The first global financial crisis of the 21st century: Part II, June-December, 2008

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Part II: June – December, 2008

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Preface

This book is a selection of VoxEU.org columns that deal with the ongoing global financial crisis. VoxEU.org is a portal for research-based policy analysis and commentary written by leading economists. It was launched in June 2007 with the aim of enriching the economic policy debate by making it easier for serious researchers to contribute and to make their contributions more accessible to the public.

Just as newspapers pride themselves on being "first drafts of history," the contributions to Vox on the ongoing global financial crisis have proven to be the first drafts of the economics profession's understanding of these events. Mainstream media's limits (800 words written for the average newspaper reader) just did not work for an event of this complexity. Vox provided commentators with the space to explain the situation using standard economic terminology. It raised the level of the public debate and this attracted researchers who had also been at the cutting edge of policy-making, such as: Willem Buiter (professor at LSE and former member of the Bank of England's rate-setting Monetary Policy Committee), Charles Wyplosz (professor at the Graduate Institute, Geneva and adviser to central banks), Guillermo Calvo (professor at Columbia University and former chief economist at the Interamerican Development Bank), Marco Onado (professor at Bocconi and former Commissioner of the Italian public authority responsible for regulating the Italian securities market, CONSOB), and Luigi Spaventa (professor in Rome and former Chairman of CONSOB).

Initial contributions on the subject were compiled into a volume edited by Andrew Felton and Carmen Reinhart and published by the Centre for Economic Policy Research in June 2008. The crisis did not end then, it deepened and spread, and neither did the efforts of Vox contributors. Andrew and Carmen agreed to edit this second volume of compilation of columns. On behalf of CEPR and the Vox editorial board, I would like to thank them for producing this primer on what is probably the worst financial crisis of our generation.

Richard Baldwin, VoxEU.org, Editor-in-Chief and CEPR Policy Director

December 2008

Introduction

Sadly, our previous compilation of VoxEU columns, "The First Global Financial Crisis of the 21st Century," was not the last word on the subject. Since the publication of that volume in June 2008, the global crisis has both deepened and widened. The industrial world has seen the largest bank failures in its history, and many governments have intervened in the financial system in a manner that would once have been unthinkable. Wall Street and the City of London, along with most other financial centers, have been changed forever. Many storied financial firms have failed or been merged away, and others are left with significant ownership positions of national governments. The economy of Iceland has suffered a collapse just as sizable as any of Latin America or East Asia during the last few decades.

Vox authors have kept up their prolific pace of commenting on unfolding events. In keeping with the mission of Vox, columnists both applied existing economic research to understand events and pointed the way to new avenues for research. These articles, it has to be understood, were written "in the moment" over the past six months and so incorporate to a varying extend the history we have lived through. To help place individual contributions within this historical sequence, an appendix updates the timeline of events from our June publication through December. Another appendix provides a glossary of technical terms.

As we did last time, we have divided the Vox columns into three thematic groupings. Columns in the first group describe how the crisis spread around the world and necessitated international coordination. The next group is about how the ciris has upended traditional thinking about financial economics. The final group of columns includes a plethora of policy critiques and proposals.

1. The spread of the crisis to the rest of the world

Perhaps the most notable recent development has been how quickly and forcefully the crisis has spread to the rest of the world. Danielsson provided a comprehensive account of the country hit hardest by the crisis, Iceland. The krona fell by more than 95 percent against the dollar and the nation's banking system is devastated. Lane thought that these events will propel Iceland into the arms of the European Union, a policy that Zoega thought was the only sensible prescription. Buiter and Sibert, who have been writing about Iceland for more than a year, called its downfall the "predictable end of a non-viable business model."

Reisen predicted that emerging markets are still vulnerable to contagion and that they would try to rely less on private debt in the future. Reinhart and Reinhart identified a systematic predictor of a variety of crises in a large set of countries over the past few decades. Economies receiving large inflows of capital, termed "capital flow bonanzas," often run aground when those flows stall. Calvo and Loo-Kung wanted a preemptive bailout of emerging markets to cut off calls for protectionism and nationalization. As equity markets plunge in unison around the world, Hesse examined how the wealth effect differs among countries, and found that the stock market wealth effect is smaller but still significant in emerging economies. Freytag and Pehnelt wanted to use the financial crisis to spur reform in emerging-market debt relief programs. In two articles, Subramanian

discussed the credit crunch's impact on India and suggested that the government use its foreign exchange reserves to stabilize the economy.

Several columns discussed the need for coordinated international action. Muellbauer argued forcefully for a large, internationally coordinated interest rate cut. Others focused on intra-Europe cooperation. Gros and Micossi called for a European Financial Stability Fund to issue euro bonds to recapitalize the financial system. Di Noia suggested that Europe create a new financial regulatory system based on the four objectives of macroeconomic stability, microeconomic stability, investor protection and competition. Pagano's article was also in favor of a Euro-area bank supervisory authority. Taking a broad view, Rossi's philosophical piece discussed the impact of financial globalization on the role of the state and regulation.

Gros pointed out that many European banks are too large for their national governments to save and floats a few ideas about how to improve cross-border financial regulation. Persaud pointed out that the inability of national governments to save their banks will likely increase fiscal integration in the euro area. Gros and Micossi suggested that the ECB obtain the power to directly support large European banks and that Europe develop a cross-border rescue fund. Laeven and Levine were more skeptical of one-size-fits-all plans, demonstrating how banks adapt to their local environments, especially with regard to corporate governance laws. Bertola and Lo Prete discussed how financial globalization and the current crisis will negatively impact welfare programs around the world.

Although the 2005-era concerns about current account deficits now seem like a distant memory, Forbes reminded us that the dollar remains vulnerable and reliant on external funding. Reinhart and Reinhart pointed out that this foreign funding continued this year, even though the United States has been the epicenter of the financial crisis. This follows because large foreign official holdings of U.S. government debt has made the United States too big to fail, lessening external discipline on the policy response. Eichengreen questioned whether the IMF will have a useful role to play in this crisis – and if it does not, what that portends for its future status. He suggested that the Fund increase its lending to middle-income countries to help them through the current liquidity squeeze.

2. What is wrong with the traditional economic/financial viewpoint and models?

To many Vox columnists, the ongoing crisis has highlighted glaring omissions in economists' understanding of financial markets and institutions. The view that asset prices should equal their risk-adjusted expected return means that the smartest minds, with huge incentives, mispriced a huge variety of securities. The Vox contributors pointed out a number of current events that undermine traditional theories of finance; as Dale quipped, the current crisis "is an academic crisis too."

Many of the problems had to do with transparency, principal-agent problems, and other forces keeping the purchaser of assets from understanding their underlying properties. Kiff, Mills, and Spackman discussed a number of problems with the European securitization market. Pagano explained how the opacity created by securitization led to surprisingly high systemic costs. Cohen focused on agency problems, which he said lead

to a "Panglossian" attitude in the financial sector. Sinn blamed limited liability laws, which he said encourage excessive risk taking, especially in the financial sector.

Mariano discussed transparency of ratings agencies, and found that their reputation concerns might not be enough to assure accurate ratings. Instead, reputation effects could cause ratings to be too conformist, too conservative, or too bold, and it is difficult *a priori* to find out which of these will result. Goodhart presented the view of the Financial Economists Roundtable on a variety of proposed reforms of the ratings industry.

Another aspect of financial markets brought to the forefront by the current crisis is that of liquidity: how easy it is to trade an asset. Pedersen explained asset liquidity – a concept not incorporated into most economic theories based on expected value. Persaud also wrote about liquidity and how a problem in subprime mortgages, less than 1 percent of the world's debt stock, caused a cascade of failures throughout the financial system. González-Hermosillo, and Hesse examine various liquidity channels through which the problems spread beginning in 2007, including ABCP, SIVs, and interbank lending. Freixas and Parigi said that the increased importance of liquidity and interconnection of banks makes the central bank's role as a lender of last resort even more important. Persaud argued against suspending mark-to-market accounting and proposes mark-to-funding accounting instead, which would weight market prices of assets by the durations of their off-setting liabilities.

The complexity, rapid growth, and interconnection of markets has prevented analysts from producing either a simple explanation of the crisis or a simple way to restart economic growth. Heinemann discussesed the crisis in light of recent theoretical work on the possibility of asset price bubbles and game theory, particularly that of Princeton's Markus Brunnermeier. The work implied that a coordinated global signal is needed to get investors buying again.

Danielsson discussed the role of complexity in the crisis and tells regulators to focus on simple variables, like the leverage ratio. Bloom argues in two articles that the previous goodwill toward complexity has morphed into risk aversion and uncertainty, which will deter investment and likely lead to a severe recession that monetary and fiscal policy are powerless to avoid. One of the driving regulatory forces toward complexity was Basel II, which Repullo and Suarez found reinforced pro-cyclical capital requirements. Goodhart agreed that counter-cyclical policy is needed, although he focuses on the role of central bank policy. Giovannini said that a single regulatory policy cannot apply to universal banks, and advocated splitting them into "client servicers" and "capital managers."

Coutert and Gex looked back to 2005, when the bankruptcy of auto parts supplier Delphi caused a minor crisis in the credit default swap market, for lessons applicable today. The show that correlations on CDS spreads rose during the crisis, leading to potential contagion issues today after the recent bankruptcies of Lehman Brothers, etc..

Giavazzi discussed the puzzling spread between LIBOR and the expected path of policy interest rates, which was implying default rates far higher than even the most determined bear would predict. He pointed out that some banks may be deliberately withholding funds from the market in order to weaken competitors.

3. The proper governmental response

Eichengreen emphasized that, despite the temptation to blame the crisis on greed and corruption, policy has an important role to play in both explaining the cause and getting world markets out of it. Calomiris provided a useful overview of both private and public actions that precipitated the turmoil. Rancière urged policymakers not to throw out the baby of innovation and risk-taking out with the bathwater of systemic risk. Berglöf and Rosenthal warned Europe not to proclaim the end of capitalism too quickly, pointing out that many of the modern U.S. problems have their roots in policies enacted in the wake of earlier crises.

Corsetti and Müller provided an overview of theory and simulations on the effectiveness of different types of fiscal policy versus monetary policy. Gros argued that governments should prefer to implement fiscal policy via tax cuts rather than infrastructure development. Castanheira advocated fiscal stimulus combined with explicit targeting of expanding future budgets deficits in order to manipulate expectations. Boltho and Carlin focused on Germany, which they said needs a large financial stimulus despite being in better shape to weather the crisis than many other countries.

A number of columns discussed the United States' Troubled Asset Relief Program (TARP) and related government bailouts and guarantees. Zingales stated flatly that it wouldn't work. The problems of the banking sector were too large to pay for without cutting other necessary spending to prop up the real economy and provide debt relief to underwater homeowners. Wyplosz provided a half-hearted defense of the plan, however, as did Spaventa.

When the TARP was first announced, a flurry of columns came to a similar conclusion: the real need was to recapitalize the banks rather than buy illiquid assets. Persaud advocated a debt-for-equity swap. Buiter similarly focused on the need to recapitalize the banks. Acharya discussed the pros and cons of various recapitalization approaches, as well as related regulatory infrastructure improvements. Zingales discussed why existing bankruptcy procedures might exacerbate the problem, but mentioned some game-theoretic problems with a pure recapitalization. Calomiris also wanted purchases of preferred shares to recapitalize the banks. Frankel summed up the "emerging consensus." Onado discussed bank recapitalization through the metaphor of Achilles and the turtle: banks losses were rising more quickly than capital could be acquired.

Cesari advocated the creation of an alternative to the TARP focused on debt relief and increased regulation. Boeri suggested three ways of broadening the bank bailout plans to ensure more benefits for the general public: increase competition in the financial industry, reduce low-income tax rates, and provide mortgage debt relief.

Other discussion centered around how much to pay for troubled assets or charge for guarantees. Pagano discussed the theory of reverse auctions, which were to be the main policy tool of the TARP. Gros used option theory to show that if homeowners exercise their default options ruthlessly enough, then subprime mortgage securities could be mostly worthless.

Suarez discussed the necessity of government guarantees of bank debt just as a number of countries were launching similar programs. Acharya and Sundaram focused on how the

United States and United Kingdom were pricing their bank debt guarantees and found that the U.S. guarantee was much more favorable to the banks than the U.K. guarantee was. Gros and Micossi discussed the impact of direct bailouts, such as of AIG, and how European banks were too big for any one national government to save.

Wyplosz contrasted the "Larry Summers" approach, keeping investors from taking flight, with the "Willem Buiter" approach to making investors stomach the risks they knew they were taking. de la Dehesa alerted us to the difference between a credit "crunch," in which the quantity of credit is lessened, with a "squeeze," in which the adjustment is on the price side, and concluded that the euro area—at least in July–was suffering neither.

Some columns discussed governmental responses to past crises. Claessens et al found that recessions instigated by financial crises are usually much longer and deeper than those from other causes. Laeven, who collected results mostly from prior studies, reported that the average crisis costs about 15 percent of GDP – which would be more than $2 trillion in the United States alone. Kobayashi recapped some of the mistakes that Japan made during the 1990s, specifically with regard to the choice about recapitalizing "zombie" banks. Similar to Gros and Micossi, he called for a global "Financial System Stabilisation Fund." Eichengreen compared the current situation to the Great Depression and finds sobering similarities. Hughson and Weidenmier discussed the importance of a lender of last resort in the historical context of seasonal liquidity crises before the Federal Reserve.

Finally, Duflo managed to find a potential silver lining to the crisis: high salaries in the financial sector have attracted many of society's brightest minds, which will now have to refocus on more socially useful activities.

The spread of the crisis to the rest of the world

Danielsson: The first casualty of the crisis: Iceland

12 November 2008

Iceland's banking system is ruined. GDP is down 65% in euro terms. Many companies face bankruptcy; others think of moving abroad. A third of the population is considering emigration. The British and Dutch governments demand compensation, amounting to over 100% of Icelandic GDP, for their citizens who held high-interest deposits in local branches of Icelandic banks. Europe's leaders urgently need to take step to prevent similar things from happening to small nations with big banking sectors.

Iceland experienced the deepest and most rapid financial crisis recorded in peacetime when its three major banks all collapsed in the same week in October 2008. It is the first developed country to request assistance from the IMF in 30 years.

Following the use of anti-terror laws by the UK authorities against the Icelandic bank Landsbanki and the Icelandic authorities on 7 October, the Icelandic payment system effectively came to a standstill, with extreme difficulties in transferring money between Iceland and abroad. For an economy as dependent on imports and exports as Iceland this has been catastrophic.

While it is now possible to transfer money with some difficulty, the Icelandic currency market is now operating under capital controls while the government seeks funding to re-float the Icelandic krona under the supervision of the IMF. There are still multiple simultaneous exchange rates for the krona.

Negotiations with the IMF have finished, but at the time of writing the IMF has delayed a formal decision. Icelandic authorities claim this is due to pressure from the UK and Netherlands to compensate the citizens who deposited money in British and Dutch branches of the Icelandic bank Icesave. The net losses on those accounts may exceed the Icelandic GDP, and the two governments are demanding that the Icelandic government pay a substantial portion of that. The likely outcome would be sovereign default.

How did we get here? Inflation targeting gone wrong

The original reasons for Iceland's failure are series of policy mistakes dating back to the beginning of the decade.

The first main cause of the crisis was the use of inflation targeting. Throughout the period of inflation targeting, inflation was generally above its target rate. In response, the central bank kept rates high, exceeding 15% at times.

In a small economy like Iceland, high interest rates encourage domestic firms and households to borrow in foreign currency; it also attracts carry traders speculating against 'uncovered interest parity'. The result was a large foreign-currency inflow. This lead to a sharp exchange rate appreciation that gave Icelanders an illusion of wealth and doubly

rewarding the carry traders. The currency inflows also encouraged economic growth and inflation; outcomes that induced the Central Bank to raise interest rates further.

The end result was a bubble caused by the interaction of high domestic interest rates, currency appreciation, and capital inflows. While the stylized facts about currency inflows suggest that they should lead to lower domestic prices, in Iceland the impact was opposite.

Why did inflation targeting fail?

The reasons for the failure of inflation targeting are not completely clear. A key reason seems to be that foreign currency effectively became a part of the local money supply and the rapidly appreciating exchange-rate lead directly to the creation of new sectors of the economy.

The exchange rate became increasingly out of touch with economic fundamentals, with a rapid depreciation of the currency inevitable. This should have been clear to the Central Bank, which wasted several good opportunities to prevent exchange rate appreciations and build up reserves.

Peculiar Central Bank governance structure

Adding to this is the peculiar governance structure of the Central Bank of Iceland. Uniquely, it does not have one but three governors. One or more of those has generally been a former politician. Consequently, the governance of the Central Bank of Iceland has always been perceived to be closely tied to the central government, raising doubts about its independence. Currently, the chairman of the board of governors is a former long-standing Prime Minister. Central bank governors should of course be absolutely impartial, and having a politician as a governor creates a perception of politicization of central bank decisions.

In addition, such governance structure carries with it unfortunate consequences that become especially visible in the financial crisis. By choosing governors based on their political background rather than economic or financial expertise, the Central Bank may be perceived to be ill-equipped to deal with an economy in crisis.

Oversized banking sector

The second factor in the implosion of the Icelandic economy was the size of its banking sector. Before the crisis, the Icelandic banks had foreign assets worth around 10 times the Icelandic GDP, with debts to match. In normal economic circumstances this is not a cause for worry, so long as the banks are prudently run. Indeed, the Icelandic banks were better capitalized and with a lower exposure to high risk assets than many of their European counterparts.

If banks are too big to save, failure is a self-fulfilling prophecy

In this crisis, the strength of a bank's balance sheet is of little consequence. What matters is the explicit or implicit guarantee provided by the state to the banks to back up their assets and provide liquidity. Therefore, the size of the state relative to the size of the banks becomes the crucial factor. If the banks become too big to save, their failure becomes a self-fulfilling prophecy.

The relative size of the Icelandic banking system means that the government was in no position to guarantee the banks, unlike in other European countries. This effect was further escalated and the collapse brought forward by the failure of the Central Bank to extend its foreign currency reserves.

The final collapse was brought on by the bankruptcy of almost the entire Icelandic banking system. We may never know if the collapse of the banks was inevitable, but the manner in which they went into bankruptcy turned out to be extremely damaging to the Icelandic economy, and indeed damaging to the economy of the United Kingdom and other European countries. The final damage to both Iceland and the rest of the European economies would have been preventable if the authorities of these countries have acted more prudently.

While at the time of writing it is somewhat difficult to estimate the recovery rate from the sale of private sector assets, a common estimate for the net loss to foreign creditors because of private debt of Icelandic entities is in excess of $40 billion.

The Icelandic authorities did not appreciate the seriousness of the situation in spite of being repeatedly warned, both in domestic and foreign reports. One prominent but typical example is Buiter and Sibert (2008). In addition, the Icelandic authorities communicated badly with their international counterparts, leading to an atmosphere of mistrust.

The UK authorities, exasperated with responses from Iceland overreacted, using antiterrorist laws to take over Icelandic assets, and causing the bankruptcy of the remaining Icelandic bank. Ultimately, this led to Iceland's pariah status in the financial system.

British and Dutch claims on the Icelandic government

The current difficulties facing Iceland relate to its dispute with the Netherlands and the UK over high interest savings accounts, Icesave. Landsbanki set these savings accounts up as a branch of the Icelandic entity, meaning they were regulated and insured in Iceland, not in the UK or the Netherlands.

Icesave offered interest rates much above those prevailing in the market at the time, often 50% more than offered by British high street banks. In turn, this attracted £4.5 billion in the UK with close to £1 billion in the Netherlands. Landsbanki operated these saving accounts under local UK and Dutch branches of the Icelandic entity, meaning they were primarily regulated and insured in Iceland, although also falling under local authorities in the UK and the Netherlands. Hence the Icelandic, British and Dutch regulators approved its operations and allowed it to continue attracting substantial inflows of money. Since the difficulties facing Landsbanki were well documented, the financial regulators of the three countries are at fault for allowing it to continue attracting funds.

Landsbanki went into administration following the emergency legislation in Iceland. The final losses related to Icesave are not available at the time of writing, but recovery rates are expected to be low, with total losses expected to be close to £5 billion. The amount in the Icelandic deposit insurance fund only covers a small fraction of these losses.

Both the Dutch and the UK governments have sought to recover the losses to their savers from the Icelandic government. Their demands are threefold. First, that it use the deposit insurance fund to compensate deposit holders in Icesave. Second, that it make good on

the amounts promised by the insurance fund, around EUR 20,000. Finally, that it make good on all losses. The last claim is based on emergency legislation passed in Iceland October 6, and the fact that the government of Iceland has promised to compensate Icelandic deposit holders the full amount, and it cannot discriminate between Icelandic and European deposit holders.

Murky legal situation

The legal picture however is unclear. Under European law 1% of deposits go into a deposit insurance fund, providing savers with a protection of €20,000 in case of bank failure. Apparently, the European law did not foresee the possibility of a whole banking system collapsing nor spell out the legal obligation of governments to top up the deposit insurance fund. Furthermore, the legal impact of the Icelandic emergency law is unclear. Consequently, the Icelandic government is disputing some of the British and Dutch claims.

Blood out of a rock

Regardless of the legal issues, the ability of the Icelandic Government to meet these claims is very limited. The damage to the Icelandic economy is extensive. The economy is expected to contract by around 15% and the exchange rate has fallen sharply. By using exchange rates obtained from the ECB November 7 the Icelandic GDP is about EUR 5.5 billion, at 200 kronas per euro. In euro terms GDP has fallen by 65%. (This calculation is based on the Icelandic GDP falling from 1,300 billion Icelandic kronas to 1,105 and a Euro exchange rate of 200. One year ago, the exchange rate was 83. In domestic currency terms the Icelandic GDP has contracted by 15% due to the crisis, in Euro terms 65%.)[1]

The total losses to Icesave may therefore exceed the Icelandic GDP. While the amount being claimed by the UK and the Netherlands governments is unclear, it may approximate 100% of the Icelandic GDP. By comparison, the total amount of reparations payments demanded of Germany following World War I was around 85% of GDP.[2]

Resolution and the way forward

Any resolution of the immediate problems facing Iceland is dependent on the UK and the Netherlands settling with Iceland. Unfortunately, the ability of the Icelandic government to meet their current demands is very much in doubt.

Opinion polls in Iceland indicate that one third of the population is considering emigration. Further economic hardship due to Icesave obligations may make that expression of opinion a reality. Meanwhile, many companies are facing bankruptcy and others are contemplating moving their headquarters and operations abroad.

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[1] This calculation is based on the Icelandic GDP falling from 1,300 billion Icelandic krona to 1,105 and a Euro exchange rate of 200. One year ago, the exchange rate was 83. In domestic currency terms the Icelandic GDP has contracted by 15% due to the crisis, in Euro terms 65%.

[2] Initial reparation demands from Germany were close to 200% of GDP, but quickly lowered to around 85%. See e.g. Webb (1988) for comparisons of German reparation payments and emerging market debt repayments.

With the youngest and most highly educated part of the population emigrating along with many of its successful manufacturing and export companies, it is hard to see how the Icelandic State could service the debt created by the Icesave obligations to the UK and the Netherlands, making government default likely.

The economic rationale for continuing to pursue the Icesave case with the current vigor is therefore very much in doubt. If a reasonable settlement cannot be reached, and with the legal questions still uncertain, it would be better for all three parties to have this dispute settled by the courts rather than by force as now.

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Lane: Iceland: The future is in the EU

6 November 2008

Iceland is undergoing a traumatic financial crisis. This column argues that the main anchor for its recovery strategy should be EU membership and entry into the euro area.

Iceland is undergoing a traumatic financial crisis. In just a few weeks, it has seen the collapse of its currency and its banking system, plus a spectacular decline in its international reputation and its diplomatic relations with long-standing international partners. Much of the current debate revolves around the attribution of blame for its predicament, and there is certainly much to be learned from a rigorous forensic enquiry into the origins and mechanics of the crisis. Although Iceland ultimately proved unable to ensure the survival of a banking system with a balance sheet that was ten times the size of its GDP, the debate about whether its demise was inevitable is sure to remain intensely contested.[3,4]

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[3] Buiter and Sibert (2008) provide an excellent account of the vulnerability of the Icelandic banking system in view of the limited capacity of the Icelandic authorities to act as a lender of last resort in respect of the Icelandic banks' considerable foreign-currency positions. Portes (2008) argues that better crisis management by the Icelandic authorities may have avoided the collapse.

[4] This article is based on a presentation to the Reinventing Bretton Woods Committee conference held in Reykjavik on October 28th 2008 "Testing Times for the International Financial System: Inflation, Global Turmoil, New Challenges for Small Open Economies"

However, this debate should not overshadow the important process of setting a strategy for the recovery of the Icelandic economy and ensuring that the risks of a future crisis are minimised.

To this end, it seems clear from the outside (and also to many in Iceland) that the main anchor for its future strategy should be membership of the EU and, once the Maastricht criteria are fulfilled, entry into the euro area.

This is not to claim that membership of the EU and the euro area is a panacea.

Indeed, the current members of the euro area are not immune to the international financial crisis and important weaknesses in the financial stability framework for the euro area have been vividly highlighted by recent events.

In particular, the combination of international banking with national-level supervisory and stability systems has been shown to represent substantial risks to European taxpayers. Indeed, Iceland and the existing members of the monetary union would have much to gain from the promotion of cross-national consolidation in the banking sector, delivering a smaller number of large banks that would hold more diversified loan books, reducing exposure to country-specific and sector-specific shocks. For this to happen, national governments will have to agree *ex ante* on burden sharing rules in order to ensure that such banks would be backed by a sufficiently large fiscal base. In related fashion, the supervision and regulation of such banks would have to be designed in order to ensure that such banks are operated on a truly pan-European basis rather than being organised as a hierarchy of a parent national bank that takes precedence over its international branches and affiliates in the event of a crisis.

Membership of the euro area also involves macroeconomic policy challenges for member countries. The absence of a flexible exchange rate has the potential to make the adjustment to country-specific asymmetric shocks more difficult. For countries such as Iceland that are highly reliant on a small number of export sectors, this can be a non-trivial problem. However, the flexibility of the Icelandic labour market is a key compensating factor, with a coordinated approach to wage setting allowing real wages to fall during downturns and rising international labour mobility providing an additional adjustment mechanism.

Moreover, the potential gains from a flexible exchange rate are surely dominated by the capacity for financial shocks to drive currencies away from the values that would be justified by current macroeconomic fundamentals. While the role of risk premium shocks is most dramatic during crisis episodes, it is also an ever-present factor during more tranquil periods, especially for small currencies that are thinly traded in less-liquid markets. The consequences of such shocks have been scaled up by the rapid growth in cross-border investment positions over the last decade: the balance sheet impact of currency fluctuations in many cases dominates their impact on trade volumes.

The current crisis has also illustrated that banking supervision and crisis management are very demanding tasks that pose a challenge even to the largest countries that have deep talent pools. It is plausible that very small countries do not attain the “minimum efficient scale” to run these systems in an effective manner.

For these reasons, the logic of very small countries participating in monetary unions is compelling. The rationale of membership is even stronger for a country - such as Iceland - that has suffered damage to its credibility as the sponsor of a national currency.

It is important to emphasise that there is no close substitute for membership of the euro area. In particular, unilateral euroisation or the adoption of a currency board would represent much weaker forms of monetary discipline, since such regimes are more easily reversed in the event of a crisis. These routes are much more expensive from a fiscal viewpoint relative to joining a multilateral monetary union as a fully-integrated member.

Moreover, the importance of EU membership should not be discounted, even in the narrow context of a discussion about the monetary regime. In particular, the multi-dimensional commitments that are involved in EU membership have the effect of embedding each member country in a deep institutional and inter-governmental network set of relations with other EU member countries. The current crisis has highlighted that Iceland's relations with other European countries proved to be relatively weak under the stress of a crisis situation and many problems could have been avoided if it had enjoyed a better level of comprehension and empathy among its European neighbours.

Although membership of the EU and the euro area cannot be achieved in the very short run, announcing an intention to enter the process of applying for membership would have an immediate stabilising benefit for the Icelandic economy. In addition, the anchor of medium-term entry into the EMU would enable the Icelandic central bank to pursue a managed float system during the transition period in an environment in which it need not prove its capacity to independently deliver a long-term nominal anchor for the Icelandic economy.

The current crisis also raises questions about the appropriateness of the "exchange rate stability" criterion in determining whether a country is ready to join the euro area. Under the existing rules, a country must spend two years inside the ERM II mechanism before it can enter the EMU. Recent weeks have shown that even countries with excellent macroeconomic fundamentals are vulnerable to major currency shocks. In this new environment, it seems expensive to impose a two-year currency stability test on countries that wish to join the euro.

Finally, Iceland's entry into the EU and the euro area should be welcomed by the existing member countries. In particular, the Icelandic financial collapse has imposed heavy losses on many investors across Europe and contributed to the instability of international credit markets. All member countries stand to gain from a better-integrated financial system.

