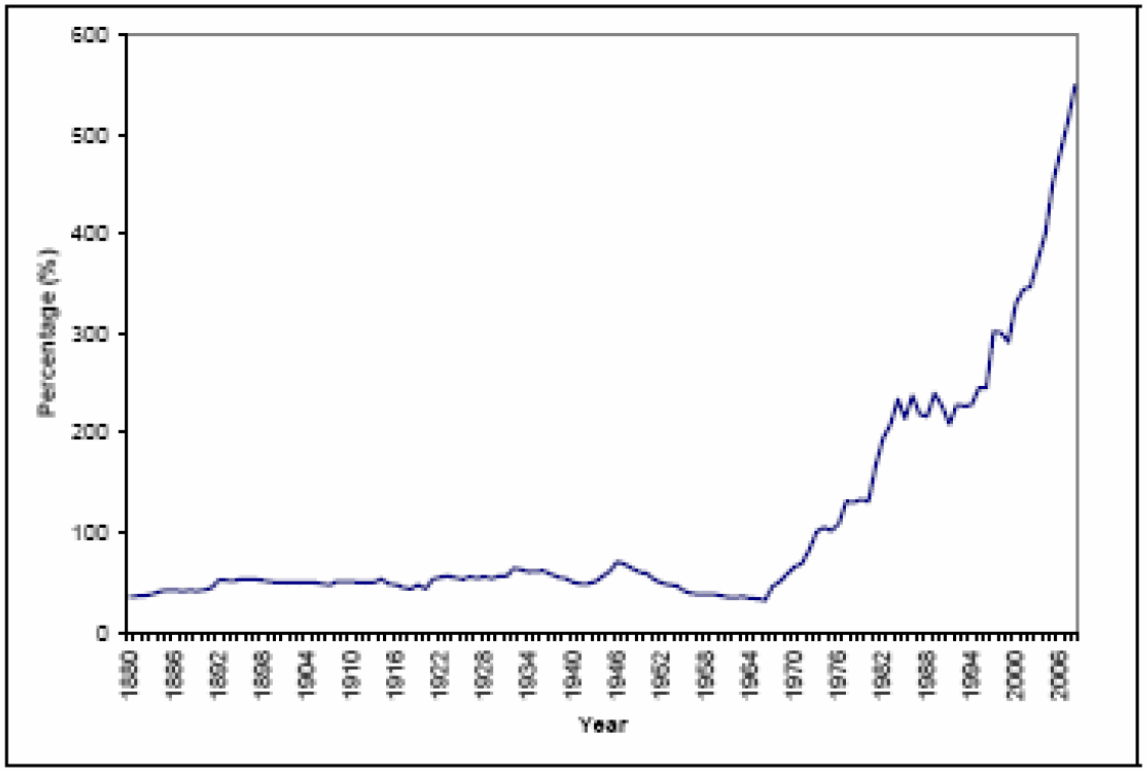
Source: Philippon and Reshef, 2009, "Wages and human capital in the US financial industry: 1909-2006", NBER working paper 14644