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Zoega: Iceland faces the music

27 November 2008

Iceland's meltdown was caused by the rapid emergence of an oversized banking sector and accompanying domestic credit creation, asset bubbles and excessive indebtedness that all this encouraged. This column draws lessons from this crisis and suggests Iceland should join the EU if it wants to stand a chance at keeping its well-educated young people from emigrating.

Iceland's borrowing in international credit markets during the period 2003-2007 propelled a macroeconomic expansion as well as the very rapid expansion of the banking sector.[5] Borrowing was also undertaken to fund leveraged buy-outs of foreign companies as well as the buying of domestic assets. There developed the biggest stock market bubble in the OECD while house prices doubled.

The banking development was ominous. No visible measures were taken to limit the banks' growth during the expansionary phase. The size of the banking sector at the end of this period was such that it dwarfed the capacity of the central bank to act as a lender of last resort[6] as well as the state's ability to replenish its capital. The banking system was also vulnerable because of its rapid expansion and the bursting of the domestic asset price bubble.

The end

The end came quickly. In the otherwise quiet city of Reykjavik, suspicious movements of government ministers and central bank governors were detected on Saturday morning, 27 September. On Monday it was explained that Glitnir, the smallest of the three larger banks, had approached the central bank for help because of an anticipated liquidity problem in the middle of October. Lacking confidence in the collateral offered, the central bank had decided to buy 75% of its shares at a very low price.

Like the banks themselves, the government had claimed for months that all three banks were liquid as well as solvent, yet when push came to shove it tackled a pending liquidity squeeze by wiping out the shareholders of Glitnir. Credit lines were now withdrawn from the two remaining banks. There followed an old-fashioned bank run on the Icesave branch of the Landsbanki in the UK The Landsbanki fell when it was unable to make payments to creditors.

The responses were chaotic. The governors of the central bank announced a 4 billion euros loan from Russia but then had to retract the story within hours. They also decided to fix the exchange rate but without the requisite foreign currency reserves this was an impossible task so the bank gave up within two days. One of the governors appeared on

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[5] See Gylfi Zoega (2008), "Icelandic turbulence: A spending spree ends," VoxEU, 9 April.

[6] See Willem Buiter and Anne Sibert (2008), "The Icelandic banking crisis and what to do about it," *CEPR Policy Insight* No. 26; and "The collapse of Iceland's banks: the predictable end of a non-viable business model," VoxEU, 30 October; also Jon Danielsson, (2008), "The first casualty of the crisis: Iceland," VoxEU, 12 November.

television and stated that the Icelandic state would not honour the foreign debt of the banks without distinguishing deposits from loans. Telephone conversations between government ministers in Iceland and the UK appear not to have clarified the situation.[7] The British government then seized the British operations of both the Landsbanki and Kaupthing in London. The seizure of Kaupthing's Singer and Friedlander automatically brought Kaupthing into default. All three banks were now in receivership.

The foreign exchange market collapsed on October 8th. Following a period of sporadic trading the central bank started to auction off foreign currency on October 15th. There are plans to let it float again.

The real economy is currently responding to the turmoil; unemployment is rising and there have been several bankruptcies and many more are imminent. There is the realisation that not just the banks but a significant fraction of non-financial firms are heavily leveraged; have used borrowing, mostly in foreign currency, to fund investment and acquisitions. The Icelandic business model appears to have involved transforming firms into investment funds, be they shipping companies such as Eimskip (established 1914), airlines such as Icelandair (established in 1943), or fish-exporting companies, to name just a few examples. Exporting firms, however, are benefiting from lower exchange rates. The future belongs to them.

Lessons

The proximate cause of the economic meltdown in Iceland is the rapid emergence of an oversized banking sector and the accompanying domestic credit creation, asset price bubbles and high levels of indebtedness. At this point it is important to consider the reasons why this was allowed to happen.

Monetary policy technically flawed

A sequence of interest rate rises, bringing the central bank interest rate up from 5.3% in 2003 to 15.25% in 2007 did not prevent the boom and the bubbles that preceded the current crash. On the contrary, they appear to have fuelled the bubble economy.

But surely it was apparent to anyone in the latter stages of the boom that it was driven by unsustainable borrowing and that a financial crisis was fast becoming inevitable. Iceland would have faced the music soon even in the absence of turmoil in international credit markets. However, in spite of many observers pointing this out[8] (including the central

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[7] See report by David Ibison in the Financial Times, 24 October 2008, titled "Transcript challenges Darling's claim over Iceland compensation."

[8] See, amongst others, Robert Wade, "Iceland pays price for financial excess," Financial Times, 1 July 2008; Robert Wade, "IMF reports uncertain outlook for Iceland," *Financial Times*, 15 July 2008; Thorvaldur Gylfason, "Events in Iceland: Skating on thin ice?" VoxEU, 7 April 2008; Gylfi Zoega, "A spending spree," VoxEU 9 April 2008; Robert Aliber, " Monetary turbulence and the Icelandic economy", lecture, University of Iceland, 5 May 2008; Thorvaldur Gylfason, "Hvernig finnst þér Ísland?", *Herdubreid*, 27 July 2007; Gylfi Zoega (2007), "Stofnanaumhverfi, frumkvöðlakraftur og vægi

bank itself![9]), the course of economic policy was not changed. There were clearly other, more profound, reasons for this inertia and passivity in the face of peril.

Belief in own abilities and good luck

History is full of examples of nations gripped by euphoria when experiencing rapidly rising asset prices. During the economic boom it was tempting to come up with stories to explain the apparent success, such as the notion of superior business acumen. However, this is a normally distributed variable and its mean does not differ much between nations. The ability to govern a modern economy is unfortunately also a normally distributed.

The normal distribution and the division of labour

When there are not too many people to choose from, it becomes doubly important to pick the best candidate for every job. While the private sector has, as if led by an invisible hand, a strong incentive to pick the most competent people for every position, the same can not be said of certain areas within the public sector. The appointment of former politicians to the position of central bank governor, to take just one example, reduces the bank's effectiveness and credibility. The danger is that the individual in question has interests and policies that exceed those fitting a central bank governor in addition to lacking many job-specific skills. And this one example is just the tip of the iceberg!

In addition, Adam Smith's dictum that the scale of the division of labour is determined by the size of the market also applies to the government. There are scale economies when it comes to running the state and small nations might benefit from the sharing of a government, as well as the central bank!

Social pressures

We now come to an equally profound problem, which is that the small size of the population makes it inevitable that personal relationships matter more than elsewhere.

One of the keys to success for an individual starting and sustaining his or her career in Icelandic society has been to pledge allegiance to one of the political parties – more recently business empires – and act in accordance with its interests. It follows that society rewards conformity and subservience instead of independent, critical thinking. Many players in the banking saga have interwoven personal histories going back many decades. The privatisation of the banks, not so many years ago, appears also to have been driven by personal affections and relationships rather than an attempt to find competent, responsible owners.

Mancur Olson's *The Logic of Collective Action*, first published in 1965,[10] describes the difficulties of inducing members of large groups to behave in the group's interests.

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grundvallaratvinnuvega," in Endurmótun íslenskrar utanríkisstefnu 1991-2007, ed. Valur Ingimundarson.

[9] See Central Bank of Iceland, Monetary Bulletin, years 2005-2007 (http://www.sedlabanki.is/?PageID=234).

[10] Mancur Olson (1971), *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard University Press.

Clearly, political parties need to reward their members in order to motivate them and ensure their loyalty. The same applies to labour unions and business empires. But the smaller the country, the smaller the total surplus income that can be used in this way, while the amount needed to guarantee the loyalty of any given individual may not be any smaller. It follows from Olson's analysis that the smaller the nation, the more likely it is that society will be uni-polar. As a matter of fact, powerful individuals or parties that often rule small nations. Such a society usually does not encourage dissent or critical thinking.

It follows that one individual's criticism – be that of banks or the political or economic situation – may put him in a precarious position vis-à-vis the dominant group. The private marginal benefit of voicing your concerns and criticising is in this case negative and much smaller than the social marginal benefit.
The same logic explains why the media may not criticise the ruling powers. During the boom years, the media, different commentators and even some academics lavished praise on the Icelandic bankers and other capitalists who profited from the asset bubble. This then is the root of the problem; a cosy relationship between businesses, politics and the media and limited checks and balances. Everybody knows everything but no one does anything about anything!

Relations with Europe

Membership of the European Economic Areas, involving market integration and the free mobility of factors without the participation in a common currency and joint decision-making, made economic policy in Iceland difficult, even impossible, to implement. The local central bank was no match for the vast flows of funds that came into the country.

Membership of the EU might help remedy many of the problems described above. The sharing of certain areas of government may improve the quality of decision-making. Having greater contact with decision makers in Europe may provide stimulus, criticism and points of comparison that may improve the quality of decisions. The rule of law may be strengthened. The adoption of the euro will provide monetary stability and lower interest rates.[11]

Iceland either has to move backwards to the time of capital controls or forwards into the EU. It needs to choose the latter option if it wants to stand a chance at keeping its well-educated young people from emigrating.

Buiter and Sibert: The collapse of Iceland's banks: the predictable end of a non-viable business model

30 October 2008

In the first half of 2008, Buiter and Sibert were invited to study Iceland's financial problems. They identified the "vulnerable quartet" of (1) a small country with (2) a large

[11] See Philip Lane (2008), "Iceland: The future is in the EU," VoxEU, 6 November.

banking sector, (3) its own currency and (4) limited fiscal capacity – a quartet that meant Iceland's banking model was not viable. How right they were. This column summarises the report, which is now available as CEPR Policy Insight No. 26 with an October 2008 update.

Early in 2008 we were asked by the Icelandic bank Landsbanki (now in receivership) to write a paper on the causes of the financial problems faced by Iceland and its banks, and on the available policy options for the banks and the Icelandic authorities.

We sent the paper to the bank towards the end of April 2008; it was titled:

> "The Icelandic banking crisis and what to do about it: the lender of last resort theory of optimal currency areas."

On July 11, 2008, we presented a slightly updated version of the paper in Reykjavik before an audience of economists from the central bank, the ministry of finance, the private sector and the academic community.

It is this version of the paper that is now being made available as CEPR Policy Insight No 26. In April and July 2008, our Icelandic interlocutors considered our paper to be too market-sensitive to be put in the public domain and we agreed to keep it confidential. Because the worst possible outcome has now materialised, both for the banks and for Iceland, there is no reason not to circulate the paper more widely, as some of its lessons have wider relevance.

A banking business model that was not viable for Iceland

Our April/July paper noted that Iceland had, in a very short period of time, created an internationally active banking sector that was vast relative to the size of its very small economy. Iceland also has its own currency. Our central point was that this 'business model' for Iceland was not viable.

With most of the banking system's assets and liabilities denominated in foreign currency, and with a large amount of short-maturity foreign-currency liabilities, Iceland needed a foreign currency lender of last resort and market maker of last resort to prevent funding illiquidity or market illiquidity from bringing down the banking system. Without an effective lender of last resort and market maker of last resort – one capable of providing sufficient liquidity in the currency in which it is needed, even fundamentally solvent banking systems can be brought down through either conventional bank runs by depositors and other creditors (funding liquidity crises) or through illiquidity in the markets for its assets (market liquidity crises).

Iceland's two options

Iceland therefore had two options. First, it could join the EU and the EMU, making the Eurosystem the lender of last resort and market maker of last resort. In this case it can keep its international banking activities domiciled in Iceland. Second, it could keep its own currency. In that case it should relocate its foreign currency banking activities to the euro area.

The paper was written well before the latest intensification of the global financial crisis that started with Lehman Brothers seeking Chapter 11 bankruptcy protection on September 15, 2008. It does therefore not cover the final speculative attacks on the three

internationally active Icelandic banks - Glitnir, Landsbanki and Kaupthing – and on the Icelandic currency. These attacks resulted, during October 2008, in all three banks being put into receivership and the Icelandic authorities requesting a $2 bn loan from the IMF and a $4 bn loan from its four Nordic neighbours.

Policy mistakes Iceland made

During the final death throes of Iceland as an international banking nation, a number of policy mistakes were made by the Icelandic authorities, especially by the governor of the Central Bank of Iceland, David Oddsson. The decision of the government to take a 75 percent equity stake in Glitnir on September 29 risked turning a bank debt crisis into a sovereign debt crisis. Fortunately, Glitnir went into receivership before its shareholders had time to approve the government takeover. Then, on October 7, the Central Bank of Iceland announced a currency peg for the króna without having the reserves to support. It was one of the shortest-lived currency pegs in history. At the time of writing (28 October 2008) there is no functioning foreign exchange market for the Icelandic króna.

In addition, outrageous bullying behaviour by the UK authorities (who invoked the 2001 Anti-Terrorism, Crime and Security Act, passed after the September 11, 2001 terrorist attacks in the USA, to justify the freezing of the UK assets of the of Landsbanki and Kaupthing) probably precipitated the collapse of Kaupthing – the last Icelandic bank still standing at the time. The official excuse of the British government for its thuggish behaviour was that the Icelandic authorities had informed it that they would not honour Iceland's deposit guarantees for the UK subsidiaries of its banks. Transcripts of the key conversation on the issue between British and Icelandic authorities suggest that, if the story of Pinocchio is anything to go by, a lot of people in HM Treasury today have noses that are rather longer than they used to be.

The main message of our paper is, however, that it was not the drama and mismanagement of the last three months that brought down Iceland's banks. Instead it was absolutely obvious, as soon as we began, during January 2008, to study Iceland's problems, that its banking model was not viable. The fundamental reason was that Iceland was the most extreme example in the world of a very small country, with its own currency, and with an internationally active and internationally exposed financial sector that is very large relative to its GDP and relative to its fiscal capacity.

Even if the banks are fundamentally solvent (in the sense that their assets, if held to maturity, would be sufficient to cover their obligations), such a small country – small currency configuration makes it highly unlikely that the central bank can act as an effective foreign currency lender of last resort/market maker of last resort. Without a credit foreign currency lender of last resort and market maker of last resort, there is always an equilibrium in which a run brings down a solvent system through a funding liquidity and market liquidity crisis. The only way for a small country like Iceland to have a large internationally active banking sector that is immune to the risk of insolvency triggered by illiquidity caused by either traditional or modern bank runs, is for Iceland to join the EU and become a full member of the euro area. If Iceland had a global reserve currency as its national currency, and with the full liquidity facilities of the Eurosystem at its disposal, no Icelandic bank could be brought down by illiquidity alone. If Iceland was

unwilling to take than step, it should not have grown a massive on-shore internationally exposed banking sector.

This was clear in July 2008, as it was in April 2008 and in January 2008 when we first considered these issues. We are pretty sure this ought to have been clear in 2006, 2004 or 2000. The Icelandic banks' business model and Iceland's global banking ambitions were incompatible with its tiny size and minor-league currency, even if the banks did not have any fundamental insolvency problems.

Were the banks solvent?

Because of lack of information, we have no strong views on how fundamentally sound the balance sheets of the three Icelandic banks were. It may be true, as argued by Richard Portes in his Financial Times Column of 13 October 2008, that "Like fellow Icelandic banks Landsbanki and Kaupthing, Glitnir was solvent. All posted good first-half results, all had healthy capital adequacy ratios, and their dependence on market funding was no greater than their peers'. None held any toxic securities."[1]

The only parties likely to have substantive knowledge of the quality of a bank's assets are its management, for whom truth telling may not be a dominant strategy and, possibly, the regulator/supervisor. In this recent crisis, however, regulators and supervisors have tended to be uninformed and out of their depth. We doubt Iceland is an exception to this rule. The quality of the balance sheet of the three Icelandic banks has to be viewed by outsiders as unknown.

If there is a bank solvency problem, even membership in the euro area would not help. Only the strength of the fiscal authority standing behind the national banks (and its willingness to put its fiscal capacity in the service of a rescue effort for the banks) determines the banks' chances of survival in this case. If there were a serious banking sector solvency problem in Iceland, then with a banking sector balance sheet to annual GDP ratio of around 900 percent, it is unlikely that the fiscal authorities would be able to come up with the necessary capital to restore solvency to the banking sector.

The required combined internal transfer of resources (now and in the future, from tax payers and beneficiaries of public spending to the government) and external transfer of resources (from domestic residents to foreign residents, through present and future primary external surpluses) could easily overwhelm the economic and political capacities of the country. Shifting resources from the non-traded sectors into the traded sectors (exporting and import-competing) will require a depreciation of the real exchange rate and may well also require a worsening of the external terms of trade. Both are painful adjustments.

If the solvency gap of the banking system exceeds the unused fiscal capacity of the authorities, the only choice that remains is that between banking sector insolvency and sovereign insolvency. The Icelandic government has rightly decided that its tax payers and the beneficiaries of its public spending programmes (who will be hard hit in any case) deserve priority over the external and domestic creditors of the banks (except for the insured depositors).

Conclusions, lessons and others who might be vulnerable

Iceland's circumstances were extreme, but there are other countries suffering from milder versions of the same fundamental inconsistent – or at least vulnerable - quartet:
(1) A small country with (2) a large, internationally exposed banking sector, (3) its own currency and (4) limited fiscal spare capacity relative to the possible size of the banking sector solvency gap.

Countries that come to mind are:

- Switzerland,
- Denmark,
- Sweden

and even to some extent the UK, although it is significantly larger than the others and has a minor-league legacy reserve currency.

Ireland, Belgium, the Netherland and Luxembourg possess the advantage of having the euro, a global reserve currency, as their national currency. Illiquidity alone should therefore not become a fatal problem for their banking sectors. But with limited fiscal spare capacity, their ability to address serious fundamental banking sector insolvency issues may well be in doubt.

Reisen: The fallout from the global credit crisis: Contagion - emerging markets under stress

6 December 2008

The global credit crisis is testing the resilience and sustainability of emerging markets' policies, this column warns. Even strong performers are not shielded against pure financial contagion, although they may well recover quickly once confidence is restored. In the future, development finance is likely to rely less on private debt.

The global credit crisis has taken some time to spread from the industrialised countries to the emerging markets. But in October 2008, the contagion spread rapidly, afflicting all emerging markets, without any distinction or regard to their so-called ' fundamentals'. For believers in 'decoupling', the high growth rates, massive foreign exchange (FX) reserves, balanced budgets and rising consumerism in the emerging markets at first reassured investors. Alas, the final diagnosis was contagion. In the end all emerging market asset classes were hit – stocks, bonds and currencies.

This column reflects on early policy lessons from the current financial crisis for

- the diagnosis of emerging market policy performance,
- the channels of crisis contagion, and
- the future of private and official development finance.

Assessing emerging markets' performance

It is now clear that the diagnosis of emerging-market policy performance suffered from hyperbole. Many observers ignored the fact that all that glitters in emerging markets may not be gold,[12] underplaying as they did the cyclicality and endogeneity of important policy performance indicators.

Emerging-market growth rates: Much of the recent growth has been driven by an extraordinary bonanza in raw material prices and low-cost financing. Many analysts forgot that growth rates can only be sustained over the long-run when supported by cyclically-adjusted productivity growth. Arguably, from this perspective, many Asian countries have more sustainable growth rates than emerging markets in other regions.

Foreign exchange reserve levels: Their durability depends very much on the exchange rate regime. Authorities may wish to avoid a currency slump and may need to recapitalise their banking system. But if both foreign and domestic investors lose confidence, even very impressive levels of foreign exchange reserves can melt away quickly, as witnessed recently in Russia. As long as reserves are below the liabilities of the banking system (M2), individuals may rush to convert their domestic currency deposits into foreign currency and cause a currency slump once reserves are down.

Public budgets: A misjudgement common to rating agencies[13] is based on the monitoring of debt-GDP ratios and public deficits. Both debt and deficits are low during booms, but they can shoot up quickly during crises. Tax collection flourishes when exports and raw material prices boom but tumbles during the bust, currency appreciation leads to the collapse of foreign-currency-denominated debt ratios but gives way to an endogenous rise in debt ratios as currencies and GDP growth weaken.

Not everything is negative, however. To the extent that fuel and food prices fall due to the crisis, government budgets in many low-income countries that highly subsidise fuel and food consumption may benefit as costly price subsidies can be reduced (though this positive effect may be mitigated by currency depreciation). And public debt management has improved: Brazil, for example now has a net long position in dollars, such that a currency depreciation actually improves its net worth.

Contagion transmission

Preventing, managing and resolving financial crises requires distilling policy lessons from recent emerging market crises that had less to do with domestic factors and were more related to do with crisis contagion from elsewhere. Furthermore, such policy lessons need to inform debates regarding the construction of a new international (or

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[12] Izquierdo, A and E. Talvi, "All that glitters may not be gold: assessing Latin America's recent macroeconomic performance", *Inter-American Development Bank*, 2008

[13] Reisen, H. and J. von Maltzahn, "Boom and Bust and Sovereign Ratings", 1999, *International Finance*, 1999, 2(2), 273-93.

regional) financial architecture.[14] Crisis contagion in principle occurs through three channels:

- Through foreign trade (sometimes known as the ' monsoon effect'): the monsoon effects hit small open economies easily through merchandise trade precisely because they are both small and open to trade. Low-income countries will be mostly hit through the monsoon channel as OECD recessions deepen.
- Through financial contagion, when money invested is repatriated, as happened during the Asian crisis when weakly capitalised Japanese banks cancelled credit lines of up to 10% of GDP at once. The process of global deleveraging hits developing and emerging countries through financial contagion, if currency mismatches in corporate and bank balance sheets cause widespread company and bank failures.
- Through 'pure' contagion, as happened in October 2008, when a systemic and simultaneous breakdown of money and bank markets leads to generalised risk aversion and the shedding of all assets that fail to carry public guarantees.

Financial crises that are caused by the monsoon effect or by financial contagion can in principle be predicted through the monitoring of macroeconomic variables common to economically integrated countries. Pure contagion, by contrast, hits countries regardless of the level of economic integration. Pure contagion is hard to predict or to quantify. A wave of pure contagion, however, can be stopped more easily by decisive policies.[15] As long as the fundamentals are not permanently damaged by pure contagion, it is sufficient to switch expectations back from red to green.

Financing development

As a mid-term consequence of the global credit crisis, private debt will be financed only reluctantly and capital costs are bound to rise to incorporate higher risk. Instead, solvent governments and public institutions will become the lenders of last resort. The consequences for development finance and the global financial architecture will be important. Figure 1 shows clearly how development loans by the World Bank, the IMF, and the regional development banks had been crowded out by private-sector lending throughout the boom decade. The supply of public development finance will rise and regain some of the attractiveness to poor countries that it lost during the boom period.

Figure 1. Percentage share in lending to developing countries

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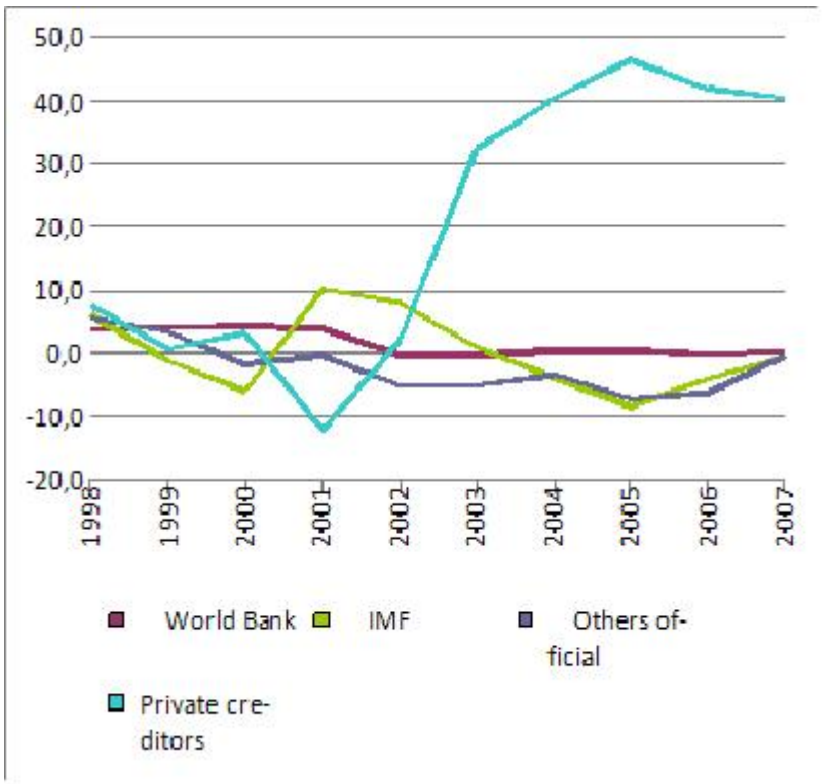
[14] Reisen, H. , "After the Great Asian Slump: Towards a Coherent Approach to Global Capital Flows," OECD Development Centre Policy Briefs 16, OECD Development Centre 1999.

[15] Allen, F., Gale, D., "Financial contagion", Journal of Political Economy, 2000, 108 (1), 1–33.



Source: World Bank, Global Development Finance, 2008

However, the firepower of the international financial institutions is quite limited and unlikely to stop 'pure' contagion and the global crisis. Causing a precautionary rush by vulnerable countries to ask the international financial institutions for help, their limited firepower paves the way for one-way bets on emerging-market currencies. It is therefore important that these institutions finance a capital increase.

China and India could provide a small part of their foreign exchange reserves to the regional development banks - provided they are granted more voting rights. Foreign exchange reserves, invested through the regional development banks, could be leveraged as soft loans. Such action might alleviate African leaders' concern that the global credit crisis will reduce finance available to poor countries rather than the systemically important emerging markets.

Reinhart and Reinhart: From capital flow bonanza to financial crash

23 October 2008

The standard pattern: capital flows into the new "hot" nation, but then stop or reverses forcing painful adjustment. This column presents research based on such episodes from 181 nations during 1980-2007 and for a subset of 66 nations for the 1960-2007 period. If

the pattern of the past few decades holds true, emerging market economies may be facing a darkening future.

A pattern has often been repeated in the modern era of global finance. Global investors turn with interest toward the latest "foreign" market. Capital flows in volume into the "hot" financial market. The exchange rate tends to appreciate, asset prices to rally, and local commodity prices to boom. These favourable asset price movements improve national fiscal indicators and encourage domestic credit expansion. These, in turn, exacerbate structural weaknesses in the domestic banking sector even as those local institutions are courted by global financial institutions seeking entry into a hot market.

But tides also go out when the fancy of global investors shift and the "new paradigm" looks shop worn. Flows reverse or suddenly stop à la Calvo[16] and asset prices give back their gains, often forcing a painful adjustment on the economy.

In a recent paper, we examined the macroeconomic adjustments surrounding episodes of sizable capital inflows in a large set of countries.[17] Identifying these "capital flow bonanzas" turns out to be a useful organising device for understanding the swings in investor interest in foreign markets as reflected in asset price booms and crashes and for predicting sovereign defaults and other crises.

The bonanza episodes

For each of 181 countries, we defined a capital flow bonanza as an episode in which there are larger-than-normal net inflows (operationally, those inflows bigger than the 80th percentile of the entire sample). As can be seen in the share of countries experiencing a capital bonanza year by year plotted in the figure below, bonanzas are clustered in time even though they were defined using country-specific cutoffs.[18]

There were two eras of booms of boons over the past three decades. The first ran from 1975 to 1982 and the world is living through the second—which appears to be partially unwinding. In both, real interest rates in the financial centres of the world were low and often negative, growth in advanced economies was sluggish, and commodity prices were rising rapidly. Statistical evidence suggests that these three variables are important systematic determinants of capital flow bonanzas. If the historical pattern plays out again, capital flows may remain elevated for the next few years, encouraged by the lagged effects of low real interest rates.

Figure 1: Capital Flow Bonanzas

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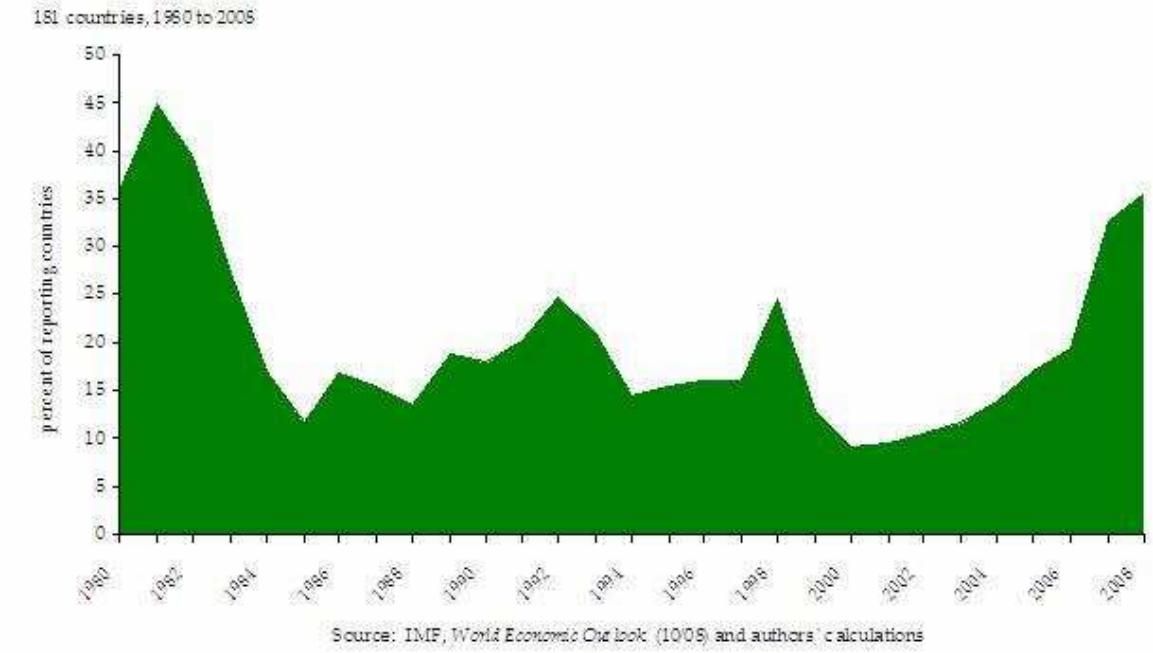
[16] Calvo, Guillermo A., "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops," Journal of Applied Economics 1, no. 1 (1998): 35-54.

[17] "Capital Flow Bonanzas: An Encompassing View of the Past and Present," CEPR Discussion Paper 6996, October 2008.

[18] The charts and tables below have been updated with the recently released IMF, World Economic Outlook (October 2008).



The initial wave of bonanzas had a distinct Latin American flavour, including such countries as Brazil, Chile, and Mexico. This is an ominous precedent, in that the first great wave of inflows in recent memory ended in the emerging market debt crisis of the 1980s. This shows through systematically over time. Over a longer period, capital flow bonanzas appear to help predict government defaults and other financial crises.

Recent bonanza episodes

As for the recent experience, the table below lists the countries experiencing capital flow bonanzas over the past three years. We applied the technique described in our paper to the IMF forecast made earlier this month. As is evident, two main groups of countries have been beneficiaries of outsized net inflows in recent years: Industrial countries with house-price booms (such as Ireland, Spain, the UK, and the US) and nations in Central and Eastern Europe expected to converge to the centre with the enlargement of the EU (such as Bulgaria, Romania, and Slovenia).

Countries with recent notable capital inflows	2006	2007	2008
Bulgaria	√	√	√
Iceland	√	√	√
Italy	√	√	√
Jamaica	√	√	√
Latvia	√	√	√
New Zealand	√	√	√
Pakistan	√	√	√
Romania	√	√	√
Slovenia	√	√	√
South Africa	√	√	√
Spain	√	√	√
Turkey	√	√	√

United Kingdom	√	√	√
United States	√	√	√

Source: IMF, World Economic Outlook (10/08) and authors' calculations.

Notes: For the full list of recent bonanza episodes see the paper.

Cross-checking this list with recent headlines in the financial news supports the contention that the concept of a capital-flow bonanza may be a useful device for identifying countries likely to undergo significant macroeconomic adjustment—perhaps even a crisis, an issue we turn to next.

Capital flow bonanzas and financial crises

To examine the potential links with financial crises of various stripes, we constructed a family of country-specific probabilities. For each of the 64 countries, this implies four unconditional crisis probabilities, that of: default (or restructuring) on external sovereign debt, a currency crash, and a banking crisis.[19] We also constructed the probability of each type of crisis within a window of three years before and after the bonanza year or years, this we refer to as the conditional probability of a crisis. If capital flow bonanzas make countries more crises prone, the conditional probability should be greater than the unconditional probability of a crisis.

We summarise the main results and then provide illustrative examples. For the full sample, the probability of any of the three varieties of crises conditional on a capital flow bonanza is significantly higher than the unconditional probability. Put differently, the incidence of a financial crisis is higher around a capital inflow bonanza. However, separating the high income countries from the rest qualifies the general result. As for the high income group, there are no systematic differences between the conditional and unconditional probabilities in the aggregate, although there are numerous country cases where the crisis probabilities increase markedly around a capital flow bonanza episode.

Also, to provide an indication of how commonplace is it across countries to see bonanzas associated with a more crisis-prone environment, we also calculate what share of countries show a higher likelihood of crisis (of each type) around bonanza episodes. For sovereign defaults, less than half the countries (42%) record an increase in default probabilities around capital flow bonanzas. (Here, it is important to recall that about one-third of the countries in the sample are high income.) In two-thirds of the countries the likelihood of a currency crash is significantly higher around capital flow bonanzas in about 61% of the countries the probability of a banking crises is higher around capital flow bonanzas.

Beyond these general results, Figures 2 to 4 for debt, currency, and banking crises, respectively, present a comparison of conditional and unconditional probabilities for individual countries, where the differences in crisis probabilities were greatest. (Hence, the country list varies from one figure to the next).

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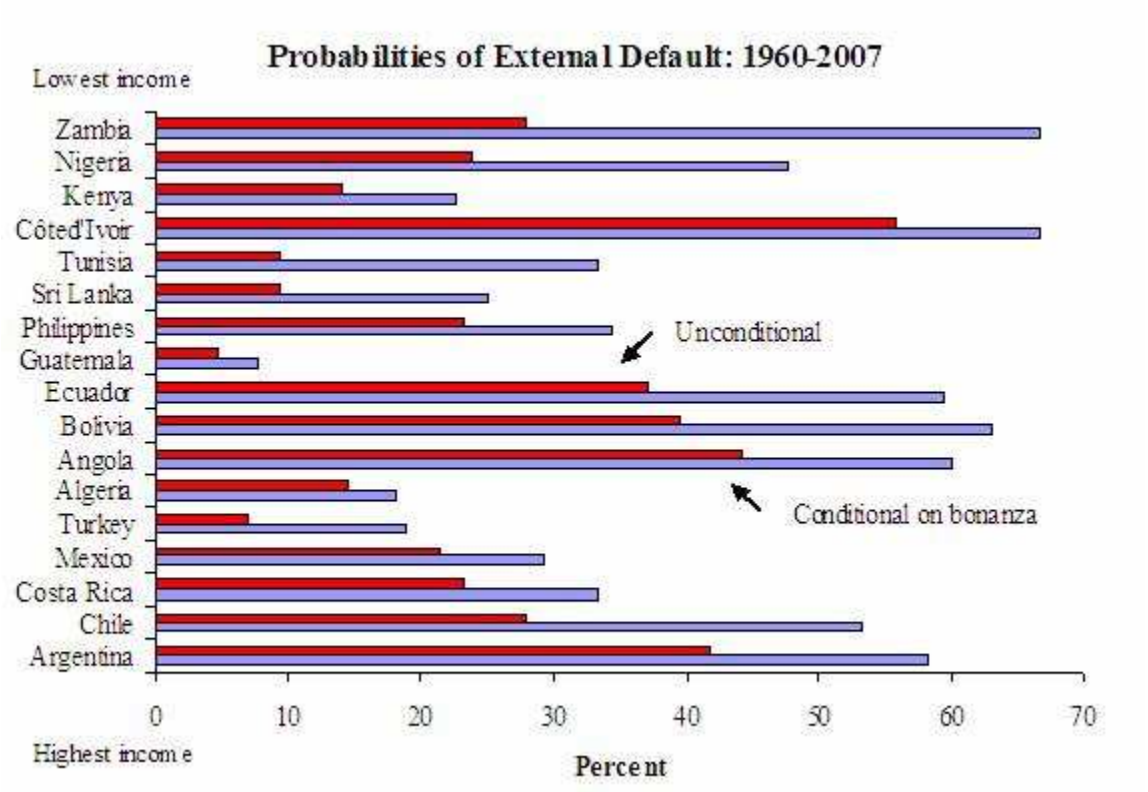
[19] In the paper, we also consider inflation crises; for crisis definitions see Reinhart, Carmen M. and Kenneth S. Rogoff, "This Time is Different: A Panoramic View of Eight Centuries of Financial Crises" NBER Working Paper 13882, March 2008.

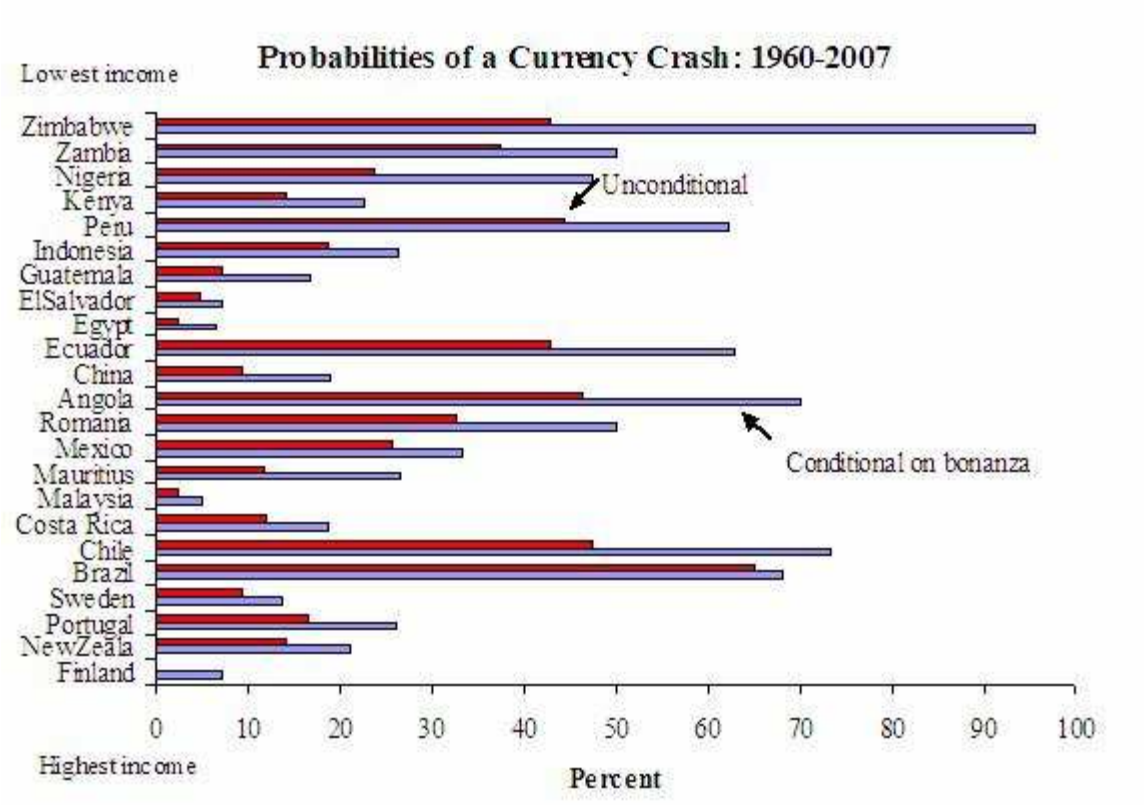
For external sovereign default (Figure2), it is hardly surprising that there are no high income country examples, as advanced economy governments do not default on their sovereign debts during the sample in question. The same cannot be said of Figures 3 and 4. While the advanced economies register much lower (conditional and unconditional) crisis probabilities than their lower income counterparts, the likelihood of crisis is higher around bonanza episodes in several instances. Notably, Finland and Norway record a higher probability of a banking crisis around the capital flow bonanza of the late 1980s. Recalibrating this exercise in light of the banking crises in Iceland, Ireland, UK, Spain and US on the wake of their capital flow bonanza of recent years would, no doubt, add new high income entries to Figure 4, which graphs conditional and unconditional probabilities for banking crises.

Figure 2. Are bonanza episodes more crisis prone? Sovereign external default: 66 countries, 1960-2007



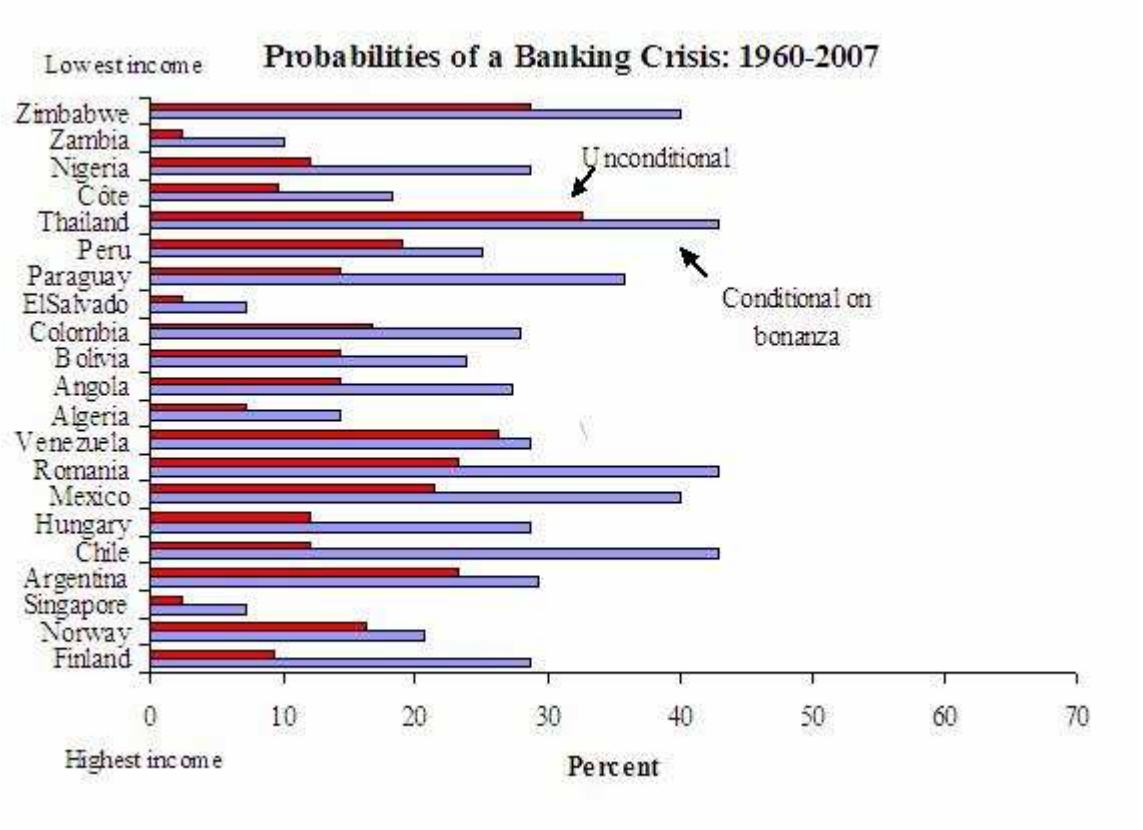
Sources: Authors' calculations, Reinhart and Rogoff (2008a), and sources cited therein.

Figure 3. Are bonanza episodes more crisis prone? Currency crashes: 66 countries, 1960-2007



Sources: Authors' calculations, Reinhart and Rogoff (2008a), and sources cited therein.

Figure 4. Are bonanza episodes more crisis prone? Banking crises: 66 countries, 1960-2007



Sources: Authors' calculations, Reinhart and Rogoff (2008a), and sources cited therein.

Reflections on the current conjuncture

Most emerging market economies have thus far been relatively immune to the slowdown in the US. Many are basking in the economic warmth provided by high commodity prices and low borrowing costs. If the pattern of the past few decades holds true, however, those countries may be facing a darkening future.

Calvo and Loo-Kung: Rapid and large liquidity funding for emerging markets

10 December 2008

Emerging markets are weaker than the G7, and if they undertake expansionary monetary and fiscal policies like the G7, inflation and capital flight are likely surge. This column argues international financial institutions must take an unprecedented role in bailing out emerging markets as there is the serious risk that they resort to protectionism and nationalisation.

One can blame the G7 for incompetent financial supervision, but few would criticise them for the rapid and decisive action taken by their central banks and fiscal authorities after the crisis materialised.

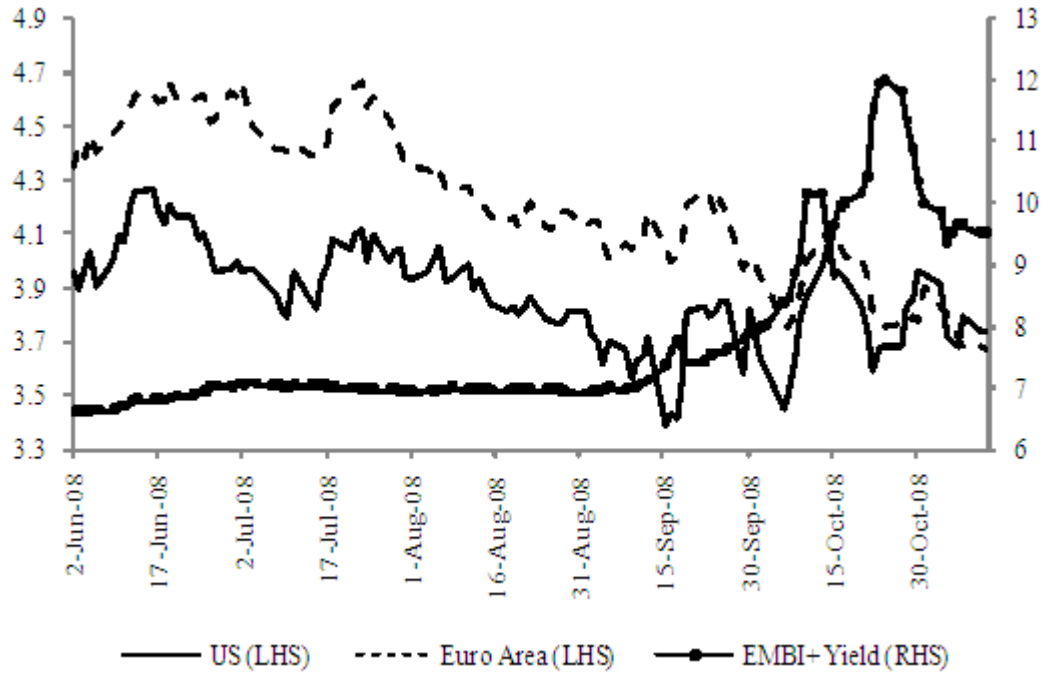
It is too early to tell if the G7 are coming out of the quagmire any time soon, but it is clear that the G7 have a powerful arsenal. The world is eager to buy their public bonds at negligible interest rates, which they can then use to pump in liquidity and bail out their financial sectors.

Emerging market woes

Unfortunately, that's not the case in emerging market economies, or EMs in the jargon. JP Morgan's EMBI+ bond index, for example, has become highly volatile and at one point recently it crossed the 1000 basis point mark (see Figure 1). Moreover, since the third quarter 2008, when it transpired that there was no decoupling, the EM stock market collapsed in dollar terms, and also relative to the Dow Jones.

This shows that the EM arsenal is considerably weaker than the G7's, and that if they undertake an expansionary monetary and fiscal policy like the G7, inflation and capital flight are likely surge.[20] The instruments that are helpful in refloating advanced economies could prove fatal for emerging markets!

Figure 1. Interest rates in the US, euro area and emerging markets



Notes: 10-year Generic Bond rates for the US and the Euro Area. *Source*: Bloomberg.

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[20] For a thorough evidence about the relative disadvantage of developing economies, see Carmen Reinhart, Kenneth Rogoff and Miguel Savastano "Debt Intolerance," *Brookings Papers on Economic Activity*, Economic Studies Program, The Brookings Institution, vol. 34(2003-1), pages 1-74.

Large reserve stocks help but aren't sufficient

The good news is that emerging markets have accumulated a sizable stock of international reserves which they could, in principle, apply to finance an expansionary fiscal policy for some time. To illustrate, consider the region composed by Africa, emerging Europe and Latin America. In 2007, gross international reserves reached around $1.7 trillion, while annual investment was about $1.8 trillion.

Suppose the current crisis shrinks investment by about 18% as it did, on average, during the Asia/Russia crises.[21] This would imply a fall in investment equivalent to 1.8´0.18 = $324 billion. The stock of reserves would allow the region to offset the potential fall in investment for an impressive 5 year period. Granted, these are gross reserves, but the firepower is anyhow impressive.[22] The same computation for 1998, for instance, yields a much shorter period (about 2 years).

A major problem in using international reserves for credit expansion is that the stock of reserves is usually taken by market participants as a guarantee of banking and currency stability.

Data on reserves are closely followed by the private sector because, even in a reserves-rich region like Asia, international reserves do not exceed 45% of M2, on average. For instance, in the above example, if reserves fall by $324 billion, the region would have to spend about 20% of its gross reserves – a change that will not pass unnoticed to market participants. Here is where the International Financial Institutions (IFIs) can make a difference.

Loans from international financial institutions have the double effect of providing a seal of approval to the credit-expansion policy, and ensuring that the hard-currency backing of domestic monetary aggregates does not suffer a dramatic reduction. Both effects go in the direction of enhancing the trust of the private sector in domestic financial institutions. Loans from multilateral development banks, MDBs, to the region (i.e., Africa, emerging Europe and Latin America) in 2007 were slightly higher than 12% of the $324 billion required to offset the Sudden Stop (see Table 1). Even if all the MDBs follow the World

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[21] This is likely a conservative estimate. In the sample of Sudden Stops in countries from Latin America, emerging Europe and Asia, tracked in the JP Morgan's EMBI, the average peak-to-through reduction in nominal investment was about 30% during the Asia/Russia crises.

[22] In some cases, international reserves net of government short-term liabilities can be substantially lower. Take for instance, the case of Brazil. As of last October, gross reserves totaled $203 billion while public domestic short-term debt amounted to $134 billion (valued at the current exchange rate). Granted, most domestic debt is denominated in *reais* but the currency has already suffered a very large devaluation (almost 60% against the dollar), and there are concerns of an imminent inflation flare up. This makes it unlikely that, barring a crisis, the authorities will be inclined to let the real devalue much further – in which case, domestic debt would be *de facto* denominated in terms of foreign exchange.

Bank's recent announcement, and expand lending by a factor of four, the additional funds would raise the MDBs' contribution to only around 50% the above amount.

Table 1. MDBs lending to Africa, emerging Europe and Latin America (US$ billions)

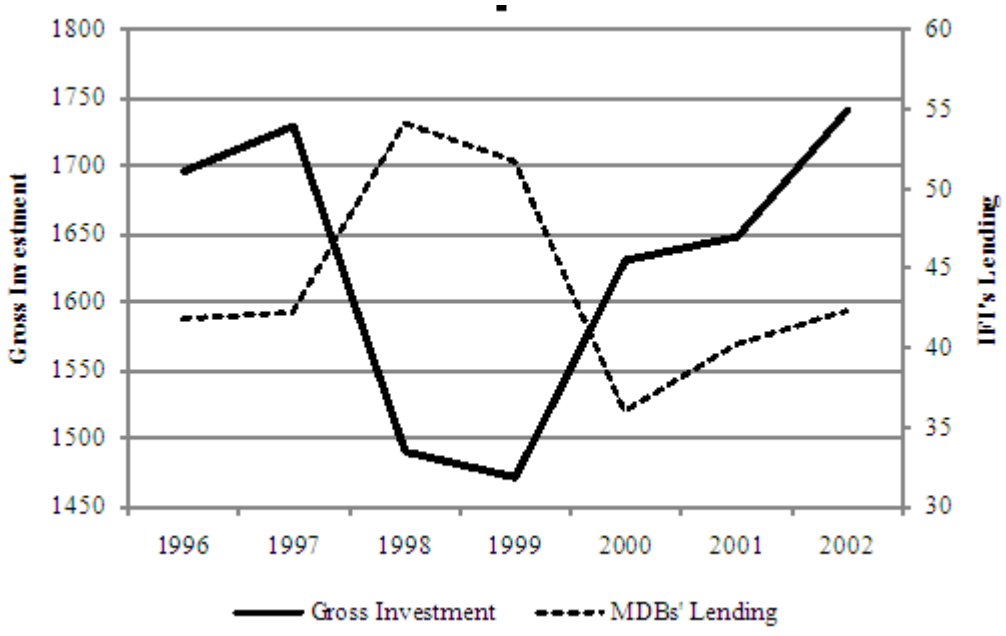
	2004	2005	2006	2007
Africa	9.0	7.8	10.0	11.3
Emerging Europe	7.9	8.0	8.6	9.8
Latin America	14.8	17.1	17.8	20.1
Total	31.7	32.9	36.4	41.2

Note: Figures correspond to the total of approved loans and guarantees by the World Bank, the African Development Bank Group, the Inter-American Development Bank, the Andean Development Corporation and the European Bank for Reconstruction and Development.

An additional difficulty is that MDB loans take a long time to be approved and disbursed. Thus, in the short run the MDBs are unlikely to be of much help. More promising are initiatives like the Fed's currency swaps and the IMF Short-Term Liquidity Facility. It is essential, though, that the sums involved are large enough and cover a wide spectrum of emerging markets.

The good news for emerging markets is that the G7 seem to have recognised their responsibility in generating the present financial turmoil and are coming forward with proposals to enlarge the MDBs' lending capacity much more aggressively than in the past. To illustrate, during the Asia/Russian 1997/8 crises the MDBs increased lending by 30% (instead of the 400% recently announced by the World Bank), an amount that represented less than 5% the fall in emerging market investment (see Figure 2).

Figure 2. Investment in emerging markets and MDBs lending (US$ billions)



Note: Includes Africa, emerging Asia, emerging Europe, Latin America and the Middle East. MDB's lending includes the total of approved loans and guarantees by the World Bank, the African Development Bank Group, the Asian Development Bank, the Inter-American Development Bank and the European Bank for Reconstruction and Development.

This, in addition to the recent and programmed G20 meetings, gives us hope that emerging markets will be offered a much more adequate cushion to a potential Sudden Stop. Optimism, however, is tempered by the fact that this time around emerging markets will likely be bereft of the net export channel, which played a very important role in their rebound from previous Sudden Stops. Unlike the 1997/98 episode, during which robust growth in the US and other advanced economies provided a strong external demand that helped the recovery in EMs, this time the global nature of the crisis will almost surely prevent this mechanism to take place.

Conclusion

Our analysis strongly suggests that, in the short run, first priority should be given to developing liquidity facilities aimed at stopping financial unravelling in EMs. At present, those facilities don't seem to be either large enough, or cover a wide enough spectrum of EMs. Time is of the essence.

As shown by the "Sudden Stop" literature, slow response from the IFIs could result in serious output and employment losses.[23] The Fund appears to be well positioned to take the lead, but its effectiveness will depend very much on getting the unambiguous political support necessary to run the large risks that the rapid expansion of sizable liquidity facilities is likely to entail.

If successful, the international financial institutions will have taken an unprecedented role in bailing out emerging markets, and for the first time, in a long time, we will be entitled to talk about a New Economic Order.

If not, and the world does not quickly recover from this crisis, there is the serious risk that many key emerging markets resort to protectionism and nationalisation, a major backward step for their economies and the world's.

Hesse: Stock market wealth effects in emerging market countries

16 October 2008

This column examines the impact of stock market valuation changes on consumption and investment in emerging markets. Though the effects are smaller than those in advanced economies, emerging market policymakers ought to pay attention to how equity price swings will transmit business cycles and impact aggregate demand.

There are a few channels through which asset price changes affect consumption. For instance, consumption depends on peoples' expectations of wage income and equity price

[23] See, e.g., Guillermo Calvo, *Emerging Capital Markets in Turmoil*, MIT Press, 2005.

increases can signal higher income growth. Financial assets play a significant role in peoples' permanent (life-cycle), income so changes in the stock market could have an effect on private consumption expenditure.

Although there is a large body of literature about the effect of asset price changes on private consumption in advanced economies, such studies are scarce for emerging market economies. Estimates of stock market wealth effects for a 10% change in equity prices range from 0.15% - 0.3% in Japan and 0.1% - 0.3% in various European countries to 0.3% - 0.7% in the United States (IMF 2002; Ludwig and Sløk 2004; Slacalek 2006). Funke (2004) presents evidence of a small but statistically significant stock market wealth effect in 16 emerging markets over 1985–2000 ranging from 0.2% to 0.4%.

To shed more light on the relationship between stock market valuation changes and private consumption, co-authors and I estimated a simple two-step panel model covering 1985–2007 for 22 emerging markets in the MSCI equity index (see IMF 2008 for more details). The findings suggest that a 10% increase in the stock market valuation would, on average, lead to an increase of real private per capita consumption of 0.12% in the short run and 0.15 % in the long run. The nominal impact amounts to 0.25% in the short run and 0.26% in the long run. These results are in line with Funke (2004). Restricting the sample period to 1997–2007, when stock market valuations exhibited large increases as a percentage of GDP, reveals a slightly higher real stock market wealth effect. In general and as expected, the impact is smaller than in advanced economies.

It is also of interest whether the wealth effect is different for countries that have witnessed a stock market boom or bust. To account for this, we restricted the sample to observations for which the equity market had increased or decreased by more than 20% and 30%, respectively, in any given year. These findings suggest a slightly more pronounced wealth effect.