Figure 6:
Total US credit market debt as % of GDP



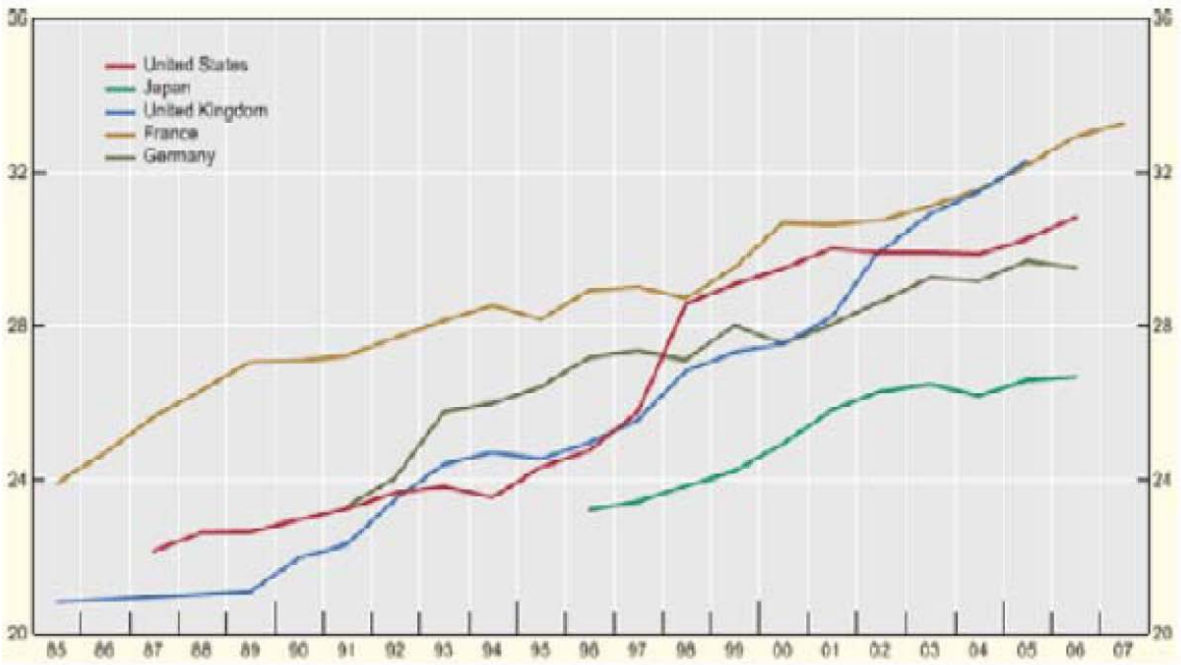
Source: www.Austrianenginomics.com

Figure 7:
UK banking sector assets as % of GDP



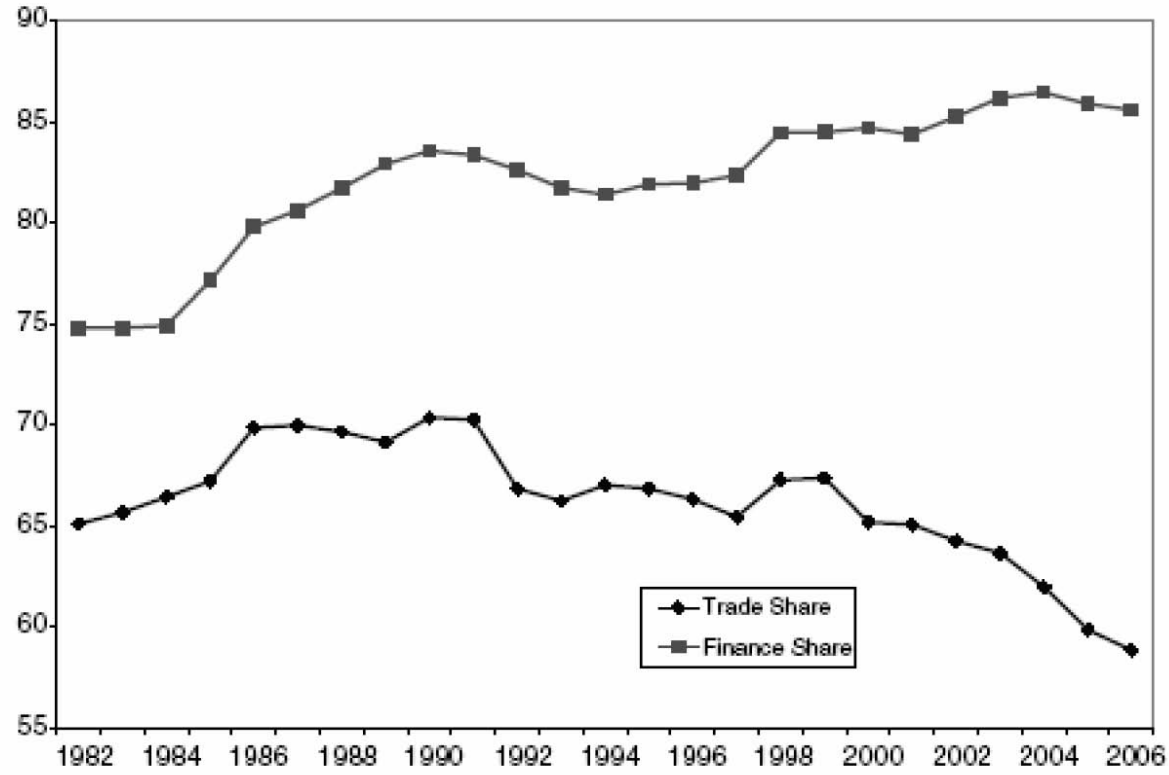
Source: Alessandri and Haldane, 2009, "Banking on the state", Bank of England mimeo

Figure 8:
Broad financial sector as share of GDP in US, UK, Japan, and selected European countries