The obtained wealth effects are rough estimates and depend on other factors that are hard to measure. First, using stock market returns is only an imperfect proxy for household wealth. Second, the model did not take into account different structures of financial markets and features such as its volatility or depth. Third, the magnitude is also driven by factors such as the leverage of consumers, duration and the degree of stock market participation. For instance, consumer leverage is still relatively low in many emerging economies compared to some developed economies. With respect to duration, recent stock market gains and losses in many emerging markets have occurred very quickly, so there has been little time for consumers to change their behaviour. If stock market increases had materialised over a longer time period, the wealth effect may have been larger.

Overall, these findings suggest that changes in stock market valuations have a relatively small but significant impact on consumption in emerging economies. But consumption patterns are still mainly driven by disposable income, and so far, that has been resilient to the volatility of financial markets in many countries, especially in Asia. In addition, the housing wealth channel plays an important role in some emerging market countries that have especially seen rapid build- ups of property prices, and this channel was ignored in the study.

In addition to private consumption, the wealth effects of stock market valuation changes

are also relevant for a number of other key macroeconomic variables, notably government revenues and private investment. Investment and share prices are inherently linked. Since equity prices are forward-looking variables that convey information about the expected value of firms, they affect investment. Higher stock market prices also reduce the cost of capital for companies, benefiting their investments. Results from estimating a simple model for private investment suggest that a 10% change in stock prices would lead to about 1% change in investment, which is a substantially stronger effect than on private consumption. This is in line with the results of Henry (2000), who utilises the same methodology.

What are the possible implications for policy makers? With fluctuations in stock markets affecting private consumption and investment expenditures and therefore demand, policy makers need to pay attention to this relationship, especially in large build-ups of asset price booms and the subsequent bust. Furthermore, as domestic asset price prices are increasingly influenced by regional and global factors, there is a possible transmission mechanism of business cycle movements.

There is no one-size-fits-all approach for dealing with the consumption stock market wealth effect. The approach should be country-specific and depend on domestic factors such as the monetary policy framework, financial regulation, the degree of consumer leverage (especially for retail investors), and the level of stock market participation in the economy. For instance, a monetary policy stance in an emerging economy that explicitly targets inflation might find it harder to lean against asset prices than a central bank that focuses more on the growth of the economy. The good news is that the consumption stock market wealth effect is lower in emerging market countries than in advanced economies – but emerging economies should not ignore its existence.

Note: The views expressed here are those of the author and do not necessarily represent those of the IMF or IMF policy.

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Freytag and Pehnelt: The political economy of debt relief

11 December 2008

In a future phase of the crisis, the issue of sovereign debt relief is likely to arise. Such debt relief has historically been marked by political failure and short-term thinking, and not delivered promising results. Drawing on recent research, this column argues for tying debt relief to good governance goals is one way to improve the outcome.

The global financial market crisis has fed fears that individual countries face such serious problems that they might go broke, with this causing a cascade of national crises.
In particular, developing and emerging economies, which so far have been regarded as being decoupled from the crisis in the industrialised world, are endangered. Countries that may be regarded as problematic in this context are Hungary, Pakistan and Iceland.

The IMF has loaned $15.7 billion to Hungary to help the country combat negative fallout from the global financial crisis. Most recently, Pakistan got into deep trouble when the country's foreign exchange reserves shrunk dramatically and the rupee plunged in October as the balance of payments deficit in the three months from July 1 widened to $3.95 billion from $2.27 billion a year earlier. The decision of the IMF to approve a US$7.6 billion credit to Pakistan to stave off a balance of payments crisis reduces for the time being the prospect of Islamabad defaulting on its foreign debts. Iceland received a bailout of almost $5 billion from the IMF and the neighbouring Nordic countries.

The IMF also promised to help Latvia deal with its economic crisis after it assisted Iceland, Hungary, Ukraine, Serbia and Pakistan.

Table 1 shows the cost of some of the bailout programmes since the mid 1990s. Not a few analysts believe that the worst is yet to come with respect to some transition and developing economies.

Table 1: Crises and bailout-cost

Crisis	GDP (in billions)	Cost* (in billions)	%GDP
USA 2008	$14,312	$1.500?	>10%?
Pakistan 2008	$130	$8?	6%?
Hungary 2008	$170	$16?	9%?
Argentina 2000	$299	$22	7%
Brazil 1998	$844	$42	5%
Russia 1998	$271	$24	9%
Korea 1997	$527	$57	11%
Thailand 1997	$151	$17	12%
Indonesia 1997	$238	$21	9%

Mexico 1995	$421	$48	11%

*Progressive Policy Institute, September 24, 2008, and own estimations.

If the bailout programmes do not help quickly, one might think of an old instrument, namely debt relief, to overcome the problem. The question is if bailing out broke countries is a remedy for the tilt or rather part or even a cause of the problem.

The rationale of debt relief

There are three efficiency arguments for the provision of debt relief. The first is the so called 'debt overhang'. It has been stated that highly indebted countries benefit very little, if ever, from the returns on any additional investment because of the debt service obligation. Large debt obligations can be seen as a high tax on investment, policy reforms and development, because a significant part of the gains from economic adjustment would go to foreign creditors and not to the country itself. Creditors should therefore offer debt relief to countries with large stocks of external debt in order to reduce future debt obligations. This would increase the share of any marginal gains from economic adjustments that goes to the debtor country and create incentives to make these adjustments. This strategy could end up in a win-win-situation by not only easing the debt burden of debtors but also increasing future repayments to the creditors.

Secondly, debt relief may have a stimulating effect on investment and economic development. The clincher with respect to the resource position of low-income countries and therefore to the capacity to pay their obligations and to invest, is still the net resource transfer from donors, including aid. Since the reduction of multilateral debt is partly financed by bilateral donors (e.g. through their contributions to multilateral funds), and these contributions usually come from the same political reservoir, namely the donors' aid budget, there might be a trade-off between debt relief and official development assistance.

The third rationale for debt relief could follow different lines. If an individual country's bankruptcy causes investors to withdraw their capital from other countries with similar but not identical problems, the crisis cascades and even countries without the structural problems of the country in question are endangered.

The determinants of debt relief

Despite these arguments, past debt relief programs have been rather ineffective. The determinants of debt relief obviously deviate from economic reasoning. It can be argued that neither absolute poverty nor lack of access to foreign exchange (through exports) have been criteria in allocating ODA debt relief and pure grants. If politicians and international bureaucrats realise that default risks become very high, they prefer to grant debt relief in order to conceal their imprudent past lending and to "sell" the renunciation of funds as an innovative poverty reduction measure, especially if lobbying by non-governmental organisations (NGOs) in favour of debt relief increases their chances of obtaining positive public credit for the delivered debt relief. According to this reasoning, politicians in donor countries do not like to admit policy errors. Politically rational governments in creditor countries would find arguments for further debt relief measures.

Thus, debt relief is driven by path dependence. Debt relief then is a politically cheap, but economically expensive form of publicly visible development policy.

In our study, we analysed the determinants of debt relief in more than 100 developing countries between the mid-1990s and 2004. On the one hand, our findings confirm the political rationale outlined above but are – on the other hand – somehow encouraging, as creditor governments indeed seem to learn. The most striking result for the 1990s is the strong path dependence of debt relief. At the beginning of the 21st century, this pattern has changed. Path dependence, though still visible to some extent, is much weaker in the period 2000-2004. In this period, the institutional quality became more relevant, in particular the change in institutional quality. The provision of debt relief in recent years seems to follow some prudential rules and to be conditioned on relatively decent policies rather than only the level of indebtedness and the amount of previous debt forgiveness.

The results also suggest that recent debt relief has been provided in favour of poor countries that have shown improvements in their governance quality, of course not neglecting the level of indebtedness and the amount of debt relief granted in the 1990s (see table 2).

Table 2: Determinants of debt relief 1995 – 2004

Determinant	Period 1995 - 1999	Period 2000 - 2004
Past debt relief	Positive and highly significant	Positive and weakly significant
Poverty	Positive and significant	Positive and highly significant
Institutions	No correlation	Positive and significant
Change in institutions	n.a.	Positive and significant
Controls	No significant correlation	No significant correlation

These results suggest that the discussion of institutions in development, which has its roots in academic circles and has been transferred into the international development organisations, has not only produced political statements but also some policy measures. Along these lines, a debt relief for emerging economies in the current situation may also be based on economic rather than on political rationality.

Conclusions

The history of debt relief is characterised by political failure and short-term thinking. Consequently, so far debt relief did not deliver promising results. Neither the economic performance nor the governance quality has increased. Analysing the determinants of debt relief programs in the 1990s, we derive a standard result of international political economy. Governments of creditor countries have granted debt relief rather because of political than of economic reasoning. In particular, we can confirm a path dependence with respect to debt relief granted.

However, the determinants of debt relief for highly indebted poor countries have changed slightly, which indicates learning processes in creditor countries. Thus, recent debt relief programs since 2000 seem to be positively influenced by economic and institutional development as well as the results of the latest research on the role of institutions for

growth and development. This may indeed be the result of a successful learning process of donor countries' governments and a slight change in the allocation pattern of debt relief along with the introduction of some sensible criteria during the last decade. Analysing debt forgiveness within the framework of the Enhanced HIPC initiative, one can find a relation between debt relief and enhanced institutional quality. This is a very promising sign for the future.

As a consequence of the dramatic financial crisis the world has changed. The global financial system will never be the same. Traditional instruments, certain financial products and regulations will disappear. A new order is requested, though yet to be developed. The determined reaction of the IMF and national governments has undoubtedly helped securing the savings of many people and has been necessary to prevent a collapse of the banking sector and whole economies. However, the question remains if bailing out broke countries and banks will stabilise the financial markets and fiscal policies in the future or rather set further incentives for irresponsible lending, unsound policies and business practices. Much depends on the application of the rule to tie debt relief to good governance for helping the emerging countries.

Subramanian: India's credit crunch conundrum

10 November 2008

The Indian variant of the credit crunch is different. This column outlines potential means of expanding India's credit supply. Simply cutting interest rates will not suffice.

How can India be facing credit crunch if credit continues to grow at a torrid 30%? Yet, it is undeniable that call rates have risen sharply to double-digit levels. What is going on? And how should monetary policy respond?

First, distinguish the Indian phenomenon from what we have seen in Western credit markets. In the latter, the crisis was primarily about a lack of confidence in the financial system and the evaporation of trust between agents because of uncertainty about exposure to mortgage-related assets. In short, the problem was a diminished supply of credit. Even the inability of firms to raise capital in the commercial paper market similarly reflected an unwillingness of banks and the public to supply finance to firms that were believed to be exposed to toxic assets.

The Indian variant is somewhat different. The private sector's funding from foreign sources and from the non-bank public (through the issuance of bonds and raising equity) has dried up because of combination of capital outflows and declining share prices. In 2007/08, for example, 40% of funds available to Indian industry were raised through external commercial borrowings and new equity issues. Funding for Indian companies that have borrowed abroad has also dried up because of trouble in foreign credit markets, forcing these companies to turn to the domestic banking system for credit. And firms' own funding has declined as profits have headed south.

This reduced supply of non-bank and foreign funding has led the private sector to turn to banks to make up this shortfall: that is, there has been a sharp increase in the demand for

domestic bank credit. Of course, with banks lending to finance the losses of oil companies, there has been an additional squeeze (crowding out) of credit to the private sector as a result of pre-emption of bank credit by the government.

So, the answer is yes, there is a credit crunch despite torrid credit growth because the demand for credit has gone up. Price (the call interest rate), not quantity, is the right signal.

The policy question then is – how can this additional credit be provided to the private sector? Or to put it in accounting terms – how can the aggregate size of the balance sheet of the banking system as a whole be increased?

Five sources of credit

Simple macroeconomic accounting suggests that additional supply of credit can come from five sources: government, the Reserve Bank of India, firms' own profits, the non-bank public, and abroad.

If the government could reduce its deficit, more of the existing credit could be made available for the private sector. With oil prices declining, this channel should, unless the government increases its deficit for other reasons, start kicking in.

The Reserve Bank of India (RBI) could also facilitate greater credit supply by reducing the cash reserve ratio, allowing banks to reduce their balances at the RBI and to make them available to the private sector. The RBI has been using this policy tool vigorously and perhaps will, and should, continue doing so. Of course, there is a natural floor to the cash reserve ratio stemming from prudential considerations. Cutting the statutory liquidity ratio is more complicated. It makes additional resources available to the private sector only if the non-bank public is willing to hold government paper in its portfolio. If the result of cutting statutory liquidity ratios leads to a re-allocation of these bonds within the financial sector, there are no extra resources from the banking system as a whole.

Can the non-bank public augment the supply of credit? Only if it is willing to hold more bank deposits, which the banks would lend to the private sector. But this would require making bank deposits more attractive and hence an increase in interest rates. Indeed, some banks have been attempting to raise deposit rates to attract customers.

How can the rest of the world augment credit? Increases in remittances and in NRI deposits into the Indian banking system could help achieve this. But again this would require making the holding of deposits more attractive, entailing raising interest rates and avoiding the risk of depreciation.

The interest rate dilemma

Here then is the dilemma for interest rate policy. Reducing interest rates can help address the current credit crunch in a number of ways. First, by reducing the cost of bank's funding and raising their spreads, it would increase bank profitability. Second, it could also help corporate profitability which has two positive effects: by increasing the own source of funding (profits) it reduces firms' demand for bank credit and by improving the asset quality of banks it frees up resources to expand credit. Finally, lower rates helping corporate profitability could attract foreign capital into the equity market. This would

again, for the reasons discussed above, alleviate the credit crunch by increasing non-bank funding of firms and hence reducing their demand for bank credit.

On the other hand, lowering rates would reduce remittances and NRI inflows, which are known to be interest-sensitive. It could also lead the public to take money out of the banking system to put in other assets or hold it as cash. Some money could also find its way abroad through direct and indirect (for example, trade) channels. All of these would reduce the supply of credit, aggravating the credit crunch.

The policy implications are then clear for alleviating the ongoing credit squeeze. Unambiguous ways of helping would be to reduce government claims on credit and reducing the cash reserve ratio so that implicitly the central bank finances credit creation. On the other hand, cutting interest rates does not have an unambiguously positive effect. Policy makers should take note of that. Whoever said that conducting monetary policy would be easy?

Editors' note: This first appeared in the Indian newspaper Business Standard.

Subramanian: Preserving financial sector confidence, not monetary easing, is key

1 November 2008

Financially integrated India has been hit by the financial contagion. This column explains what Indian policymakers need to do in order to restore confidence in the financial system and avoid the risks of easing monetary policies. The time has come for the Reserve Bank of India to use its foreign exchange reserves to inject liquidity into the financial system.

"Brand India" is being buffeted by the global financial crisis. India has been more financially integrated than was generally supposed, and hence more affected by financial contagion than expected. The stakes are high because policy hesitancy or missteps could turn mild contagion into virulent disease.

One lesson that countries are learning is that during a crisis of confidence, policy-makers have to get ahead of the curve in order to reassure markets. Governments have discovered the hard way that responses that are reactive, piecemeal, and uncoordinated risk undermining rather than adding to confidence. A formidable policy arsenal needs to be deployed to have any chance of restoring stability. In western financial markets confidence is returning, slowly, only after a series of ambitious actions, boldly initiated by the UK and then followed by Europe and the US, as many economists advocated.

Between last week's actions to shore up the financial system and Monday's cut in interest rates, Indian policymakers can legitimately claim to have risen to the challenge. But will these actions be enough? What more will be necessary?

Broadly, more will need to be done on the financial sector side in order to do less on the monetary policy side. Put differently, if confidence in the financial system is not restored, the easing, even substantial easing, of monetary policies that we have recently seen may not have enough traction, and may even entail risks.

First and foremost, the plight of individual financial institutions should be addressed. A benchmark should be that no Indian bank should have credit default swap (CDS) spreads exceeding 300 or so basis points. It is likely that perilously elevated CDS spreads reflect problems with foreign funding. So, high on the action list would be to provide foreign currency resources from the Reserve Bank of India's reserves. The RBI's liquidity injections operations that have so far been in rupees need to be expanded to foreign currency.

One way to do this would be to hold foreign currency auctions for all domestic financial institutions to meet either their own needs or those of their corporate clients that face foreign currency funding pressures. The Fed and ECB responded to dollar shortages in Europe through extensive swap operations that made available enormous lines of dollar credit in European markets. The RBI foreign currency auctions should be held quickly and flexibly so that liquidity can virtually be provided on tap. The RBI's foreign exchange reserves have been accumulated for rainy days, and these are not just rainy but stormy days, justifying their liberal use today.

If these measures prove inadequate, the government may need to step in to guarantee the foreign-currency debt of domestic financial institutions. This may need to be complemented with government re-capitalisation, especially if private banks are unable to raise capital from private sources within a very short period of time. India just cannot afford to have financial institutions that are flashing amber or red in these times.

Moving beyond individual institutions, and given the crisis of confidence, it may be worth requiring all banks to raise their capital adequacy ratio (CAR) to about 15-18%, within a short period. If meeting this higher CAR requires additional government capital injection, that should be seriously considered. Ways could be found for this capital to be returned to the government once the crisis subsides. If all banks were seen to be meeting this high standard, it could have a significant impact in reassuring markets. The rationale for the higher ratio, apart from the confidence boosting impact, is the more substantive one that banks' non-performing assets are bound to rise as the economy weakens. An apparently cushion-providing 15% CAR today could very easily become an 8% CAR within a short space of time.

Next, it might be worth imposing additional transparency requirements on all the major banks to reassure investors and the public. Uncertainty in this environment leads to markets believing the worst. All banks should therefore be required to immediately clarify and publish key variables of concern, including foreign currency exposure, especially on the liability side, the extent and sources of wholesale funding, and exposure to derivatives and other such instruments. A strong transparency effort, under the RBI's supervision, could have an important reassuring function.

Finally, what about exchange rate and monetary policies? On the former, the RBI should refrain from foreign exchange intervention, which at the moment sends contradictory signals because it sucks out liquidity at the very time that the RBI is pumping enormous amounts of liquidity back into the economy. Far better to use the RBI's foreign exchange reserves to meet the foreign funding requirements of domestic financial institutions rather than to defend some level for the rupee.

On monetary policy, the RBI has been doing the juggling act of easing interest rates and injecting rupee liquidity, on the one hand, while trying to encourage capital inflows and discourage outflows through a variety of measures such as raising interest rates on foreign currency deposits. Make no mistake that there is an inherent tension, even plain contradiction, between these actions, which the RBI has been able to avoid because residents, unlike foreign investors, are not fleeing rupee assets. The risk of aggressive easing is that it might trigger the move away from rupee holdings, at a time when confidence in the rupee is so shaky, when current and prospective depreciation would offset the favourable effects on inflation from declines in commodity prices, and when credit is still growing at a whopping 30%. It is worth noting that while the repo rate has been cut to 8%, the call rate — which reflects market conditions — is at 6%, below CPI inflation, resulting in negative real interest rates.

A loss of confidence in the rupee is an outcome devoutly to be avoided. At this juncture, restoring confidence in individual financial institutions and the financial system is key to achieving that objective and to avoid unreasonably burdening monetary policy.

"Brand India" has come to connote not just rapid growth but a reasonable ability of policymakers to respond to challenges. Of course, this response will be assessed by outcomes. But critical to this assessment will be whether processes for arriving at outcomes are effective, and specifically, whether all concerned institutions play their rightful roles and maintain their credibility. "Brand India" must pass all these tests.

Editors' note: This first appeared in the Indian newspaper Business Standard.

Muellbauer: The folly of the central banks of Europe

27 October 2008

The current financial crisis will probably lead to an unnecessarily deep recession. This column suggests that European central banks, misguided by outdated econometric models, should have cut rates faster and deeper in a coordinated fashion. They should now scrap these models and agree on a large, coordinated cut of 2 percentage points.

When future economic historians look back to trace the triggers for the October 2008 financial panic and the unnecessarily severe recession of 2009, they will likely put their fingers on two.

- The failure to keep Lehman Bros functioning as a going concern.

- The failure of the ECB and the Bank of England to use their interest rate setting firepower to organise a substantial globally co-ordinated interest rate cut (the 8 October 2008 cut was too timid).

Economics ministries, not central banks, demonstrated decisiveness

A convincing argument for independent central banks adopting an inflation targeting framework is that, where central banks are forward looking and responsive, they should be able to avoid deflationary slumps. The markets then should expect the central banks to assess clearly the global economic situation and the downside risks, and take decisive action. Instead, it was the European finance ministries, via the bank refinancing packages announced between October 8th and 14th, that demonstrated their *far* greater understanding of the risks involved. They acted in a timely and *potentially* effective internationally co-ordinated manner. It was less effective because the central banks failed to follow up their initial too small interest rate cut. They were persuaded into a co-ordinated half point interest rate cut on October 8th. The central banks then sat on their hands, despite a daily barrage of deflationary news.

Emerging markets and the deflationary firestorm

By October 16th, the impact on emerging markets of the deflationary firestorm, in consequence of the collapse in global growth and in commodity prices, had become all too apparent. History shows that the resulting combination of financial and currency crises leaves long-lasting damage in lost output, bankruptcies and bad debts that handicap future recoveries. There is little chance of a significant commodity price recovery from recent levels in the next six months. The reason is that instead of stabilising the global economy, emerging market demand, such as China's, is falling, and thus *amplifying* the shock. As I pointed out at the Bank of England's Monetary Policy Roundtable (Sept 30th), a straightforward piece of economics underlies this idea. While consumer spending is closely linked with the level of income, investment is more driven by growth. It is the huge share of investment in national output in emerging economies that makes them, and their commodity demands, highly sensitive to the global slowdown.

The dual effect of the depreciation of emerging markets' currencies and the massive falls in commodity prices will induce the largest negative shock to the price level in developed economies since WWII. Moreover, collapsing export demand and rapidly rising unemployment will add domestic deflationary pressure. The deflation will in part be offset by the improvement in the terms of trade for the developed countries, and eventually also by fiscal measures undertaken to boost demand. However, with the rise in food and energy prices accounting for approximately 80% of the rise in inflation in 2007-2008 in most European countries, the coming collapse of inflation in 2009 should have been obvious to every central banker.

What could have been?

As late as October 21st, the central banks of Europe still had an opportunity for credible and confidence boosting action on interest rates. A short-term rise in global stock markets gave a window for action which would *not* have been seen as a 'too little, too late' fire-fighting reaction to market panic. An accompanying statement could have noted the dramatic shift in the inflation outlook. It could have acknowledged that, *in effect,*

monetary policy had involuntarily tightened with falling inflation expectations raising *real* interest rates. Policy had already been tightened through raised market interest rates paid by households and firms, due to widened spreads under the credit crunch.

Would a co-ordinated 1% cut, accompanied by the promise of decisive and timely further action in the light of rapidly evolving news, have worked to halt the panic? Sceptics, perhaps including some in the central banks, were doubtful, but quite wrong.

The most obvious impact of a cut would have been to raise the profit outlook of private sector banks in every country. This would have boosted the flow of investors' funds to the sector and raised banks' share prices, thereby enhancing their ability to lend and replenishing trust of depositors and in the interbank market. The result would have greatly amplified the benefits of the earlier refinancing operation of the ministries of finance, and lowered money market and credit spreads.

Some of the cut in policy rates would have lowered borrowing rates faced by hard-pressed households and firms, though more gradually for some types of debt. Where floating rate debt dominates (e.g. the UK), cash flow effects on consumer spending are large. In research (with Janine Aron and Anthony Murphy) summarised in my Jackson Hole paper of 2007, this effect was estimated for UK consumption. With credit now so restricted and debt levels so high, the size of the impact on spending of a cut in borrowing rates is larger than ever. Thus, had the policy rate fallen, the UK might well have experienced a less severe recession than Germany, which is far more exposed to the slump in exports of capital goods.

Currency crises in emerging markets

Another benefit would have been to ameliorate currency crises in emerging markets and smaller countries such as Denmark. Their exchange rates depend in part on interest rate spreads with the major currencies. A co-ordinated global interest rate cut would have widened spreads without these countries having to *raise* rates to support their currencies in the face of severe recessions. Moreover, as late as October 21st, many other central banks would have felt able to join a co-ordinated cut without exposing their currencies.

More generally, the reduction in policy rates, and the prospect of more to follow, would have reduced returns on safe assets, such as government bonds, and induced investors at the margin to rebalance towards riskier assets, such as equity and corporate debt. The rise in such asset prices would eventually have helped to restore collateral values, slowing the spiral of rising bankruptcies.

Following the panic beginning on October 22nd, the task of restoring confidence is far harder. With asset prices so much lower, the bad loan position of the banking system looks worse, and with it, the potential burden on tax payers. The damage for the UK looks particularly severe, with its debt and housing market vulnerability - reflected in the sudden decline in Sterling and in Treasury gilt prices.

Conclusion: Scrap the models and agree on a big, coordinated rate cut.

Why Europe's key central banks made this potentially catastrophic error is a long story. One reason, however, rests in their econometric models, based on fashionable but outdated economic theory.

It is deeply ironic that central bankers who rightly have made much of the moral hazard of bailing out private bankers, have adopted central bank models excluding channels for real world moral hazard and credit crunches. These models are overdue for the scrap heap. Central banks making policy without functioning models are like aeroplanes flying without radar, and the consequences are now obvious.

They now have a last chance to undo the damage of last week. They need to put aside short-term currency wobbles, focus on the big picture and surprise the markets with a much larger cut, probably of 2 percentage points. If international co-ordination is now harder to achieve, then leadership by the ECB and the Bank of England will have to suffice.

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Gros and Micossi: Crisis management tools for the euro-area

30 September 2008

Europe's largest banks are highly leveraged and thus vulnerable, as Fortis showed. But some of these banks are both too large to fail and too big to be rescued by a single government. The EU should: (1) urgently pass legislation to cover banks with significant cross-border presence and empower the ECB to provide direct support, and (2) create an EU-level rescue fund managed by an existing institution like the European Investment Bank.

Europe's universal banks were supposed to be immune to the fallout from the subprime crisis.

We now discover that any financial institution – universal bank or not – is vulnerable if its leverage is high enough – as is the case for Europe's largest banks. As we pointed out 10 days ago, Europe's banks are too big to fail but also too big to be rescued by any single government. The unfolding of Fortis illustrates vividly the weaknesses and hurdles of raising adequate defenses against a fully-fledged banking crisis in the euro-area. This is an area where urgent EU action is needed.

In the case of Fortis, no European solution was possible. The ECB can only provide liquidity against collateral to keep the money market functioning. It has no powers to resolve a solvency crisis. In the absence of a European Treasury, such operations can only be done by national authorities. But national authorities tend to think nationally and are naturally reluctant to pay for the rescue of banks abroad. In the case of Fortis it was relatively easy to cut the bank into three pieces, but this would be more difficult with other large EU banking groups.

Foreign affiliates and banking crises

A key difficulty is that large European banks typically have subsidiaries – separate legal entities – with separate balance sheets in every country where they operate. However, asset and liability management is centralized. Cash and liquidity reserves are also managed centrally and these assets may be ordered back to the mother-company at times of stress. In such cases, subsidiaries receive paper which can become worthless if the bank becomes insolvent.

Given this, burden sharing among national treasuries is controversial in cases of bank failure. Disputes can delay timely decisions. Issues surrounding the equal treatment of creditors and depositors in the different countries can add layers of complexity.

In the case of Fortis, the three governments – Belgian, Dutch and Luxembourgish – choose to inject capital into the subsidiaries on their territory, thus effectively creating 3 separte, state-owned banks. This is no doubt a harbinger of the Balkan-isation of the EU banking system that might spread like a forest fire unless decisive action is taken immediately.

EU policy makers need to take two steps quickly:

- First, a new EU 'Statute of Union' for chartered banks should be established for banks in the EU/euro-area with "significant" operations in more than one member state. This could be done by Regulation adopted by the Council of Ministers.

These banks would be subject to fully consolidated capital requirements and supervision. In exchange, they would have direct access to ECB liquidity support – support they could count on even in case of a severe, bank-specific crisis. By the same legislative act, a new supervisory authority should be created in Frankfurt – preferably at the ECB – but in any case it should be legally obliged to cooperate fully with the ECB in all its activities.

- Second, an EU-level contingency fund for rescue operations should be created at the European investment bank (EIB).

The EIB already is a public agency and issues publicly guaranteed bond to finance its operations. Its Board of Governors is made up of the ministers of finance of all EU members and they hold the purse strings. Given that this infrastructure is already in place, the rescue fund could be operative within weeks. Policy makers only need to give the EIB the power to take equity stakes in financial institutions under clearly defined circumstances. When these circumstances materialize, however, the EIB should have full power to act without further government interference, issuing (guaranteed) bonds as required to finance the operation.

One could even go a step further. The EIB and/or ECB could be allowed to act preventively to stop contagion, or at least make it less likely. They could do this by forcing highly leveraged EU banks with significant cross border operations to recapitalize themselves or accept public funds. For instance, a capital injection of €280 billion would be sufficient to reduce the leverage ratio of the 10 largest euro area banks from its current value of 33 to below 20. This would underpin confidence and thus reduce the risk of massive liquidity withdrawals by depositors. Such an investment could be unwound once distressed conditions in financial markets started to ease.

Of course, support by the EIB must come with strings attached to preserve the value of the public investment and to make sure those who mismanaged pay the consequences. Thus, the price paid for the (preferred equity) public sector stake should fully protect the value of the investment, and management should be changed. Enhanced controls and supervisory procedures should be envisaged during the period of EIB support.

Conclusion

We are living in extraordinary times. The uncertainty created by the US Congress's rejection of the Paulson Plan will render the market environment even more forbidding for European banks. Policy makers in Europe cannot continue to muddle through. They need to rise to the occasion. The implementation of these simple proposals would put them ahead of events in the unfolding crisis.

Being behind the curve is extremely costly – a fact that US taxpayers have discovered in a spectacular and exceedingly expensive manner over the past two weeks.

Editors' note: This is an updated version of a column that appeared today in the *Financial Times* newspaper, 30 September 2008.

Di Noia: A proposal on financial regulation in Europe for the next European Council

20 October 2008

The current crisis has exposed the poor organisation of financial supervisory responsibilities, as central banks, EU ministers, and treasury authorities fought to respond appropriately. This column argues for the reorganisation of the European financial regulatory apparatus using a "four peaks" approach that horizontally divides responsibilities according to objectives.

World leaders, after a false start, have made decisions that at least give us a chance of getting past this crisis. Now is the time to start thinking about how to reduce the risk of finding ourselves in the same situation in the future.

Many troubled intermediaries violated no rule or regulation. It is certainly right to replace greedy managers. The same decision should be taken for those responsible for designing the wrong rules for bank capital, rating agencies, and accounting standards. The same approach should be taken for supervision: those who did not abide by the rules must be severely punished, along with those who were not able to supervise.

Who is in charge?

The crisis calls into question the efficacy of both the "horizontal" allocation of competencies among different authorities (fragmentation in the US or the single regulator in many EU countries) and the "vertical" distribution of competencies, where only national entities appear to be in charge of supervision (in the US there is a mix of federal and state competencies on banks while only states supervise insurance; in Europe, lacking a political and fiscal union, the agencies are basically all at the member state

level). The central banks' role swings from monetary policy to lender of last resort to policy-maker, as we have observed over the last year and more so in the past few weeks.

In the beginning, UK central bankers panicked in the face of a textbook bank run. Then, all authorities hysterically moved to restrict short selling. Late night meeting of EU ministers to bail out transnational banks, frantic decisions across Europe to raise deposit insurance coverage beyond credible levels, and guarantees for all interbank loans followed. Looking at the ways such policies have been used for recent bailouts has raised doubts about their efficacy. All the traditional instruments have been exploited (sometimes in a creative way or mixed together): direct government intervention, central bank intervention, deposit insurance, and other guarantees. All kinds of intermediaries are involved: commercial and investment banks, investment and hedge funds, investment firms, and insurance firms. The traditional three-way division of the financial system into banks, capital markets, and insurance has been finally defeated by the events.

The huge need for fresh capital (through direct injection of capital or loans, the purchase of toxic assets, new rules on deposit insurance, etc.) remind us of a simple concept: bailouts must ultimately be the responsibility of the government, only possibly assisted by the authority and the central bank (which are independent agencies). On the contrary, bail out decisions are often taken by central banks, as lenders of last resort, or competent authorities (sometimes central banks), who should have been, on the contrary, supervising the entity so that it did not go bankrupt. Furthermore, no lender of last resort has the access to the money needed for direct intervention in extreme cases: the net result of the Fed's intervention in the AIG case is its loss of independence from the US Treasury.

Central banks and competent authorities already have too many conflicts of interest in carrying out different objectives (macroeconomic stability, prudential supervision, investor protection or competition). They are worse if those objectives are those of the policy maker (national interest, bailing-out of a big intermediary). Furthermore, national and international coordination among authorities is slow and cumbersome, with hundreds of bilateral and multilateral memoranda of understanding or colleges of supervisors on financial conglomerates. The Level 3 Committees (Cebs, Cesr and Ceiops), in spite of excellent but limited permanent staff, depend wholly on their constituent authorities and have rigidly tripartite competence (banks, securities and insurance) according to an obsolescent framework.

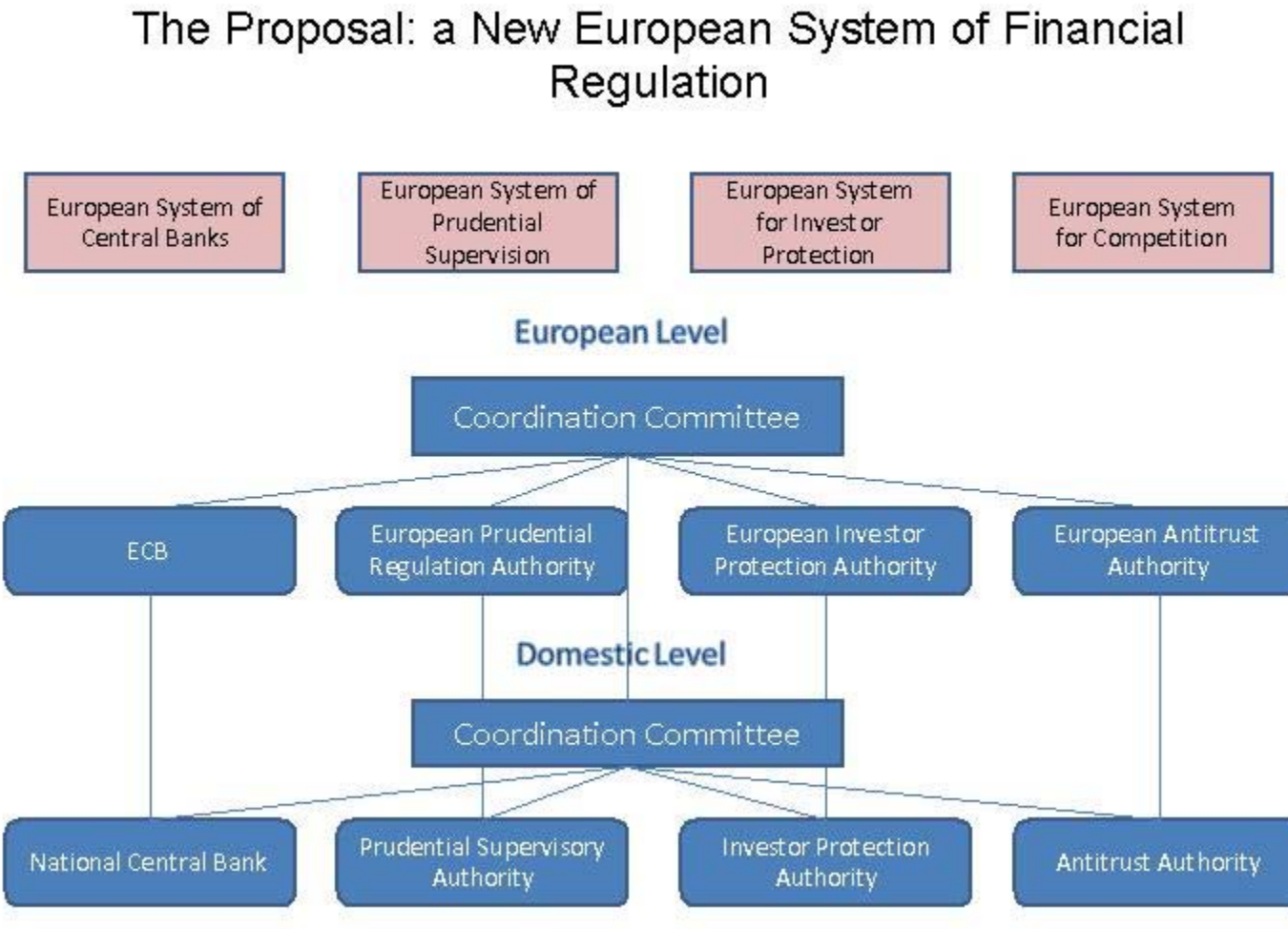
In spite of progress in recent years, the system is still unable to effectively respond to the challenges of a largely integrated market. This has two regrettable consequences. It offers inadequate protection for investors and citizens (taxpayers) and it creates an extra regulatory burden entailing a loss of competitiveness for financial industry.

It is too early for one (or more) central regulator (s) and supervisor (s) at the European level. Lacking a political union, still too many different rules exist (commercial codes, company laws, failure procedures, corporate governance) and policy-makers and taxpayers remain national. But is certainly too late to keep only national authorities.

Reorganising financial supervision into four peaks

Something can be done. A feasible solution, already suggested some years ago[24] and identified as the optimal long-term regulatory structure by the Paulson report[25], is the four-peak model (see Figure 1). Regulation and supervision should be arranged horizontally by objective – separate agencies should be in charge of macroeconomic stability, microeconomic stability, investor protection and competition for all intermediaries including insurers. Each of these objectives should also have a federal structure, with a structure similar to the one established for the European System of Central Banks (ESCB).

Figure 1 The proposal: a New European System of Financial Regulation



[24] Di Noia e Di Giorgio (1999), *Should Banking Supervision and Monetary Policy Tasks be Given to Different Agencies*, International Finance; Di Giorgio e Di Noia (2001), *Financial Regulation and Supervision in the Euro Area: A Four-Peak Proposal*.

[25] Department of Treasury (2008), Blueprint for a modernized financial regulatory structure.

The ESCB should have responsibility for macrostability issues and lending of last resort throughout the EU – not just the Euro area, so to avoid awkward meetings with UK fellows.

Then a European System of Prudential Supervisors should be established, using possibly the expertise of the ECB, national central banks, Cebs and Ceiops. The system should denote a central entity in charge of the prudential regulation of all intermediaries and of the coordination of the national authorities, possibly designed by objective in each country. The national prudential supervision authorities should be in charge of all supervision but not regulation.

The third peak should be a European System for Investor Protection. The structure should be similar as above. A central entity, exploiting Cesr expertise, should be in charge of all regulation of conduct-of-business rules of all intermediaries, including insurance and pension funds, transparency of all financial products (from banking deposit to insurance contracts), and issuers and markets. Some supervision should be exercised in case of multinational intermediaries or issuers. National authorities should focus only on supervision.

The fourth peak, that of competition, already exists with a central entity (DG Competition) supervising relevant operations while national authorities supervise smaller operations.

Apart from this vertical form of coordination, cooperation would be also desirable horizontally, at both the European and national levels. This coordination, and resolution of eventual controversies could be provided by special Commissions for the Supervision of the Financial System established at the EU Council Level (with the Commission, too) and at national treasuries.

How to implement it? Many difficulties are obvious. Treaty changes are complicated (but why not explore the route of intergovernmental agreements?). Commission or EU regulation must be carefully analysed, as well as the possibility offered to the Council by Article 352 (ex Article 308 TEC) of the Treaty.[26] The opposition of existing central bank and national supervisors to some centralisation and redesign of competencies at national level is enormous.

The existing crisis offers the (hopefully last!) occasion to act in order to increase the efficacy of financial supervision, simplifying the complex architecture of existing authorities. In the US, Secretary Henry Paulson did not dare to put a single word of his Blueprint in the TARP. And in Europe? The "financial crisis" cell[27] created by the European Council two days ago is not sufficient; let's do something more!

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[26] If action by the Union should prove necessary, within the framework of the policies defined in the Treaties, to attain one of the objectives set out in the Treaties, and the Treaties have not provided the necessary powers, the Council, acting unanimously on a proposal from the Commission and after obtaining the consent of the European Parliament, shall adopt the appropriate measures.

[27] See http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/103441.pdf

Pagano: The European response to the crisis: Not quite there yet

17 October 2008

EU leaders have agreed on a bail-out plan but much is still unknown about its details. How will governments act as equity shareholders? Who will deal with cross-border banks? This column discusses the need for a Euro-area bank supervisory authority, as financial integration has outpaced regulatory integration.

At last, European countries appear to have realised that the solvency problem at the heart of the current crisis goes well beyond their national borders and requires cooperation. After a week of collapsing stock markets and rising fear of widespread bank defaults, the leaders of the 15 euro-zone countries have reached an agreement on a plan that follows the broad outline of the British bail-out plan – governments will buy equity stakes in banks and will guarantee new borrowing to unblock the interbank market. Together with the announcement that the ECB will create an unsecured lending facility to purchase commercial paper by banks, this plan has finally managed to instil some confidence into the markets, as witnessed by the immediate jump of stock prices.

Devil in the details

Of course, while the broad lines of these interventions are clear, much is still unknown about their detailed design and implementation – and this is a case where the devil is in the details. How will each government determine the equity stakes to be bought in distressed banks? Clearly, governments should not bail out all banks irrespective of their degree of solvency. The same issue arises for the provision of loan guarantees and the purchase of commercial paper from banks. Presumably equity injections and loan guarantees should be implemented in close cooperation with the relevant banks' main supervisors, as already argued by Javier Suarez.[28]

But other "details" are no less important for the long-term outcome of the bail-out. What will ensure that these equity injections and the implied partial or total nationalisations of European banks will not take us back to the era of widespread state control over banks? In the UK, Germany, France and Italy (as well as in the US), governments are pledging that they will take equity stakes in the form of preferred shares and that they regard this as a temporary investment, to be eventually sold back to the market once the crisis is over. But are such pledges common to all of the Euro-area governments? And in the countries where governments made them, what guarantees that they will be upheld, and over which time horizon?

Governments as passive investors

A related question is whether governments will behave as passive investors or wield some control over the key decisions of the banks that they bail out. Historical experience from past crises shows that governments tend to take an active role in controlling the

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[28] See Javier Suarez, "The Need for an Emergency Bank Debt Insurance Mechanism," CEPR Policy Insight No. 19, March 2008.

institutions that they bailed out. This applies, for instance, to the Reconstruction Finance Corporation created by President Herbert Hoover in 1932 and to the Institute for Industrial Reconstruction (IRI) created in Italy during the Great Depression. It also applies to the more recent experience of Sweden's financial crisis in the early 1990s, when the government bailed out the country's banks, replaced their executives, and forced mergers among them to strengthen the survivors. But if governments are going to have such sweeping control rights, it would be important to indicate clearly how they will use them. For instance, will they be entrusted to bank surveillance authorities or will they rather stay directly with the governments?

Put bluntly, what will prevent reverting to a regime where politicians extract huge rents from the control of banks or mismanage them, as used to happen in much of Continental Europe before the privatisations of the 1980s and 1990s? Clearly, this question is closely tied to the credibility of government's exit as a shareholder. If we go back to a regime where politicians can extract control rents from banks, governments will find it hard to surrender such control once the crisis is over, as witnessed, for instance, by the fact that IRI kept controlling stakes in the largest Italian banks for over half a century after the Great Depression.

The answers to these questions will shape the structure and working of European financial markets for a long time.

Bailing out big, cross-border banks: Create a supra-national authority

There is also the all-important issue that unfortunately European leaders have completely disregarded so far – how to deal with the bail out of large banks with extensive cross-border activities and subsidiaries. European governments have decided to implement the bailout plan at the national level rather than create a common authority to attack the problem at a supra-national level. This is probably an efficient solution for most Euro-area distressed banks, which are small or medium institutions with little or no cross-border operations. But it is totally inadequate for those few large banks with extensive cross-border operations and subsidiaries, whose solvency is crucial for the systemic stability of the European credit market. If any of these banks were to experience solvency problems, we would need a fast and commonly agreed procedure to determine how the governments of the various countries involved should intervene and share the burden of the bail-out.

The best way to face this formidable challenge would probably be to create a supra-national authority to coordinate the bailout. Of course, designing the rules to determine when such an authority should bail out a cross-border bank and how the implied costs are to be shared across EU member states is no easy task. One can think of alternative sharing rules. For instance, the burden to be paid by each government might be set on the basis of the balance sheets, the share of risk-weighted assets, or the share of regulatory capital of the various subsidiaries. The design of these rules will have important implications for the incentives of the managers of these banks and, most importantly, for European taxpayers. But, for all their technical difficulty and political sensitivity, these issues can no longer be dodged. If one or more of euro area's largest cross-border banks turned out to be insolvent, this limitation of Europe's policy response would become tragically apparent.

Set up an embryonic Euro-area bank supervisory authority

Taking up this challenge would be a golden opportunity to create the embryo of a future Euro-area bank supervisory authority, capable of monitoring the risks being taken by the few large European banks with large cross-border operations, while leaving the many purely national banks of the Euro area under the surveillance of the corresponding national supervisors – an idea that has already been repeatedly proposed by Tommaso Padoa-Schioppa.[29] Hopefully the crisis will induce governments to recognise that, in its current incompleteness, European monetary and financial integration is in a potentially unstable situation. We have created a single, integrated financial market where the operations of the main players naturally transcend national boundaries. Yet, we have so far failed to complement this construction with its natural counterpart – a supra-national surveillance authority for Europe's supra-national banks. This half-way stop is a very dangerous one. Precisely because the current situation poses substantial risks for the European banking system, it can also become a unique opportunity to secure European financial integration on much firmer grounds than it currently is.

Rossi: Finance, market, globalisation: a plot against mankind?

20 November 2008

Finance, the market and globalisation are at risk of being jointly demonised by the crisis. This column argues that the these three elements are neither good nor bad; they are just opportunities for individuals, for societies and for economies that must be understood and regulated.

A critical rethinking of finance has been prompted by the present crisis. It is also implicating the very notion of the market economy and the globalised form that it has taken in recent years. Finance, the market and globalisation are at risk of being jointly demonised, including by normally moderate observers of economic affairs. Recollecting a few basic arguments in favour of the trio may not be useless at this juncture.

Finance: *instrumentum diaboli*?

At its core, finance is first and foremost a mechanism for shifting purchasing power over time.

Lending is an ancient human activity. Embedded in it is the suspicion of immoral conduct on the part of the lender, seen as the one who, for personal profit, either encourages the borrower's spendthrift ways or exploits the borrower's genuine needs. Which is why in some human communities, at certain times in the past but also today (for example in the

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[29] See Tommaso Padoa-Schioppa, "Europe Needs a Single Financial Rulebook," *Financial Times*, 11 December 2007, p. 13.

Islamic world), charging interest on money loaned was/is forbidden by either law or religion.

The very concept of money was probably devised at the dawn of humanity along with that of credit, and perhaps even at its service, as a means of transferring spending power over time by detaching it from any specific physical good. Money flanked and possibly surpassed credit as a source of negative symbols in the popular imagination.

Yet money and credit are part of what has enabled human beings to free themselves from the barbarism of immanence, from the savagery of a life ruled by the consumption for survival, which is spent in an instant. They teach man to think about the unfolding of time and they do so by appealing to the most powerful of all psychological levers, that of desire and need. Learning how to project a desire into the future or to predict a need is a fundamental step in evolution. It pushes people to design a method for satisfying future desires or needs, and that method is saving. If everyone's savings is lent to someone else, both the personal (if the loan is interest-bearing) and the social utility are augmented, because two ends are simultaneously met: that of investors who have in mind their future consumption (needs-desires) and that of those who instead require additional immediate purchasing power, motivated by the mere urge to consume, but possibly – and this is the most socially interesting case – by the desire to increase their own productive capacity, and therefore by a plan that is equally far-sighted and future-oriented.

In a monetary economy, finance – consisting of markets and intermediaries whose job is to assure the optimal allocation of resources and risks – is what makes the saving-credit-investment gears turn. It is one of humanity's great intellectual achievements. Yet it does not enjoy the universal admiration accorded to such other intellectual watersheds as the wheel or the number zero. The problem is that everybody can use the wheel and the number zero profitably, easily and naturally, while by definition finance creates a conflict of interest between two major, and equally deserving, categories: lenders and borrowers. The first group will want to see high interest rates and broad guarantees, be they real collateral or based on reputation. The second group will want low interest rates and the possibility of providing the minimum possible guarantees.

The unalterable fact that the objectives of these two groups are, at least in part, conflicting leads to tensions being inevitably offloaded onto professional intermediaries. They always run the risk of being seen as parasites who are happy to sit back and let others toil – the people who produce tangible goods and save up to ensure that they can retire in peace – before fleecing them mercilessly. It must be acknowledged that the victims of this prejudice often do practically nothing to dispel it; indeed, at times their conduct seems designed to lend it credence. Evident examples of this are to be found in the current global financial crisis.

Yet, the pivotal role of finance in our lives has never been apparent as in the present turbulent days.

Market: did it fail?

In this crisis, who has failed, State or Market? I argue that it is more a State failure, but by virtue of a paradox. One firmly established conclusion of centuries of economic science is that the market must be "regulated" or it is no market. If the government

practices absolute laissez-faire, the free competitive market cannot last; it is strangled by the monopolistic spirit of operators. This is a law of nature, a sort of economic entropy. The pure competitive market is the optimal regime from the standpoint of "buyers," i.e. the community as a whole, but the worst possible for the "sellers," a powerful minority constantly trying hard to oppose it. Such a market is a limiting condition that the public authorities may seek to approximate only by virtue of unflagging effort. Clear, comprehensive, specific rules are essential; and farsighted, attentive regulators and supervisors who cannot be captured by the "sellers" are indispensable. They must obviously be efficient: the burden of the regulatory apparatus that inevitably weighs on private agents ought to be non-distorting, light and non-bureaucratic. But we cannot do without it.

This forms the essence of what to my mind is the most advanced contribution of liberalism to economic thought. Nobody should confuse the great principles of liberty with the arbitrariness of complete laissez-faire. Eighty years ago, an Italian champion of liberalism in politics and a neatly pro-free-market economist, Luigi Einaudi, wrote:

The maxim of economic liberalism (is) taking on a third – I would call it a religious – meaning. In this interpretation, "economic liberals" are those who accept the maxim of laissez-faire, laissez-passer almost as if it were a universal principle. (…) The whole subsequent history of the doctrine demonstrates that economic science (…) has nothing to do with the religious conception of economic liberalism.[30]

The "religious" notion that Einaudi stigmatised so scathingly was resuscitated in the second half of last century, as the consequence of a debate on the foundations of public economy. The standard theory of regulation as fundamental to the public interest came under increasing criticism in the 60s, and gave way to an alternative view, according to which markets themselves, or at the most civil courts, can remedy virtually all market failures, whereby government is necessarily incompetent, possibly corrupt, and "captured" by the very interests it is supposed to regulate, so it can only make things worse.[31]

The schools of thought backing this view are unquestionably among the high points of twentieth-century economics.[32] Unfortunately, in the last twenty years, especially in

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[30] L. Einaudi (1931), "Dei diversi significati del concetto di liberismo economico e dei suoi rapporti con quello del liberalismo" in B. Croce and L. Einaudi, Liberismo e liberalismo (Ricciardi: Milan and Naples, 1988). English translation in Luigi Einaudi, Selected Economic Essays (Palgrave Macmillan: Basingstoke and New York, 2006), pp. 75-76.

[31] This critique is ordinarily associated with the Chicago School of Law and Economics and with such economists as Ronald Coase, George Stigler and Michael Posner.

[32] However, the critique has in turn been criticized both in theory and empirically. On the empirical side, in particular, it has been noted the strident contrast between the doctrine's precepts and the reality of a world at once far wealthier and far more extensively regulated than a hundred years back. See A. Shleifer (2005), "Understanding Regulation," European Financial Management, 11, 4, pp. 439-451.

Britain and America, that view has been used to forge a properly religious dogma, as Einaudi understood it, and the policies today under indictment were born of that religion. The global financial crisis of these past two years turns the empirical evidence overwhelmingly against it. The fundamental problem underlying the crisis has been one of rules and their effective application. The laissez-faire fundamentalists may be seen paradoxically as State interventionists, in that they wanted the government, allying with vested interests, to purposely deprive the competitive market of the air it breathes, namely rules and supervision. If this view is correct, by a twist of language we can call it a State failure: a failure by inaction, not excessive action, due to the refusal to see, to counter or to correct an evident series of market failures.

Globalisation: the accomplice?

In the frenzied hunt for a scapegoat during this delicate conjuncture, there has been no lack of anathemas proclaimed against globalisation. In past years detractors and enthusiasts of globalisation have squared off for some time, but the former are rapidly gaining ground since the outbreak of the financial crisis.

The complaints have tended to be mixed up: the Chinese are waging unfair competition against me, the price of petrol has doubled, I find a toxic asset in my securities portfolio that I didn't even know I had, my banks is making trouble about giving me more credit since it is unable to procure liquidity in a global market paralysed by mutual distrust. All this, most people have been thinking, should have something to do with globalisation.

The problems are serious and concrete, but the target is too generic to be useful. Globalisation involves various aspects: production, trade, finance, migrations, the diffusion of ideas and knowledge. These aspects all have one characteristic in common: the heightened mobility made possible by the ICT revolution. Technology, then, is the prime mover, even if the trade and financial liberalisation policies adopted in many countries in the 1990s assisted the process.

In effect, globalisation and innovative finance are two sides of the same coin minted by technological innovation. Because of that deep nature, they are neither good nor bad, they just represent an opportunity for individuals, for societies, for economies; they must be understood and governed, and cannot be stopped, except at the cost of accepting backwardness and marginality.

Disclaimer: The opinions here expressed are only the author's and do not involve, in particular, the Bank of Italy. An extended version, in Italian, of this note is forthcoming in: Il Mulino, 6, 2008.

Gros: Can Europe take care of its own financial crisis?

12 October 2008

Europe's new crisis plan will hopefully stop the panic. This column explores the remaining issues – the sharing the burden of transnational bank losses and restarting the inter-bank lending market. It suggests a technical change to the guarantees that would produce a better result.

The title of the press release from the emergency Euro area summit is already muddled – "A concerted European action plan of the euro area countries". The outcome of this extraordinary summit was neither an action plan, nor was its contents really specific to the euro area countries.

The limited results of two emergency summits in Europe show how much more difficult it is to manage a banking crisis in an area in which there is no fiscal solidarity and even limited regulatory convergence. One cannot just translate the lessons from past crises, almost all of which were at the national level, to formulate a European response to the current financial turmoil.

One general lesson from past crises is that it is imperative to avoid a generalised bank run. Hence it was certainly useful for the euro area summit to state the obvious. European governments will not let any systemically important bank fail. This is not news, but its restatement should still contribute to reduce the sense of panic prevailing in financial markets.

The real issue in Europe had always been the question of burden sharing – i.e. who pays for the losses at a trans-national bank. The case of Fortis does not constitute a good precedent, as this issue was not really settled. Moreover, the different pieces of Fortis had not yet been tightly integrated, so it was still relatively easy to cut the bank into three parts operating (now independently) in the three Benelux countries. This is one way in which the current situation is different from national banking crisis.

While stopping the panic was the immediate priority, the real question is whether Europe can now avoid a credit crunch, i.e. a sharp slow down in bank lending. A credit crunch would lead to a large loss of output, but this seems unavoidable as banks will now feel that they first have to rebuild their capital and their liquidity before they can extend new credit.

This issue is particularly acute for the inter-bank market, and its urgency is by now understood by all policy-makers. The inter-bank market has become dysfunctional almost everywhere. This market is important because it channels funds from banks that collect more deposits than they can usefully lend out to banks that have more credit-worthy customers than deposits. If this distribution mechanism does not work, banks with few deposits must cut lending (making the second problem much worse).

How to revive the inter-bank market?

How to revive the inter-bank market? The crisis has now become so acute that banks refuse to lend short even if they have the funding. Eurozone banks prefer to deposit surplus funds at the ECB's low yielding deposit facility rather than to lend to other banks. The ECB has *de facto* become the clearing house for the collateralised inter-bank market in the euro area. This part of Europe is working. However, the normal, unsecured, inter-bank market remains frozen.

Breaking the negative feedback: The need for European cooperation

This issue needs to be tackled, but no country can achieve it on its own since the bulk of the inter-bank market is spans national borders. This is another difference between national banking crises and the current situation in the euro area. What is needed is a coordinated approach, as proposed by the UK – but at the euro area level. The 'action

plan' of the euro area countries emphasises this point, but it seems to be headed in the wrong direction.

Experience has shown that under present circumstances any additional funds pumped into banks will be hoarded rather being lent onward in the inter-bank market. The reason is quite simple: banks refuse to lend to other banks even if their counterpart appears to be safe because in a world in which other banks do not lend even to safe banks, even safe banks can become illiquid very quickly. This negative feedback loop must be broken.

Even with the vague government guarantee now extended by most governments to all systemically important institutions, banks will still remain reluctant to lend to each other even if all banks in Europe might now be "government-sponsored entities" as Fannie Mae and Freddie Mac used to be called in the US. Most inter-bank lending in Europe is cross-border and a guarantee by a foreign government is never perceived as good as a guarantee by the own government. This is yet another difference between a national bank crisis and the problems of the euro area.

Moreover, even if the blanket guarantee for banks in Europe were perceived as rock-solid, the key point remains that banks all over the world now place an extremely high premium on liquidity. This implies that banks are likely to hoard the additional liquidity they can obtain through the debt they can issue with a government guarantee. The experience of Japan has shown that even pumping enormous amounts of liquidity in the banking system may not be sufficient to get credit flowing again.

A different approach would have been much better. Each government should guarantee its own banks reimbursement of inter-bank loans, including cross-border loans, if they are to a bank from another country that participates in this scheme. Thus this guarantee scheme would apply to the asset side of banks' balance sheets. This is an important difference from the current thinking to guarantee the *liabilities* of banks. Guaranteeing their liabilities makes funding easier, but as argued above, is no guarantee that credit actually increases.