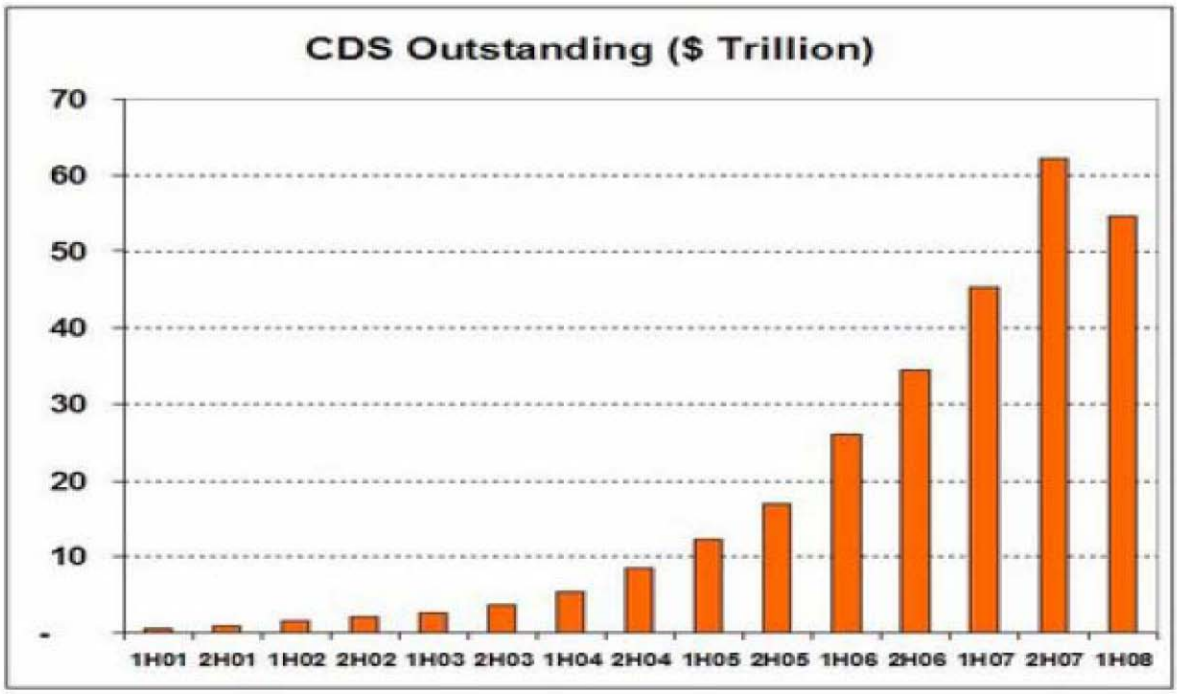
Source: OECD (2009)

Figure 9:
Share of advanced economies in world trade and gross cross-border financial position



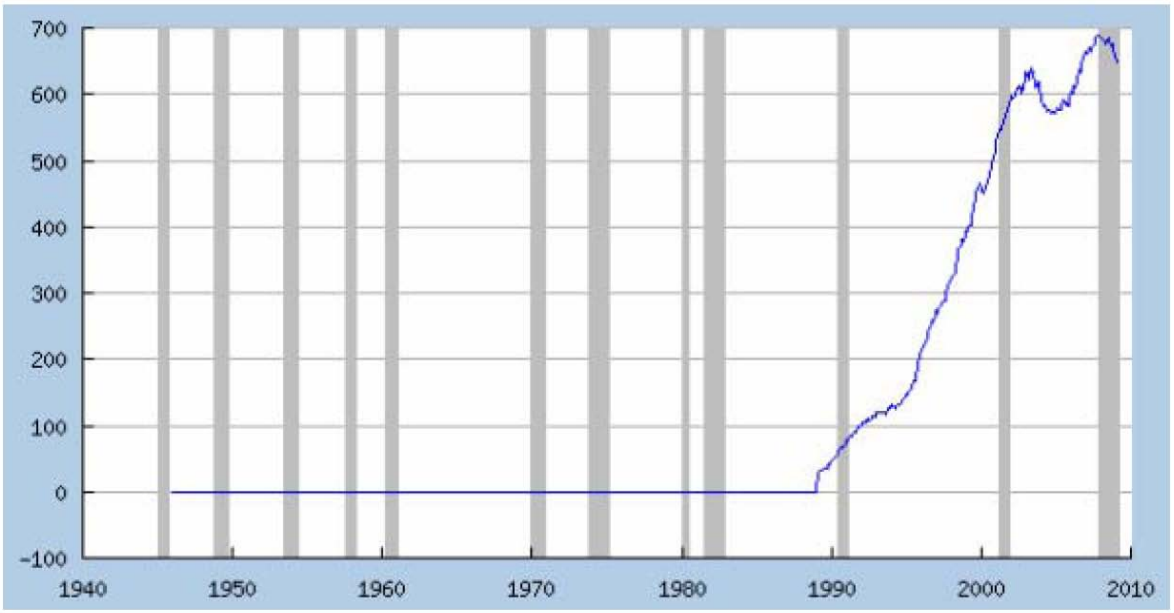
Source: Lane and Milesi-Ferretti , 2008, "The drivers of financial globalization", American Economic Review Papers and Proceedings, 327-333

Figure 10:
CDSs outstanding



Source: International Swaps and Derivatives Association (2009)

Figure 11:
Securitized loans in the US, in billions of dollars



Source: Federal Reserve Board (2009)