The guarantee for inter-bank lending proposed here would presumably be valid for a limited time and governments could charge appropriate fees (as would also be the case in the guarantee of banks' liabilities contained in the euro area approach). But given current levels of the cost of protection against counterparty default in the banking system, this fee could be substantial enough to provide a comfortable insurance premium for the protection of tax payers without choking off the market.

The objection of (national) finance ministers will of course be that this exposes them to a risk that originates potentially in another jurisdiction. In reality this risk will be quite limited because the euro area leaders also decided to shore up their large banks and prevent bank failures.

Moreover, losses from housing related activities seem relatively minor in Europe (except Spain and Ireland). This implies that the key issue in Europe is not how to make up massive losses, but how to resolve a coordination problem which has led to the disappearance of the vital inter-bank market.

Missed opportunity

Euro area countries had the chance to agree on a specific action for the euro inter-bank market. They got one important technical detail wrong. In principle, this should be easy to correct. But in reality this will be very difficult, as all national leaders now have to implement the common approach at home. Once one or two countries have started implementation, it will be extremely difficult to change tack as these countries will naturally not take it kindly if they have to go back to their national parliaments. Once a general principle has been set, it becomes extremely difficult to change. In a national context the direction of action can be changed much more quickly to adapt to quickly changing circumstances. Witness the UK (or Germany) where a national administration performed a complete U-turn in a very short time.

One should thus be cautious in applying the lessons from previous crises to the European context. Certain issues are specific to Europe and certain solutions, which might be desirable, are not politically feasible in an area that adopted a common currency hoping that the absence of fiscal solidarity would not be tested by the markets.

Persaud: The financial crisis may hasten European integration but slow global banking

6 October 2008

The liabilities of the biggest US bank equal half the US tax revenues; the ratios in Europe are bigger. Deutsche Bank's liabilities are one and a half times Germany's annual tax revenue; Barclays' are twice Britain's. This crisis will either leave European financial integration in tatters or quicken the development of European fiscal capacity. European integration is a historical process that routinely stumbles upon crises that threaten to destroy it, only to find that it has been deepened by the crisis.

One of the interesting and perhaps sad lessons of last weekend's mini-summit of European leaders in Paris is that Europe's predicament has been made worse by allowing financial integration to run ahead of fiscal integration.

Financial integration got ahead of Europe's governance capacity

The logic at the time was that financial integration would reinforce the single market and facilitate economic integration. The consequence is that Europe now has financial institutions that are large relative to individual member states. European financial institutions funded the acquisition of cross-border assets through the money markets (since regulators make it expensive to acquire deposits). Now the money markets have frozen and these institutions are too large for taxpayers in their home country to rescue.

Europe's national leaders don't have the tax base for a US-style bailout

Individual European states could not agree to a US-style bail out over the weekend because they do not have the tax bases to do so. The liabilities of Bank of America, the largest US bank by balance sheet, are approximately half of the annual tax revenues of

the United States. That is a big ratio, but it is dwarfed by the ratio of liabilities to home tax revenues of Deutsche Bank at one-and-a-half times, and of Barclays at two times.

The currency markets have followed the scent of this fiscal issue ever since the US began considering Treasury Secretary Paulson's Plan. The Euro lost 5% in a little over a week against the US dollar. But the problem may not be as bad as the currency markets think. Big government can make big mistakes. Far from enviable, the US approach may prove to be expensive folly. It is far from clear that Paulson's Plan will trigger private investment into banks, and if there is none, US Treasury purchases of troubled assets above market prices is an expensive way to inject new capital into the banks. I suspect Europe will eventually stumble towards solutions to the credit crunch that are better for being constrained by Europe's national budgets, but can nevertheless operate effectively at the European level.

Better than Paulson's Plan: Capital injections and debt-equity swaps

One idea that is emerging from the weekend discussions is for European governments to offer an injection of equity capital into institutions that seek assistance. I would add that as a condition of doing so, they should negotiate a partial debt-for-equity swap of the bank's creditors.

Getting sufficient capital is the problem that banks have today – we have moved on from the liquidity problem of the last eighteen months – and injecting capital is far less expensive than buying assets. The US is taking advantage of its tax base more than it should. Using the promise of an equity injection as a lever to negotiate a restructuring of bank debt will also help European taxpayers share this lower burden of bank rescues with bondholders. Recall that bondholders were paid to take the risk of bank failures.

Addressing government control issues with European-level institutions

Many thorny issues arise when governments start taking equity stakes in local banks. This is one of the reasons why the US authorities decided to be indirect and buy bank assets instead. But Europe has the potential to do this one step removed from national governments in a way that the US may not have been able. European governments can increase the capital subscription of the Luxembourg-based European Investment Bank to fund capital injections into banks. The weekend meeting already sanctioned a €30bn EIB fund to help small businesses hit by the credit crunch. While the process could not be de-politicised, the EIB or a new cousin can act more independently of national governments and more consistently across them.

Limits to global finance: The tax base

But the most interesting lesson of this phase of the crisis is that there is a greater limit to the globalisation of finance than we thought. The constraint is in a different direction than previously imagined – the taxpayers' guarantee.

This will cause a reappraisal of a few global banking brands. It also casts a new light on the viability of offshore financial centres. In Europe's case, it either leaves financial integration plans in tatters, or it quickens the development of a European fiscal capacity. For good or for ill, I would bet on the latter. The history of European integration has been that the process routinely stumbles upon crises that threaten to destroy it, only to find that

it has been deepened by the crisis. The euro's arrival probably required the near collapse of the European Monetary System in 1992-1995.

Gros and Micossi: A call for a European Financial Stability Fund

30 October 2008

The euro is plunging and EU banks are coming under renewed pressure. There is a strong demand for 'European' bonds as well as a need for massive government capital infusions to prevent the crisis from getting worse in the banking sector and the European periphery. This is why the EU should set up a massive European Financial Stability Fund.

The plunging euro

Why is the euro plunging against the dollar and the yen? Why are European banks coming under renewed pressure? Should the emerging financial and foreign exchange crisis of countries gravitating around the euro lead to new EU policy instruments?

The euro is plunging against the dollar because investors, in their scramble for safety and liquidity, are flocking to US and, also to some extent, Japanese government bonds which are considered safer and more liquid than other government-backed paper available in the market – including public debt instruments issued by European governments. In other words, the constellation of separate markets for sovereign debt paper of unequal quality issued by European governments cannot compete with the US market for the huge global financial flows in search of a safe harbour. Until the EU develops a unified market for bonds denominated in euro and backed jointly by EU member states – or, better, by euro-area member states – its claim for the status of reserve currency for the euro will not be met. As a result, capital is not coming to Europe, where it is badly needed to shore up its shaken financial system; moreover, the US will continue to dictate the agenda in international monetary affairs, even now, after the colossal damage inflicted on the world by their misguided macro and regulatory policies. To add insult to injury the US government is now paying 2-3 percentage points less on its short term debt than even the most virtuous EU member states.

European banks under pressure

Second, why are European banks coming under renewed pressure, and how is this related to mounting pressures in countries gravitating around the euro? Worsening economic prospects are only part of the explanation. The deteriorating foreign exchange and financial conditions of satellite countries in the euro area – from the Baltic region to Eastern Europe, Turkey and Ukraine, not to mention the imploded Icelandic financial system – is also weighing heavily on EU banks' financial solidity since they provide the backbone of the banking and financial system in those countries, and therefore are now much exposed to the consequences of mounting capital flights and currency attacks in those countries. European banks hold over $1,500 billion of cross-border claims on emerging European economies (out of a total of $1,620 billion). When all European

banks run for the exit, they are increasing their own losses – thus fuelling the need for further recapitalisation.

There is no escape: the EU will have to take responsibility for the stabilisation of financial conditions in these euro-satellites and will need substantial resources to be able to do it – for emergency balance of payment assistance as well as direct provision of good government paper in exchange for flawed private claims, precisely as the US did with their Brady Bonds in the 1980s to resolve the Latin American debt crisis. The existing funds for Macro Financial Assistance that could be mobilised are much too small to have a substantial impact.

European banks are also coming under renewed pressure because the national rescue programmes put in place following the meeting of the Heads of State and Government of the euro area on October 12th are starting to look insufficient. One reason is their prevalent case-by-case approach, which has kept banks away from their governments' helping hand for fear of political interference in the choice of management or credit policies. This applies in particular to Italy and Germany, where the largest private banks have so far declined to apply for government capital infusions and guarantees because they fear heavy handed intervention by their national finance ministries. Another reason is that country-based rescue plans fail to provide convincing guarantees to depositors and investors in large cross-border banks where it is far from clear who will take responsibility for losses generated in an EU country other than that of legal residence. The near run on the branches of ING in Spain illustrates how deep this mistrust runs.

The way ahead

The way ahead has already been shown by the US and UK authorities with their de facto compulsory recapitalisation of all main banks – which was followed by a similar approach in France. The case-by-case approach must be abandoned and an ambitious capital target must be set for all EU main banks as was recently advocated by Wyplosz. Again, there is no need to tap national budgets in order to do so. EU government-backed bonds can provide adequate resources by making it possible to tap the gigantic global capital flows in search of safety; the euro and the credibility of the European financial markets would greatly benefit from these capital inflows.

The overall message from financial markets is that investors everywhere have developed a strong preference for public debt. In the US and Japan, public debt carries no risk because if needed the government could always force the (national) central bank to print the money needed to meet its obligations. But this is not the case in Europe since no European government can force the ECB to print money. For international investors there is thus no euro area government bond in which they could invest to diversify their risk away from the dollar.

We thus have at the same time strong demand for 'European' bonds and a need for massive government capital infusions to prevent the crisis from getting worse in the banking sector and the European periphery. This is why the EU should set up a massive European Financial Stability Fund (EFSF). The fund will probably have to be at least on the scale of the US Troubled Assets Relief Programme (TARP), say €500–700 billion. It would issue bonds on the international market with the explicit guarantee of member states. As the rationale for the EFSF is crisis management, its operations should be

wound down after a pre-determined period (5 years?). For global investors EFSF bonds would be practically riskless having the backing of all member states.

Setting up a European Financial Stability Fund

Setting up a fund with a common guarantee does not imply that stronger member countries would have to pay for the mistakes of the others since at the end of its operations losses could be distributed across member countries according to where they arose. But in all likelihood the Fund would not lose, but rather would make money, because its funding costs would be much lower than that of member states and because its existence would stabilise European financial markets. Germany, which so far has opposed this idea, might be the biggest beneficiary because German banks are likely to be its biggest customer, Germany's automobile industry would gain most from a stabilisation of the European banking sector and Germany's exporters would gain most from a stabilisation of the European periphery.

This Fund could be set up quickly at the European Investment Bank, which already exists as a solid institution with the necessary expertise. (Technically the EIB is an agency of EU governments whose board of governors includes the ministers of finance of member countries). A fund run be a European institution would lead to a different political economy dynamic since national finance ministers will have an interest to see it wound down once financial markets operate again normally. By contrast, it will be much more difficult to end national support schemes since no finance minister will want to be the first one to withdraw support for his or her national champions.

The resources available to the EFSF would be used mainly for bank recapitalisation, especially for those banks which rather 'gamble for resurrection' than accept the presence of heavy handed interference of national governments. Moreover, the EFSF could also beef up the funding of existing EU instruments for balance of payments assistance to the European neighbourhood. But a key consideration in setting up such an emergency fund should not be the problems that are already known. Given the unpredictable nature of this crisis, a key consideration should be for the EU to prepare for the 'unknown unknowns' that are certain to arrive sooner rather than later.

President Sarkozy has recently called for the creation of an economic government for the euro area. Under normal circumstances one would have replied that the economic governance of the euro area was assured by the independence of the ECB and the Stability Pact. This is clearly no longer sufficient when Europe is facing the worst economic and financial crisis since World War II. The speed and depth of the crisis have clearly overwhelmed the usual decision making mechanisms. Europe needs action on a scale that can only be decided at the highest political level.

Laeven and Levine: Governance of banks

29 September 2008

When the storm passes, bank regulation will top the global policy agenda. This column presents new evidence that a bank's private governance structure influences its reaction to bank regulation. Since governance structures differ systematically across countries, one-size-fits-all regulation may be ineffective. Bank regulations must be custom-designed and adapted as financial governance systems evolve.

Banks matter.[33] When banks efficiently mobilise and allocate funds, they lower the cost of capital to firms and accelerate capital accumulation. When banks allocate credit to entrepreneurs with the best ideas (rather than to those with the most accumulated wealth or strongest political connections) productivity growth is boosted and more people can pursue their economic dreams. And, when banks manage risk prudently, the likelihood of systemic crises is reduced.

Of course, banks are double-edged. Banks that collect deposits with one hand and lend to friends and political cronies with the other stymie innovation and growth, while enriching the elite. And banks that gamble, protected on the downside by a generous government safety net, too frequently have sparked devastating crises that have exacted enormous human costs in virtually every country.

In turn, bank regulations and governance matter. If official regulations and private governance mechanisms foster well-functioning banks, the probability of costly crises is reduced and economic growth is accelerated along with the expansion of economic opportunities.

Unfortunately, regulations and governance systems too often fail to promote sound banking as exemplified by the turmoil embroiling financial markets today.

Bank regulation and private governance: A critical, little understood nexus

In fact, little is known about how private governance mechanisms interact with national regulations to shape bank risk taking. Rather, researchers and policymakers have focused on using official regulations to induce sound banking, while largely ignoring how owners, managers, and debt holders interact to influence bank risk.

Bank owners, debt holders, and managers frequently disagree about risk.[34] As in any corporation, diversified owners of banks (owners who do not have a large fraction of their personal wealth invested in the bank) have a greater incentive to increase risk than uninsured debt holders. Stock holders disproportionately enjoy the fruits of high-risk, potentially high-return investments, while debt holders want the bank to take as little risk as possible, while earning enough to pay them back. On risk, non-shareholder managers (managers who do not have a substantial equity stake in the bank) frequently align themselves with debt holders against diversified owners. Non-shareholder managers generally prefer to take less risk than owners because their jobs are linked to the survival

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[33] *Disclaimer: While one of the authors of this column is a staff member of the International Monetary Fund, the views expressed herein are those of the authors and should not be attributed to the IMF, its Executive Board, or its management.*

[34] See influential theories by Galai and Masulis (1976) and Jensen and Meckling (1976), and recent empirical work on nonfinancial firms by John, Litov, and Yeung (2008).

of the bank. Of course, to the extent that the manager has a large equity stake in the bank or holds stock options, this would enhance his or her risk-taking incentives through enticing potentially large rewards for high-return investments. In practice, however, bank managers often do not hold much bank stock, placing them at odds with diversified bank owners in their views on risk taking.

Thus, the comparative power of owners, managers, and debt holders within bank's governance structure matters. Banks with an ownership structure that empowers diversified owners will tend to take more risk than banks in which owners have less influence.

New evidence

In a recent paper (Laeven and Levine, 2008), we test how national regulations interact with a bank's private governance structure to determine its risk-taking behaviour. It is crucial to examine regulations and governance simultaneously.

If regulations boost the risk-taking incentives of bank owners but not those of managers and debt holders, then the actual change in bank risk depends on the comparative power of owners within the bank's governance structure. Thus, the same regulation will yield different effects depending on the governance structure of each bank. Similarly, changes in policies toward bank ownership, such as allowing private equity groups to invest in banks or changing limits on ownership concentration, could have differential effects depending on bank regulations.

Examining national regulations or bank governance in isolation will almost certainly yield misleading results since regulations and governance structures differ across countries. To address this, we first collected new information on the ownership and management structure of banks and merged this with data on bank regulations around the world. The new database covers detailed data on banks across 48 countries and traces the ownership of banks to identify the ultimate owners of bank capital and the degree of ownership concentration.

Most big banks have very concentrated ownership

It turns out that banks around the world are generally not widely held, despite government restrictions on the concentration of bank ownership, though there is enormous cross-country variation.

- About 75% of major banks have single owners that hold more than 10% of the voting rights.
- 20 out of 48 countries do not have a single widely held bank (among their largest banks).
- Of those banks in our sample with a controlling owner, more than half are families.

Most governments restrict the concentration of bank ownership and the ability of outsiders to purchase substantial stakes in banks without regulatory approval, generally to limit concentrations of power in the economy. But regulatory restrictions on the

concentration of bank ownership are often ineffective or not well enforced. Families employ various schemes, such as pyramidal structures, to build up control in banks.

Key results

- We find that banks with more powerful owners (as measured by the size of their shareholdings) tend to take greater risks.

This supports arguments predicting that equity holders have stronger incentives to increase risk than non-shareholding managers and debt holders and that large owners with substantial cash flows have the power and incentives to induce the bank's managers to increase risk taking.

Furthermore, the impact of bank regulations on bank risk depends critically on each bank's ownership structure such that the relationship between regulation and bank risk can actually change sign depending on ownership structure.

- For example, our results suggest that deposit insurance is only associated with an increase in risk when the bank has a large equity holder with sufficient power to act on the additional risk-taking incentives created by deposit insurance.
- The data also suggest that owners seek to compensate for the loss in value of owning a bank from capital regulations by increasing bank risk.
- Stricter capital regulations are associated with greater risk when the bank has a sufficiently powerful owner, but stricter capital regulations have the opposite effect in widely held banks.

Ignoring bank governance leads to incomplete and sometimes erroneous conclusions about the impact of bank regulations on bank risk taking.

Policy implications

These findings have important policy implications. They question the current approach to bank supervision and regulation that relies on internationally established capital regulations and supervisory practices. Instead, we find that:

(1) private governance mechanisms exert a powerful influence over bank risking, and

(2) the same official regulation has different effects on bank risk taking depending on the bank's governance structure.

Since governance structures differ systematically across countries, bank regulations must be custom-designed and adapted as financial governance systems evolve.

Regulations should be geared toward creating sound incentives for owners, managers, and debt holders, not toward harmonising national regulations across economies with very different governance structures.

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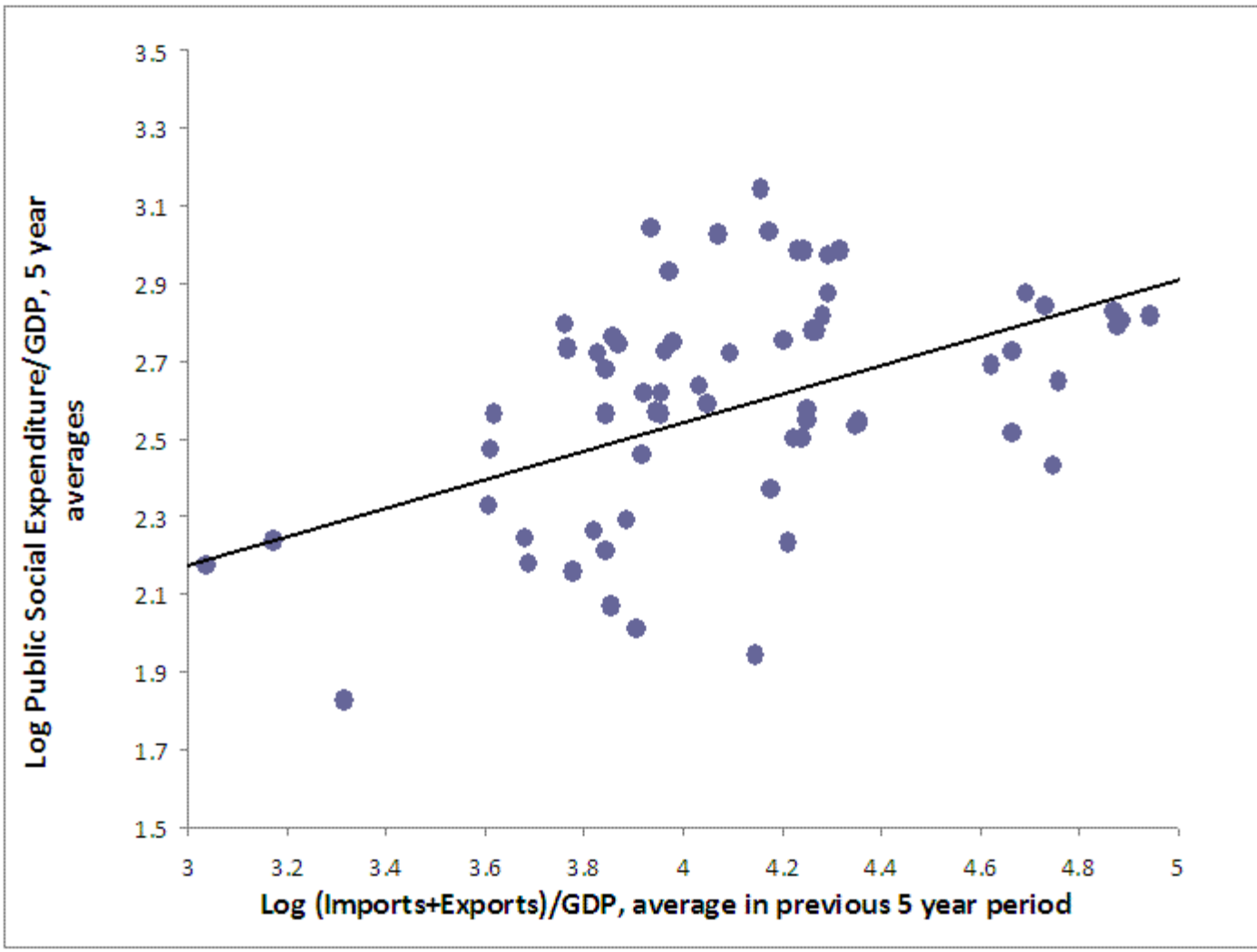
Bertola and Lo Prete: Finance, redistribution, globalisation

3 December 2008

Globalisation seemingly erodes governments' ability to redistribute wealth. This column presents new evidence of the tradeoff between integration and redistribution, showing that financial development has filled in where government has receded. The current crisis may pose political challenges to both financial development and economic integration.

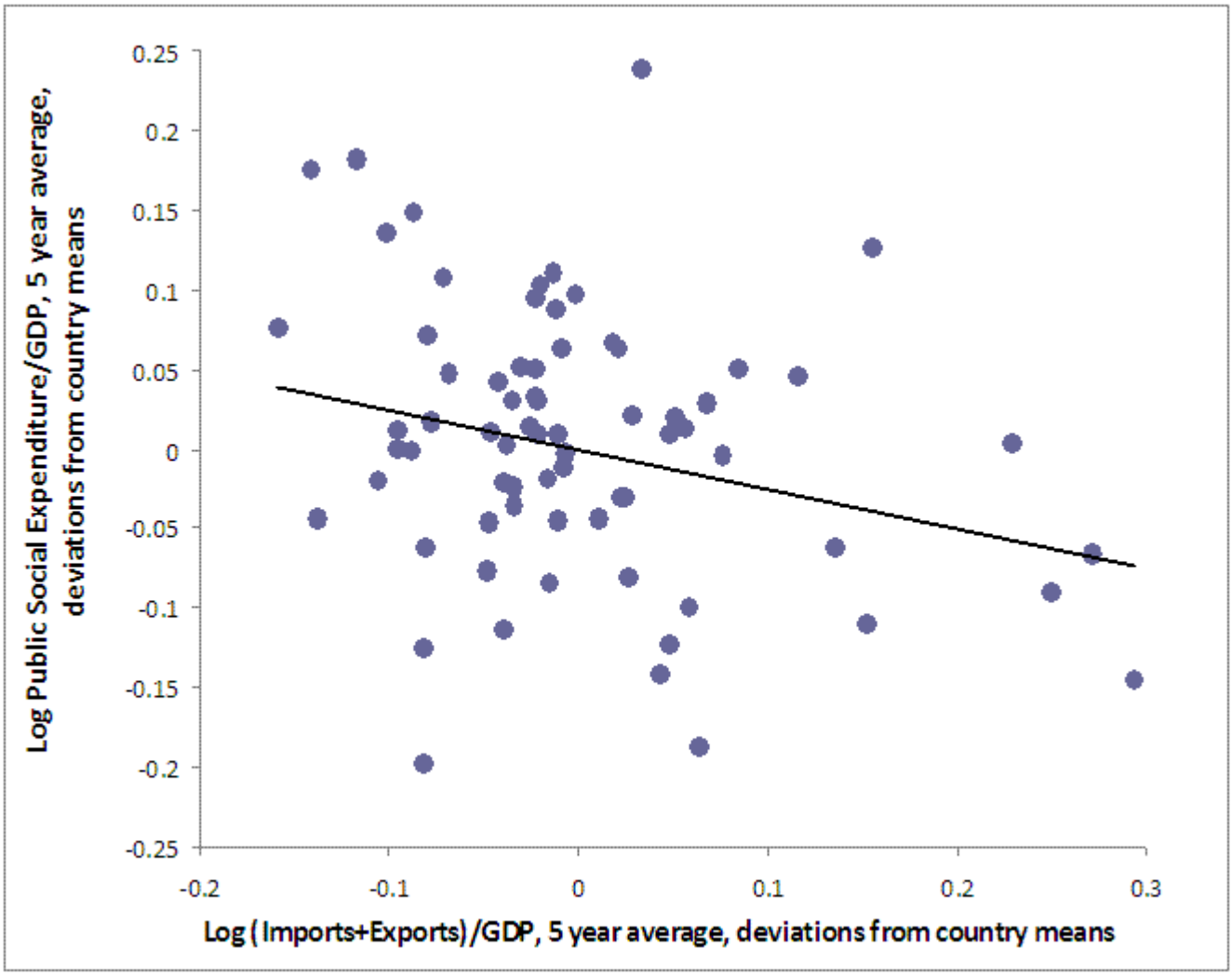
The current global financial crisis highlights the vexed issues of what role national governments should and do play in an internationally integrated economic system. In Dani Rodrik's (1998) classic analysis of data from the 1960s to the early 1990s, openness to international trade was found to be associated with a larger share of government in GDP. Government policies meant to shelter citizens from risk may indeed be more important in countries where international market access fosters opportunities to trade but also exposes workers to more frequent and intense shocks. More recent and precise data on social expenditure in 18 OECD countries confirm Rodrik's observation. In Figure 1, the fraction of GDP spent on such policies is larger in OECD countries that import and export more, perhaps because they are small and near to each other or because they choose to deregulate international trade.

Figure 1. Public social expenditure and trade openness



Another mechanism is relevant, however. Redistribution may be more useful in more open economies but national governments are less powerful if economic integration allows private agents to seek more lenient taxes and more generous subsidies across countries' borders. Competition among systems (Sinn, 2003) may reduce the viability of collectively enforced national policies, making income redistribution negatively associated with international openness. It is not difficult to find such a relationship in the data. In Figure 2, we plot deviations from countries' means of social expenditure and openness, which capture reasons for countries to be permanently more or less open, or more or less inclined to social expenditure. The relationship is negative. This suggests that as technological progress and multilateral trade liberalisation have made borders less of a barrier to economic activity, the scope of redistribution policies has become smaller.

Figure 2. Public social expenditure and trade openness, deviation from means



As an increasingly globalised economic system increases the risk households face and makes it harder for governments to enforce redistribution policies, something has to pick up the slack. Our CEPR Discussion Paper 7048 finds that, controlling for country and time effects, the negative association between openness and redistribution illustrated in Figure 2 is more pronounced when and where financial markets are better developed. As globalisation progressed, financial development substituted for government policies. In theory, this makes a lot of sense. Financial markets must indeed be more important if international competition makes it difficult to implement social protection schemes while introducing new sources of income risk. In a more risky world, absent heavily redistributive national welfare states, credit and insurance volumes have to increase.

Globalisation increases aggregate incomes but erodes redistribution, and it could decrease welfare if it were not accompanied by better insurance against new and larger risks. In our empirical work, following Jappelli and Pagano (1994), we proxy the accessibility and efficiency of household financial markets by loan-to-value ratios – the percentage of a house purchase price that may be financed by mortgages. Available indicators are significantly and sensibly related to openness and social policy developments. Over time, loan-to-value ratios increased from about 75% on average in the 1980s to about 90% in

the 2000s. They differed sharply across countries in the 1980s, when loan-to-value ratios already exceeded 80% in the UK and the US but were only slightly above 50% in Italy and Greece. By the late 1990s, the loan-to-value ratios in all our OECD countries exceeded 70%, and by the early 2000s they ranged up to 115% in countries such as the Netherlands.

From the perspective of this column, a high loan-to-value ratio is a good thing. Borrowing allows households within countries to buffer the ups and downs of international competition without having to rely on collective redistribution and makes it possible to reap the fruits of globalisation in terms of overall competitiveness. For individual households, it is beneficial to be able to borrow a lot and go bankrupt upon negative income shocks. But there can be too much of a good thing.

If individual repayment risk is not properly packaged and diversified, financial market development can be a source of aggregate instability. Financial markets are indeed in trouble and, if our perspective on past developments is correct, their fragility does not bode well for globalisation. The breakdown of private financial markets excites calls for stronger redistribution. If redistribution is national (as it has to be as long as politics are national), it will only be sustainable if national borders become less permeable to economic activity.

Researchers will be looking carefully at signs of such reversals. Not only financial market development, but also trade and social policies will change as a consequence of the current economic turmoil. The character of these developments may foster confidence in the structural character of the empirical relationships we detect in our paper, which could so far be spuriously driven by trending factors other than those we focus on.

And policymakers should also be keenly aware of these mechanisms. The path that led to the Great Depression was paved by protectionism and an increasing role of government. Rescuing financial institutions fosters confidence, but using the rising power of governments in the current financial storm to bail out manufacturers distorts competition and reduces confidence in further economic growth. To steer clear of the Great Depression path in a world where redistribution is no longer very effective and financial markets are key to the sustainability of international integration, we must develop an internationally coordinated financial regulation framework and avoid retracing backwards decades of international integration and financial development.

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Forbes: What Next for the Dollar? The Role of Foreigners

12 June 2008

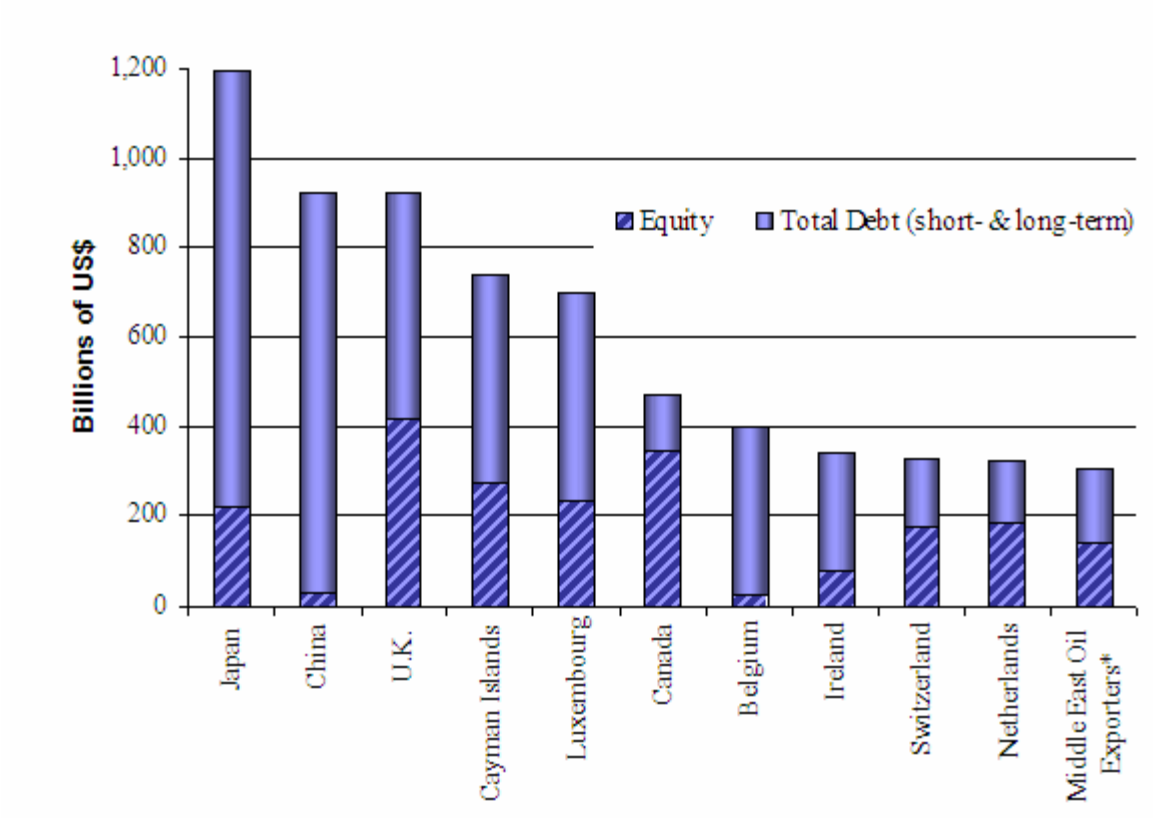
To pay for its current account deficit and capital exports, the US needs $2 trillion of additional foreign investment in 2008. Recent research shows that the quality and depth of US capital markets are key to attracting such investment, but the subprime crisis has raised doubts. A judicious regulatory reaction to the subprime crisis will thus be critical to the value of the dollar. If the US imposes a massive increase in poorly thought-out regulation, the dollar could quickly return to its downward spiral.

The US government is so concerned about the US dollar that on June 3 it broke from standard operating procedure and had the chairman of the Federal Reserve Board speak about the dollar (a role previously reserved for the US Treasury Secretary and occasionally the President). The dollar immediately strengthened and some analysts predicted that the dollar's relentless depreciation since its peak in February of 2002 was finally over. Some even predicted a dollar appreciation over the next year (at least versus the Euro and other flexible currencies). On June 6, however, the dollar took another dive and fears resurfaced that the dollar's depreciation had further to go. Secretary Paulson responded on June 9 by stating in a CNBC interview that he "would never take intervention off the table" to support the dollar.

What will it take?

In order for the dollar to stabilize, the US will need to attract enough capital at existing prices to not only finance its current account deficit, but also to balance capital outflows by US citizens (which increased by over 100% from 2005 to $1.21 trillion in 2007). Figure 1 shows the countries with the largest holdings of US portfolio liabilities (equities and debt) as of June 30, 2007.

Figure 1 Foreign holdings of US portfolio liabilities (30 June 2007)



Notes: Based on US govt. data 'Report on Foreign Portfolio Holdings of US Securities'. Includes official and non-official sector holdings.
**Bahrain, Iran, Iraq, Kuwait, Oman, Saudi Arabia and United Arab Emirates.*

Will foreigners continue to add to their holdings of US assets? *This is the greatest vulnerability to not only the dollar, but also the existing system of large global imbalances.* Rough estimates suggest that despite the reduction in the US current account deficit, the US will require an additional $1.8 to $2.7 trillion of foreign investment in just 2008.[35] This is in addition to the (roughly) $16 trillion that foreigners already hold.[36] Will foreigners invest these massive sums of money at current exchange rates? What will be the effect of increased regulation in US markets and perceived hostility in some sectors to foreign investment?

How have foreigner done on their US investments?

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[35] Assuming that the U.S. current account deficit in 2008 is $627 billion (IMF forecast) and gross U.S. capital outflows are between $1.2 trillion (equal to gross outflows in 2007) and $2.0 trillion (assuming growth in capital outflows from 2007 to 2008 equals the average annual growth rate from 2005 through 2007). Capital flow statistics from Bureau of Economic Analysis.

[36] According to the Bureau of Economic Analysis, foreigners held $16 trillion in U.S. liabilities at year-end 2006 and data for 2007 is not yet available.

These questions are particularly pressing given the disappointing returns that foreigners have recently earned in the US. Evidence shows that investors tend to "chase returns"—i.e., increase investment in assets and countries that have recently had higher returns and vice versa.[37] But from 2002 through 2006—before the recent turmoil in US financial markets—foreigners earned an average annual return of only 4.3% on their US investments, while US investors earned a much more impressive 11.2% abroad.[38]

This lower rate of return for foreigners investing in the US persists even after removing official sector investment (as much as possible given data limitations) and focusing only on the private sector.[39] As shown in Figure 2, this pattern even persists for investment within specific assets classes—equities, foreign direct investment, and, to a lesser extent, bonds. For example, foreigners earned an average annual return of only 7.6% on their US equity holdings from 2002 through 2006, while US investors earned 17.4% on their foreign equities. These patterns also persist (although to a lesser extent) after removing the effect of the dollar's depreciation and making rough adjustments for risk.

Figure 2 Returns on private sector investment positions, 2002-6

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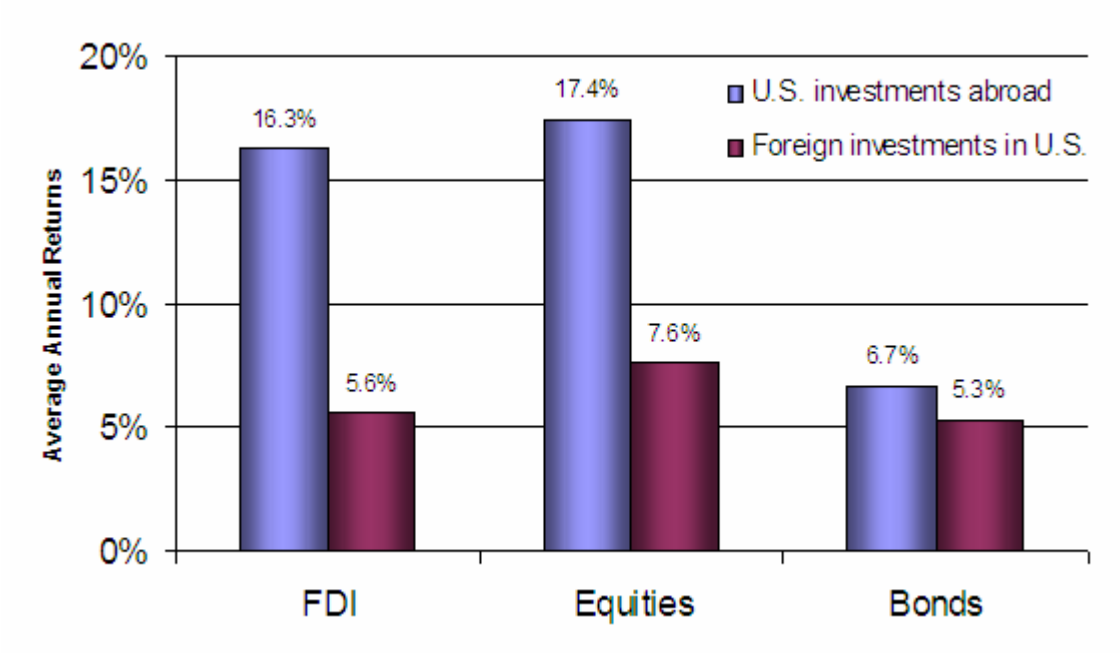
[37] For evidence on return chasing, see Henning Bohn and Linda Tesar (1996), "U.S. Equity Investment in Foreign Markets: Portfolio Rebalancing or Return Chasing?" *American Economic Review: Papers & Proceedings* 86: 77-81. Also see Erik Sirri and Peter Tufano (1998), "Costly Search and Mutual Fund Flows," *Journal of Finance* 53:1589-1622.

[38] For more details on return calculations, see Kristin J. Forbes (2008), "Why do Foreigners Invest in the United States?" NBER Working Paper #13908.

[39] For evidence that these return differentials between foreign investment in the United States and U.S. investment abroad did not exist in bonds, and probably in equities, over longer periods of time, see Stephanie Curcuru, Tomas Dvorak, and Francis Warnock (2008), "The Stability of Large External Imbalances: The Role of Returns Differentials," *Quarterly Journal of Economics*, forthcoming.



Other Potential Reasons to Invest in the US

Are there reasons why foreigners would invest in the US even if they expect these lower returns to continue? Without a doubt. Foreigners may be attracted to:

the highly liquid US financial markets—especially investors in countries with small and less developed financial markets.[40]

the strong corporate governance and accounting standards in the US. (Granted, recent problems with SIV's and other structured products shows that these standards have room for improvement, but they are still perceived to be better than in many other countries.)

the US as part of a standard portfolio diversification strategy, especially if returns in the investor's country are less correlated with US returns.

US investments due to close linkages to the US through trade, "familiarity" (such as sharing a common language or colonial history) and low information costs.

the US due to the benefits of holding assets in the global reserve currency.

While all of these reasons could hypothetically motivate foreigners to hold US assets, which are actually important in practice?

The evidence

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[40] For excellent theoretical models of this relationship, see the following three papers. (a) Ricardo Caballero, Emmanuel Farhi and Pierre-Olivier Gourinchas (2008), "An Equilibrium Model of 'Global Imbalances' and Low Interest Rates," *American Economic Review* 98(1): 358-93. (b) Jiandong Ju and Shang-Jin Wei (2006), "A Solution to Two Paradoxes of International Capital Flows," NBER Working Paper #12668. (c) Enrique Mendoza, Vincenzo Quadrini and José-Víctor Ríos-Rull (2006), "Financial Integration, Financial Deepness and Global Imbalances," NBER Working Paper #12909.

A recent analysis, "Why do Foreigners Invest in the United States?", tests which factors drove foreign investment in US stocks and bonds between 2000 and 2006.[41] It finds that the most important factor was the perceived advantages from the developed, liquid and efficient US financial markets. Even after controlling for a series of factors (including income levels), countries with less developed financial markets invested significantly more in the US relative to other countries and what optimal portfolio theory would suggest.

Although the benefit from the more developed and liquid financial markets in the US is not the only factor supporting US capital inflows, the empirical estimates suggest it can be important. For example, the estimates from the previous analysis suggest that if Italy improved its equity markets to a level comparable to France, then Italy would reduce its holdings of US equities by $3.7 billion. Taking a more extreme example, if China developed its bond markets to a level comparable to South Korea, it would reduce its holdings of US bonds by about $200 billion (compared to total holdings of $695 billion of US bonds at the end of 2006). Although this is only a fraction of total US Treasury, agency and corporate bonds outstanding, it is "real money".

Implications for the Future of the Dollar

The role of differences in financial market development in supporting US capital inflows has several important implications. First, countries around the world will hopefully continue the progress they have made in developing and strengthening their own financial markets. This will gradually reduce this important incentive for countries to invest in the US. Any such adjustments and the corresponding effect on the dollar, however, would likely occur very slowly, since developing financial markets (especially in low-income countries) is a prolonged process.

Second, and potentially more worrisome, is the implication for recent events in the US. Recent market volatility, problems with US rating agencies and a lack of transparency in off-balance sheet structured products have raised concerns that US financial markets may not be the "gold standard" that they were previously believed. Recent discussion by the US Congress about rewriting mortgage agreements sets a worrisome precedent of government intervention in private contracts. Hostility to foreign investment has emerged in a few high-profile cases. This series of events has undoubtedly already reduced foreign willingness to hold US assets and accelerated the depreciation of the dollar over the past few months.

Conclusions

The US needs to improve its regulatory mechanisms in order to avoid a repeat of past excesses. But at the same time, the US government will hopefully not overreact and rush to pass a massive increase in poorly thought-out regulation. Any such response could seriously undermine the existing advantages of US markets and reduce foreigners' willingness to invest the massive sums of money required by the US to support its current account deficit and capital outflows by US investors. The dollar could quickly return to

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[41] Kristin J. Forbes (2008), "Why do Foreigners Invest in the United States?" NBER Working Paper #13908.

its downward spiral. This need not occur if critical decisions on openness to foreign investment and financial market regulation are driven by cooler minds instead of election-year politicking. It is critically important that policymakers augment—instead of undermine—the long-term efficiency, resiliency and openness of US financial markets. If foreigners lose interest in investing in the US, additional reassuring words by Chairman Bernanke and Secretary Paulson, and even coordinated intervention in currency markets, could not support the dollar.

Reinhart and Reinhart: Is the US too big to fail?

17 November 2008

Why are investors rushing to purchase US government securities when the US is the epicentre of the financial crisis? This column attributes the paradox to key emerging market economies' exchange practices, which require reserves most often invested in US government securities. America's exorbitant privilege comes with a cost and a responsibility that US policy makers should bear in mind as they handle the crisis.

A familiar script has played as the global financial crisis has spread, picking up speed and intensity. The drama has three acts that have been written out in the historical record for as long as there have been open financial markets.

- Act One: Unbounded Enthusiasm. Some markets find favour with global investors.[42] Credit becomes readily available, asset prices percolate, and many categories of spending are buoyed.
- Act Two: Day of Reckoning. Recognition that some of that enthusiasm was overdone spreads among investors. New credit flows cease, collateral is sought, asset prices crash, and prominent private-sector icons crumble.
- Act Three: Restoration. Here governments pick up the pieces, typically passing on the cost to future generations by issuing a vast volume of debt. The cost can be punishing because investors pull away from the governments of emerging market economies as forcefully as they do from private creditors.[43]

American exceptionalism

But there has been one prominent exception to this classic tale. With fitting irony, the US, which is the epicentre of the crisis, has avoided Act Three. The US enjoyed a capital

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[42] In Reinhart and Reinhart (2008a and b), we refer to this act as a "capital flow bonanza."

[43] Such funding strains have frequently been sufficient to compel governments to default. This is why we find in Reinhart and Reinhart (2008a) that episodes of capital flow bonanzas help to predict sovereign defaults.

inflow bonanza that funded yawning current account deficits, and asset prices spiralled upward only to crash. While the crash has constricted credit and is redrawing the financial landscape, the US has not been punished by investors in typical Act-Three fashion.

If this had happened to any other government in the world whose national financial institutions were in as deep disarray as those of the US, investors would have run for the hills – cutting off the offending nation from global capital markets. But for the US, just the opposite has happened.

Rather than facing prohibitive costs of raising funds, US Treasury Bills have seen yields *fall* in absolute terms and markedly in relative terms to the yields on private instruments. This has been called a "flight to safety."[44] But why do global investors rush into a burning building at the first sign of smoke?

The answer lies in part with the exchange market practices of key emerging market economies.

Since the last global market panic, the Asian Financial Crisis of 1998, many governments have stockpiled dollars in their attempts to prevent their exchange rates from appreciating. At the same time, the long upsurge in commodity prices has swollen the coffers of many resource-rich nations. As a result, and as shown in the latest forecast in the World Economic Outlook of the International Monetary Fund, international reserves of emerging market economies are expected to have increased $3.25 trillion in the last three years. According to the Fund's survey of the currency composition of those holdings, the bulk is in dollars (see Figure 1).

Figure 1

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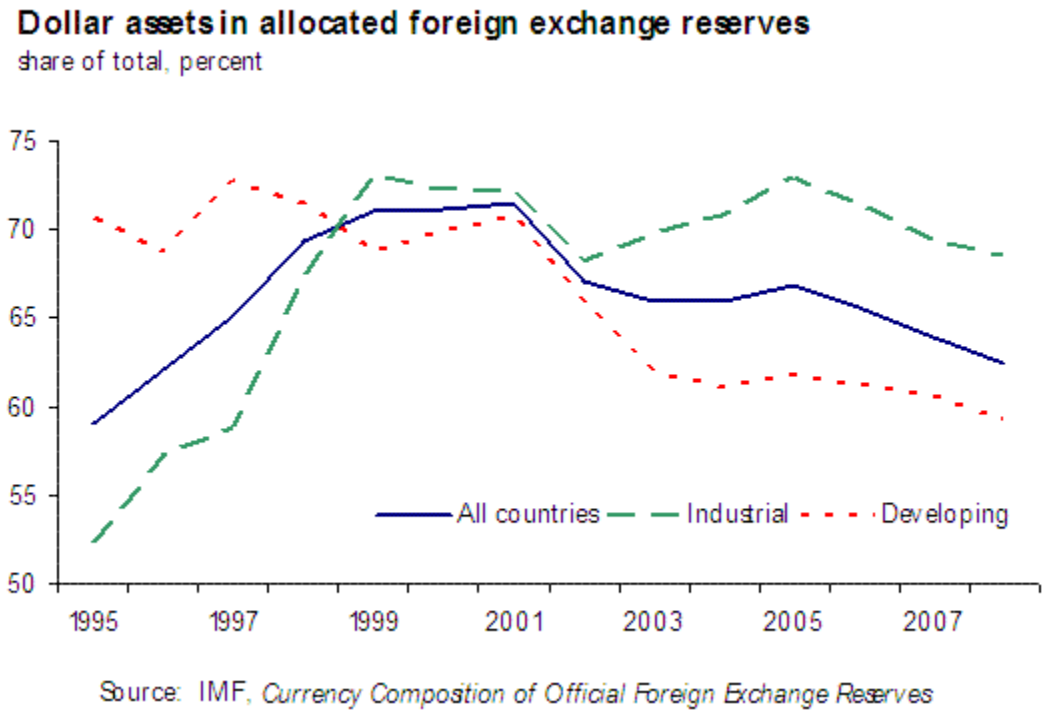

Source: IMF, *Currency Composition of Official Foreign Exchange Reserves*

The dollar portion of these reserves is most often invested in US government securities, which offers excellent market liquidity, and US government debt is also considered as safe as anything (following a precedent laid down by the first Secretary of the Treasury, Alexander Hamilton).[45] All this explains the dollar's popularity with foreign investors who might otherwise be expected to shun the US. As the Figure 2 indicates, foreign official entities now own almost one-quarter of outstanding government securities (the upper panel). These holdings of securities constitute about 10% of non-US nominal GDP (the lower panel).

Our currency, your problem

Herein lies the special status of US government securities. For a few of the world's key decision makers, it is not in their economic interest to stop, or even slow, the purchase of Treasury Bills. As Keynes once said: "If you owe your bank a hundred pounds, you have a problem. But if you owe a million, the bank has a problem." Potential capital losses on existing stocks keep foreign investors locked into US government securities.

Figure 2

[45] The history of US debt is not unblemished. Reinhart and Rogoff (2008) report that the US never defaulted on its sovereign external debt but that the abrogation of the gold clause in 1934 constituted a domestic default.

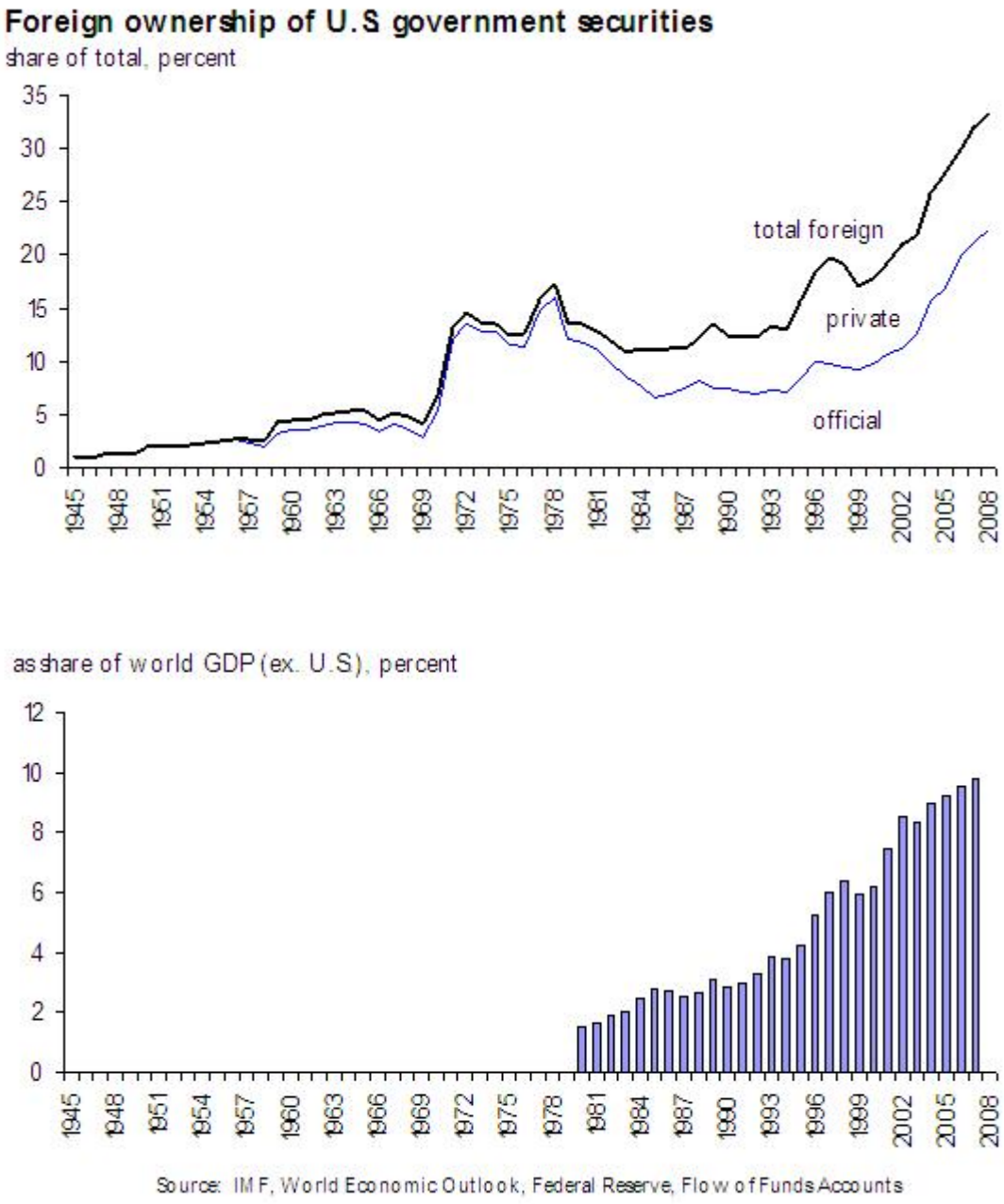

Figure 2 also shows a precedent for recent financial market strains. The last time foreign official purchases bulked so large in the US government's financing was from 1968 to 1973, when the Bretton Woods system of managed exchange rates broke down.[46] At that

[46] Dooley, Folkerts-Landau, and Garber (2004) have dubbed this latest period Bretton Woods II, in part exactly because of the role of foreign official purchases in facilitating US current account deficits. They pose plausible reasons why it might be in the self-interest of foreign officials to do so. Another possibility, as discussed earlier, is that existing portfolio holdings are so large that officials are in a self-fulfilling trap.

time, keeping the system going required increasing support from abroad, primarily from Europe. This time around, the source of that support has shifted to Asian-Pacific economies and Middle East exporters. In both cases, the message from the US seems best summarised in the words of then-Treasury-Secretary John Connolly, who famously advised, "the dollar is our currency, but your problem."

As the tone of those words suggests, another lesson from the earlier experience is that foreign resentment with a US-dominated arrangement grows over time. That America could be a source of financial instability and a haven of sovereign financial security seems to some, to quote Valerie Giscard d'Estaing, to be an "exorbitant privilege." In this episode, Treasury yields have fallen and the foreign exchange value of the dollar has appreciated recently. Moreover, many European financial firms have had funding difficulties associated with a lack of access to dollar liquidity. This has made it necessary for European officials, caps in hands, to seek swap arrangements with the Federal Reserve to acquire dollars to re-lend to their national champions.

Recent enthusiasm in Europe for fundamental reform of the international monetary system finds its roots, in part, in this resentment. They do not want our dollar to be their problem, and they want to erode some of that privilege. Put it those terms, however, it seems clear that this will mostly be a one-way conversation. US officials must recognise that their nation's funding advantage rests on the unrivalled, for now, position of US government securities in global financial markets. Thus, they will listen and agree to work-streams for groups to report back in the future. But whether it is this Administration or the next, advantages to the US, unfair as that may seem as viewed from abroad, will seem worth preserving.

An exorbitant privilege that comes with a cost and a responsibility

These advantages come with a cost and a responsibility. Open access to markets probably allowed US officials to drift in their response to the financial crisis. They initially mistook a solvency problem for a liquidity one. When action was ultimately forthcoming, Treasury officials failed to articulate a clear sense of principles and priorities for intervention. This ad hoc improvisation has probably stretched out and intensified the crisis. In a crisis in an emerging market economy, the sudden stop of credit to the government forces painful adjustment to be done quickly.[47] These adjustments may have been painful, but a quick response tends to reduce the overall bail-out cost.

As for responsibility, officials must recognise that investors have granted the US its reserve-currency status for reasons. Size matters, but other reasons include a respect for the rule of law and for contract enforcement and the predictability and transparency of the policy process.

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[47] In this regard, the current US situation is more akin to that in Japan in the 1990s, when policymakers delayed addressing the fundamental problem of non-performing loans and favoured half-measures for some time. The Japanese government could tap a large pool of domestic saving to fund its equivocations so that the opinion of global creditors was not relevant. The lesson is market discipline does not apply either if a nation is too big to fail or saves too much to care.

When US officials move to the next stage of the crisis – the search for legislative protections to prevent a recurrence – it will be important to preserve these attractive aspects of US markets.

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Eichengreen: Can the IMF save the world?

7 October 2008

Global crises used to remind us why we have the IMF. If the Fund doesn't come up with some new ideas for how to handle this one, it may remind us why it has become increasingly unimportant. The IMF could reassert its relevance by aiding middle-income countries caught up in the crisis with new ideas on how to link emergency lending with policy adjustment.

As the financial crisis has unfolded, the International Monetary Fund has been noticeable mainly for its absence. This will now change – at least temporarily – as its Governors assemble for their annual meeting and the kleg lights are turned on. The question is whether those Governors and the management to whom they entrust the Fund's operation can restore its relevance for more than a weekend.

If not now …

If this is not a set of circumstances that call for the Fund, it is hard to know what is. While recent problems affecting institutions like Fortis and Dexia have been adequately handled by a handful of governments, containing a run on a much larger British, German, or Swiss bank will require wider international cooperation. The managing director, Dominique Strauss-Kahn, should urge governments to get their ducks in a row. He should urge them to move together when raising deposit insurance limits and extending other guarantees in order to avoid draining funds from one another's financial systems. He should call for coordinating interest rate cuts and fiscal stimulus to prevent the world from sliding into depression. For consciousness-raising purposes if nothing else, the Fund should be issuing an urgent call to action, not maintaining radio silence.

Multilateral Consultation on the crisis: Too little, too late

No doubt Mr. Strauss-Kahn will also call for an IMF-directed Multilateral Consultation bringing together the US, European Union, and others to discuss the credit crisis. But cross-Channel and Transatlantic crisis management will not be arranged through a Multilateral Consultation or more generally through the IMF. Central bankers are already in continuous communication. The relevant regulators meet under the aegis of the Basel Committee of Banking Supervisors. European finance ministers meet as the Ecofin Council, and if they need to reach Mr. Paulson they know his number. They do not need a Multilateral Consultation to bring them together.

And having Mr. Strauss-Kahn and his deputies orchestrating their meeting is unlikely to produce a different outcome. Reflecting diplomatic niceties, the IMF's first Multilateral Consultation on global imbalances stretched over the better part of a year. This does not exactly match the timing of a financial panic. Any Multilateral Consultation focusing on immediate management of the crisis will quickly become irrelevant.

Focus on regulatory reform: Better ideas needed

Better would be to focus the next Multilateral Consultation on regulatory reform and preventing the next crisis. Here, however, the IMF must first demonstrate that it is a better orchestrator of these discussions than the Bank for International Settlements (BIS) or the Financial Stability Forum. Establishing this means offering better ideas. And so far the novel ideas for regulatory reform – capital insurance, countercyclical capital requirements, forcing over-the-counter trading into an organised exchange – have come from other quarters.

To advertise the 2007 decision strengthening its surveillance of currencies, the Fund will also want to say something about exchange rates. Under current circumstances, however, the less said the better. Notwithstanding the lemming-like rush of investors into US treasury bills, the dollar will have to fall over the medium term as capital flows into the United States diminish, reflecting the reluctance of foreigners to accumulate more toxic assets. Dollar depreciation may make life difficult for other exporting countries, but it is unavoidable and should not be resisted. It is not clear that there is anything constructive for the Fund to say about this.

Aiding middle-income countries

Where the Fund should have a role is in aiding middle-income countries caught up in the crisis. Countries with large current account deficits and relying on foreign capital to finance them will find their position unsustainable as growth slows, undermining their ability to export, and as foreign investors, cash-strapped and in a state of high anxiety, hesitate to commit.

In present circumstances, anyone with a large current account deficit depending on foreign capital inflows is at risk. This includes, of course, the United States, although America is not a client of the Fund, since it can effectively print international reserves (the dollar remaining the dominant reserve currency). But in many smaller countries with even larger current account deficits relative to the size of their economies, corporate borrowing, home mortgages, and even auto loans are denominated in foreign currency. For them, flooding the markets with liquidity and letting the currency depreciate, as the US does, is no solution. Indeed, it will only make matters worse.

Helping countries in this pickle has long been the IMF's bread and butter. But even here it is not clear that the crisis will allow the Fund to reassert its relevance. Eastern Europe crisis countries may be bailed out by the EU and the ECB, while their East Asian counterparts may receive swaps and credits through the Chiang Mai Initiative. Once again the Fund may end up being sidelined unless it demonstrates that it has a better idea, in this case about how to link emergency lending with policy adjustment.

It is sometimes said that the crisis is a reminder of why we have the IMF. If the Fund doesn't come up with some new ideas for how to handle it, the crisis may only remind us why we can forget it.

Editors' note: This column first appeared on http://www.eurointelligence.com/.

What is wrong with the traditional economic/financial viewpoint and models?

Dale: The financial meltdown is an academic crisis too

27 November 2008

Recent events have not been kind to the modern financial market structure. This column blames the prevailing consensus amongst finance academics for underestimating the irrationality and instability involved. Has the discipline failed to understand global financial markets?

Recent events have demonstrated that the financial market structure that has evolved over the past twenty years is a powder keg – the detonating device was the bursting of the 2004 to 2007 credit bubble. In considering where we go from here, two separate issues need to be addressed: how to deal with financial bubbles and the design of a new financial market regulatory structure.

Counter-cyclical bank capital requirements may help to deal with the first problem but regulatory reform presents more formidable difficulties. The problem here has been exacerbated by the forced financial restructuring that has taken place during the crisis management of the past few months. We now have a much more concentrated financial services industry and one in which large investment firms have been merged with deposit-taking banks. The financial landscape is now dominated by huge financial conglomerates which markets will correctly perceive as being far too systemically sensitive to be allowed to fail. Hence the whole moral hazard issue is thrown into even sharper relief.

There are two possible regulatory responses to this situation. The first is to try to put banking back in its box; to reverse the trends of the past twenty years by dismantling the financial conglomerates and re-imposing strict activity constraints on deposit-taking institutions. This was the US response after the 1929/33 crash not only from the legislature in the form of the Glass Steagall Act but also from the leading banks themselves (National City Bank and Chase National Bank), who of their own volition announced that they were disposing of their securities affiliates because events had shown that commercial and investment banking should not be mixed.[48] It is ironic that today's response is in the opposite direction: non-bank investment firms have either been eliminated (Lehman), pushed into the arms of banks (Bear Stearns, Merrill Lynch) or induced to re-charter themselves as deposit-taking banks (Morgan Stanley, Goldman Sachs). Unscrambling these new universal banking conglomerates would, however, present enormous practical difficulties and is probably unrealistic.

The second approach is to neutralise moral hazard by subjecting financial institutions to a comprehensive regulatory framework which would also see regulators acting in a much

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[48] Edwin Perkins, The Divorce of Commercial and Investment Banking, Banking Law Journal, June (1971) p.523.

more intrusive, investigative and, if necessary, adversarial manner. Crucially, this new regulatory approach would have to be truly global since national authorities are at present inhibited from taking action that might induce regulated activities to move to more accommodating financial centres.

Mixing banking and securities

Fifteen years ago, I argued that banks' increasing involvement in securities activities worldwide could eventually lead to a repetition of the 1929/33 banking meltdown.[49] My analysis rested on the observation that if banks were permitted to diversify away from non-core banking activities the moral hazard that is known to promote excessive risk-taking in traditional banking would be extended to these other activities, in particular securities markets. The question then was whether 'the mixing of banking and securities business can be regulated in such a way as to avoid the danger of a catastrophic destabilisation of financial markets'[50]. After considering all the regulatory options, I concluded that there was no solution: "Allowing banks to engage in risky non-bank activities could either destabilise the financial system by triggering a wave of contagious bank failures – or alternatively impose potentially enormous costs on tax payers by obliging governments or their agencies to undertake open-ended support operations."[51]

The prevailing view amongst finance academics at the time, as reflected in a critical review of my book in the *Journal of Finance*, was that financial structure was largely irrelevant to the question of systemic stability.[52] According to the conventional wisdom we had learned from the 1929/33 crash, a monetary contraction such as occurred then could be neutralised by injecting reserves into the banking system and a flight to quality, because it merely redistributes bank reserves, "is unlikely to be a source of systemic risk".[53] This widely held view of the behaviour of financial markets turns out to have been entirely misguided. As we have witnessed in recent months, a major shock arising from publicised losses on banks' securities holdings can have a domino effect on financial institutions, leading ultimately to a seizure in credit markets which central bankers, on their own, are powerless to unblock. Only drastic government intervention – guarantees for money market funds, guarantees for interbank lending, emergency deposit insurance cover, lending directly to the commercial paper market, and partly nationalising the banking industry – has prevented a full repetition of the 1929/33 financial meltdown.

In addition to underrating the importance of financial market structure, finance academics have also largely neglected the well-documented boom/bust characteristic of asset and credit markets. In my recent book on the South Sea Bubble, I analysed the behaviour of

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[49] Richard Dale, *International Banking Deregulation: The Great Banking Experiment*, Wiley-Blackwell 1993.

[50] Ibid, p.2

[51] Ibid, p.43

[52] Book review by Richard Herring, Journal of Finance, September 1993, pp. 1553-1556.

[53] Ibid, p. 1554.

South Sea stock prices and concluded that, even when judged against the valuation techniques available at the time, there is overwhelming evidence that the South Sea boom represented an irrational bubble.[54] My central thesis was that, taken together with other more recent boom/bust episodes, the events of 1720 lend force to the argument that national authorities must intervene to head off unsustainable financial market booms. I was also critical of revisionist histories of financial upheavals such as the South Sea Bubble that have tended to stress the rationality of investors and downplay the idea that financial markets are inherently unstable and prone to bouts of euphoria and panic.[55]

What we have witnessed in recent months is not only the fracturing of the world's financial system but the discrediting of an academic discipline. There are some 4000 university finance professors worldwide, thousands of finance research papers are published each year, and yet there have been few if any warnings from the academic community of the incendiary potential of global financial markets. Is it too harsh to conclude that despite the considerable academic resources that go into finance research our understanding of the behaviour of financial markets is no greater than it was in 1929/33 or indeed 1720?

Kiff, Mills, and Spackman: European securitisation and the possible revival of financial innovation

28 October 2008

Securitisation volumes have plummeted in the wake of the subprime crisis. As a result, banks are keeping more loans on their balance sheets and tightening lending standards. This column reviews the factors that have led to this virtual market shutdown and suggests structural changes, in the form of simpler and more transparent products trading at wider spreads, will be required to revive securitisation.

Collapsing global securitisation volumes in the wake of the subprime crisis have raised fundamental questions over the viability of the originate-to-distribute business model.[56] Issuance has dropped precipitously in both Europe and the US, with banks keeping more loans on their balance sheets and tightening lending standards as a result (Figure 1). The decline has been particularly sharp for mortgage-backed securities and mortgage-backed-securities-backed collateralised debt obligations. The originate-to-distribute model was

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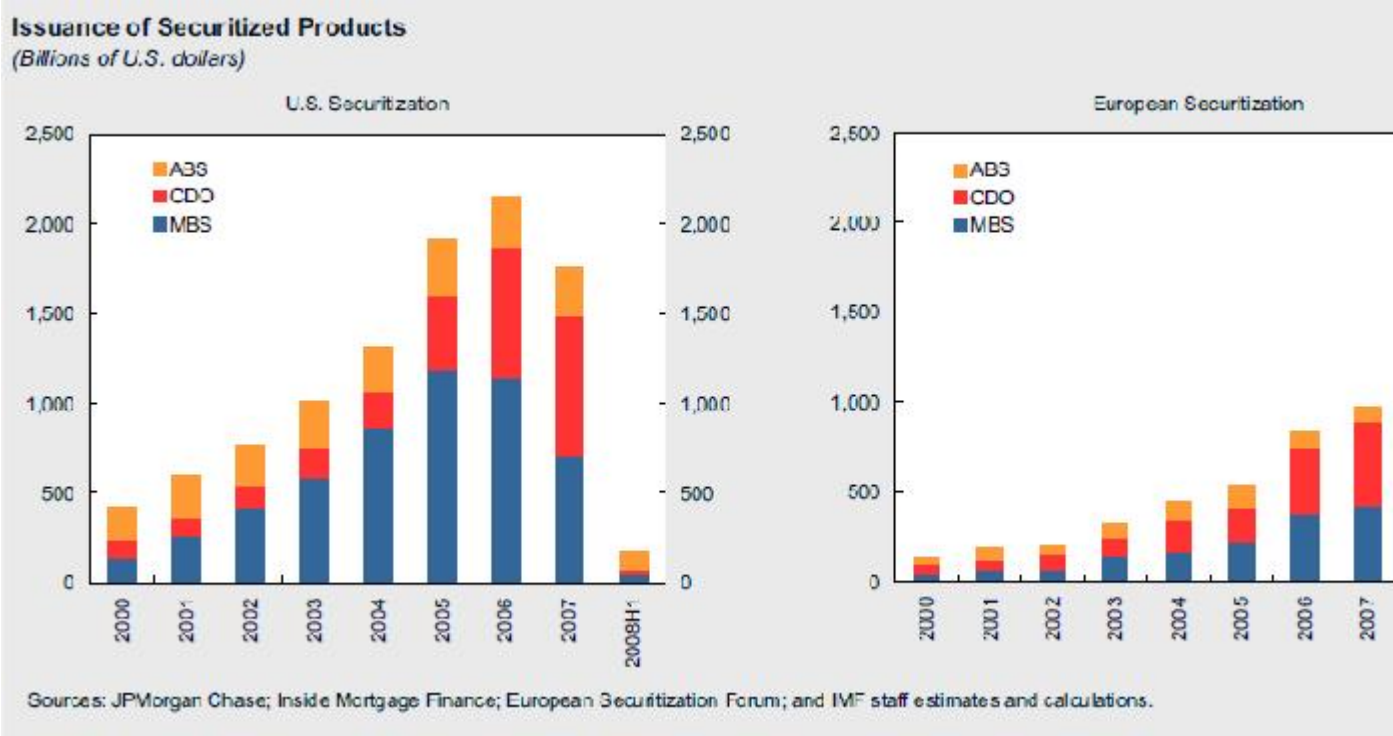
[54] Richard Dale, *The First Crash: Lessons from the South Sea Bubble*, Princeton University Press, 2004.

[55] See eg. Peter Garber, Famous First Bubbles, *Journal of Economic Perspectives*, Spring 1990; Larry Neal, *The Rise of Financial Capitalism, International Capital Markets in the Age of Reason*, Cambridge University Press, 2000.

[56] Securitisation involves the transformation of pools of loans and other types of assets into marketable securities.

thought to have made the financial system more resilient by dispersing credit risk to a broad range of investors. Ironically, however, it became the source of financial instability.

Figure 1



Mortgages constituted the vast majority of loans securitised in Europe in 2006–07. Of these, most originated in the UK (about 54%), followed by Spain (14%) and the Netherlands (11%). Total European mortgage-backed securities issuance dropped from €307 billion in 2007 to €28 billion in the first quarter of 2008. During the same period, collateralised debt obligations issuance plummeted from €471 billion to €63 billion, and asset-backed securities (ABS) issuance dropped from about €124 billion in 2007 to €9 billion in the first half of 2008.[57]

What went wrong?

In many cases, the risk transfer from securitisation proved to be less complete than believed, and investors to whom risks were transferred were too complacent. The adoption of new international financial accounting standards in Europe forced balance-sheet recognitions of substantial securitisation volumes (IMF, 2008, Box 1.3). Also, the efficacy of some risk transfers (e.g., to asset-backed commercial paper conduits and structured investment vehicles) relied on market liquidity, which broke down in 2007. As a result, banks have had to take back onto their balance sheets assets they had earlier securitised. Some banks also retained supposedly lower-risk collateralised debt obligations and mortgage-backed securities tranches but have been forced to drastically

[57] European ABS issuance is primarily of business loans and vehicle leases.

write down these holdings as their market values have fallen and bond insurers have been downgraded.

Investor complacency resulted in over-reliance on credit ratings. Furthermore, the rating agencies' key assumptions on some risks (e.g., subprime mortgage delinquencies and recovery rates) turned out to be overly optimistic. As credit fundamentals deteriorated, many of the more complex and multilayered securities became nearly impossible to value, and market liquidity disappeared as leveraged investors (primarily hedge funds) reduced their exposures. The disappearance of market liquidity and the reliance on models for valuations triggered uncertainty about losses and loss exposures. The interaction of credit and liquidity risk drove market valuations into downward spirals of mark-to-market losses and forced liquidations.

Road to recovery

Reviving securitisation requires structural change. Investor confidence in the instruments, the originators, and the rating agencies needs to be restored. Originators will have to simplify security structures and improve the disclosure of their underlying assets in a timely and comprehensive manner. Rating agencies will need to provide more information on the models and inputs that underpin their ratings and on the potential for rating volatility.

The American and European Securitisation Forums are engaged in coordinating standardised reporting and originator principles. This process will take many years. Also, the major rating agencies are consulting over whether to supplement rating letter grades with rating volatility and loss sensitivity metrics. However, they have been slow to address the conflict of interest that arises because of their parallel activities as consultancy services.

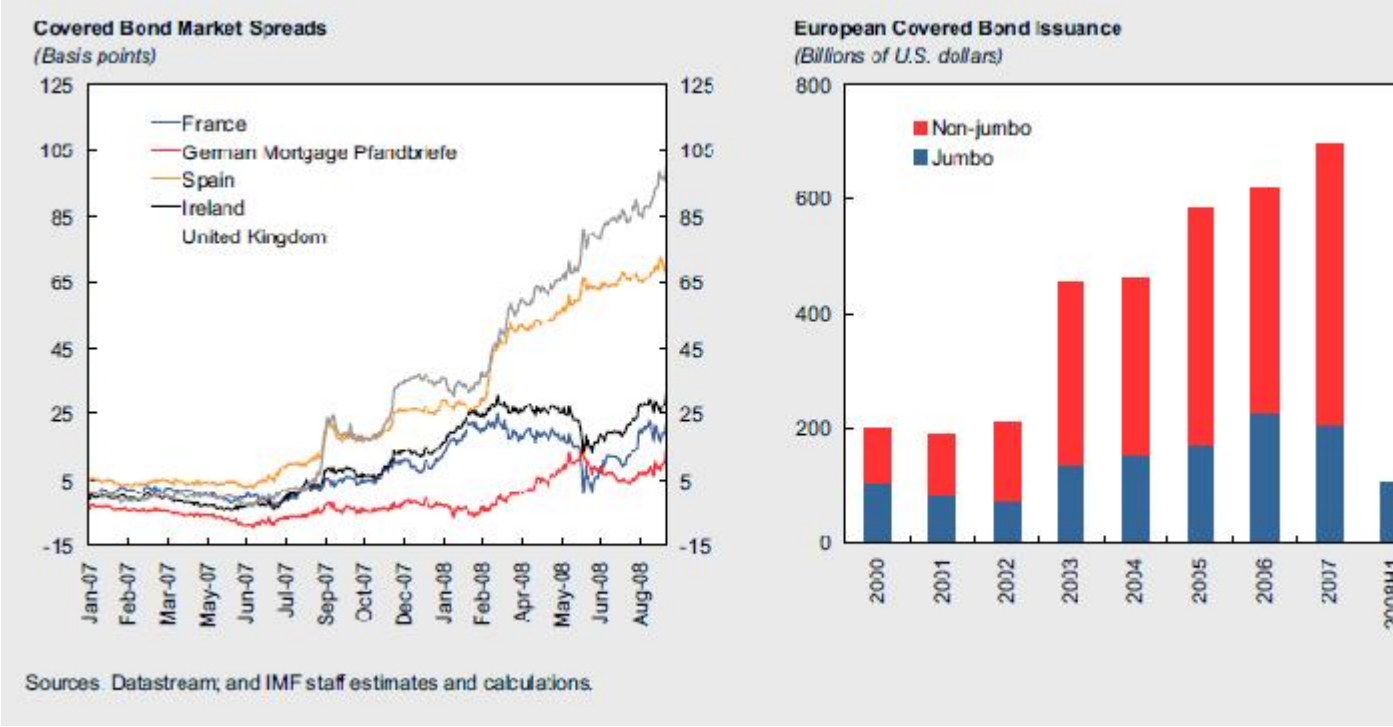
It has been proposed that originators in Europe retain some meaningful economic interest in the underlying securities, so that their incentives can be more closely aligned with those of investors. A European Commission proposal regarding implementation of the Capital Requirements Directive suggests requiring minimum levels of originator risk retention. However, this proposal could easily make securitisation uneconomic for originators and faces considerable monitoring and enforcement difficulties. It is, therefore, unlikely to restart the market.

Covered bonds

In Europe, covered bonds have provided banks with cost-efficient secured financing for over 200 years, and US authorities recently launched an initiative to encourage their use by US banks. Covered bonds are backed by identifiable and legally "ring-fenced" pools of loans. They remain on the balance sheet, however, so that the bank retains the ultimate credit risk and is encouraged to maintain loan quality. Nevertheless, yield spreads on UK and Spanish covered bonds have widened sharply during the crisis, owing to declining housing markets.

Meanwhile, German and French spreads have remained relatively low (Figure 2). Although secondary market liquidity has dried up, issuance of "jumbo" bonds is continuing; however, these are mostly German Pfandbriefe.

Figure 2



Covered bond issuance is expected to remain below trend for some time, but the market is likely to continue broadening. The first Greek covered bond issue is expected in 2008, and the four largest US banks have committed to issuing covered bonds, while an electronic trading platform in Europe is planned. The covered bond market has not been immune from recent turbulence, but it does provide a less complex alternative to outright securitisation.

Conclusion

The risk transfer and capital saving benefits of securitisation, combined with underlying investor demand for securities, should eventually revive issuance. But the products are likely to be simpler, more transparent, and trade at significantly wider spreads.

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Pagano: The price of transparency

8 October 2008

By simplifying the information they transmitted to investors, banks managed to expand the market for the structured bonds that they issued. But this has also led to a catastrophic uncertainty that paralyses markets and even affects policy choices. The choice of opacity by issuers and rating companies has been socially harmful and should have been constrained much more tightly by regulation. Until today, though, few believed that transparency could be worth as much as 5% of US GDP.

The most surprising aspect of the current crisis is that the estimate of bank losses has been subject to continuous and macroscopic revisions. When the first problems arose in the subprime loans sector in 2006, the problem seemed to concern a quite modest segment of the U.S. credit market. But already in December 2007, the *Economist* estimated that losses stemming from mortgage loan insolvencies would sit between $200 and $300 bn. In April 2008 the IMF predicted losses of $565 bn on mortgage loans and on related securities, and $945 bn including loans and securities related to commercial real estate, consumer credit and corporate loans. Now the IMF has revised its estimate further to $1400 bn. How could it happen that bankers, central banks, international institutions and economic experts made such macroscopic mistakes in insolvency estimates? And how can it be that they are still so uncertain as to their real extent?

The Origins of Uncertainty

The uncertainty originates from the same roots of this crisis, that is from the opacity of the securitization with which banks "packaged" and then sold their credits in structured bonds, often after slicing them in different risk tranches. In this process, only roughly synthesized information was transmitted to the market concerning the underlying loan portfolio or its tranches. So there was a great loss of information that would have helped to evaluate the credit risk of those portfolios.

Since structured bonds and the derivatives written on them were massively bought by banks, insurance companies and trust funds, the uncertainty concerning their value turned into uncertainty regarding the amount of losses and toxic assets hidden in bank balances, and made it difficult or impossible for them to obtain liquidity or raise fresh capital. Indeed, extreme uncertainty generates fear, and fear generates paralysis. This is best illustrated by the case of Lehman Brothers, the large investment bank that played a central role in the securitization process. When Lehman entered distress, the primary U.K. bank Barclays was the only institution that showed interest in buying up Lehman, but for fear that its balance sheet hid more losses and toxic assets than those declared, they asked for a guarantee from the U.S. Treasury against this risk. As the Treasury refused to offer a guarantee, Barclays held back and Lehman failed. One might say that this bankruptcy, the largest in U.S. history, is the outcome of uncertainty. It cannot be ruled out that Lehman would have been solvent if only their assets and liabilities could have been properly evaluated.

The uncertainty generated by lack of transparency is also at the root of market illiquidity. Since June 2007, the market of structured bonds basically froze and even the liquidity on the money markets rarefied. The reason behind this event too is the fear generated by uncertainty: investors were afraid of buying securities that could hide more insolvent

loans than expected, so if they had liquidity they preferred to hoard it. This market paralysis in turn worsened the situation of banks, making their assets illiquid and forcing them to curtail credit.

Uncertainty can even explain the swinging and ill-timed behaviour of U.S. policy makers: on September 8, the Treasury nationalized agencies such as Fannie Mae and Freddie Mac, who guarantee most of the U.S. mortage loans. The Treasury had already obtained Congress authorization in July and at that time had insisted there would be no need for intervention. On September 15, the Treasury let Lehman fail. On September 18, the Fed saved AIG, the world's largest insurance company, by giving them an enormous loan with the option to buy 80 per cent of its shares, replace its executives and nearly eliminate its preexisting shareholders. Finally, on September 20 Henry Paulson, Secretary of the U.S. Treasury, asked Congress to allocate $700 bn (5 per cent of U.S. GDP) to the purchase of the banks' bad assets, hopefully with adequate haircuts. Yet this policy move had already been proposed as early as April 2008 on the *Financial Times* by Luigi Spaventa, who had observed that there would be no way out from the crisis unless the authorities intervened to reestablish prices of structured bonds, which markets can no longer establish because of uncertainty.[58]

Maybe the dimensions of the crisis could have been contained if this suggestion had been put into action earlier. But even this delay was probably caused by the uncertainty as to the real proportion of the problem.

A socially harmful choice

But what can explain the behaviour that is at the root of this catastropic uncertainty, that is, the destruction of a large amount of price relevant information in the process of securitization and rating of structured bonds? The answer is that by simplifying the information transmitted to the market, banks managed to expand the market for the structured bonds that they issued: providing detailed and complex information would have kept away from the market many unsophisticated investors, who would have been at a disadvantage compared to those capable of processing this information.

Therefore, greater transparency would have forced issuers to reduce their security issuance or to accept a less liquid primary market, and this would have reduced their revenues, as well as those of rating agencies. Instead, they preferred to expand the primary market as much as possible, even at the cost of endangering the stability and liquidity of the secondary market.[59]

Now we know that this choice by issuers and rating companies was socially harmful: market liquidity and credit market stability have a social value that exceeds the private one, to the point that that today the U.S. is willing to sacrifice 5 per cent of its GDP to restore them. But this also indicates that the choice of opacity by issuers and rating companies should have met with far more solid and stringent regulatory constraints. We

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[58] Luigi Spaventa, "How a new Brady bond could ease the strain", Financial Times, 11 April 2008. For a more detailed description and motivation of Spaventa's proposal, see "Avoiding Disorderly Deleveraging", CEPR Policy Insight No. 22, May.

[59] Volpin in "Securitization, Transparency and Liquidity"

all knew that transparency is important for the operation of financial markets, but to this time few thought that it could be worth 5 per cent of the U.S. GDP and possibly more. Now that we know this, financial market regulators will have to keep it into account for the future.

Cohen: The Panglossian World of Finance

3 June 2008

What easy money brought forth in the new century, tight credit will take away in the years to come. Here one of France's leading economists explains the origins of the subprime crisis and why it is likely to continue to unfold.

What is the origin of financial crises? A simple fact, a fact that may be summarised as follows: one tends to bet more freely with other people's money than with one's own.

The typical investment manager/financial innovator thinks: "If I win, my profit will be proportional to the gross sales I have initiated. If I lose, I will be dismissed, and perhaps I will lose my reputation in the process." Thinking even further, the manager realises that the downside is limited to being fired, but the upside is limitless. This asymmetry between profits and losses encourages audacity. Once a certain risk threshold is breached, the investment manager who places bets with other people's money ignores danger. From a social point of view, the problem stems from the divergence of incentives. Even though the intermediary knows that he may suffer a severe personal loss, it will never be proportional to the losses inflicted on investors.

This simple rule - that profits are for me (at least in part) while losses are for others – makes it possible to understand the enchanted world of finance. The investment manager lives in a world with "Panglossian" values, to borrow an expression used by the economist Paul Krugman. Just as Voltaire's hero, this investor only sees the bright side of affairs. He ignores the risk – not by inadvertence, but by rationality.

In a recent CEPR Discussion Paper "Self fulfilling and self enforcing debt crises" (CEPR, Discussion Paper 6718), Sebastien Villemot and I show how this mechanism explains the sovereign debt crises of the last four decades. Let me show here how it helps understanding the subprime crisis of the last year. (Many Vox columnists have already written on the causes of the subprime crisis, Carmen Reinhart most recently in her 15 March 2008 column).

Panglossian principles first explain why finance requires regulation. Prudential rules set a minimum ratio of banks' equity capital to the amount of their investments. The idea is to oblige them to hold at their disposal the liquidity necessary to pay, and therefore to anticipate, their potential losses. The subprime crisis illustrates *a contrario* how the applicable logic works when, by diverse artifices, the financial intermediaries were able to free themselves from regulatory constraints.

At the origin of the so-called *subprime* crisis, there is a brilliant innovation. To make real estate credit available more to investors at attractive rates, the engineers of Wall Street

came up with the following idea. Slice up portfolios of pooled mortgage assets into several tranches. The highest quality tranches are paid first, the mezzanine tranches afterward, and the lowest (equity) tranches sustain the risk of eventual default. A palette of varied assets is constructed in this way, attracting vast classes of investors: pension funds for the senior tranches, and hedge funds for the risky assets. This invention, finalized in 1983 by a subsidiary of General Electric, was originally intended for ordinary borrowers. In spite of a first crisis in 1994, the technique took off in 2000, making it possible to broaden the range of households benefiting from mortgage loans. Thanks to the now famous subprimes, the most disadvantaged social classes were able at last to buy their housing on credit. Wall Street came to the aid of Harlem with "ninja" loans (No Income, No Job, no Assets).

Stage one: warped creditworthiness evaluation

The collapse of the subprime system unfolded in several stages, each of which revealed the Panglossian vision of financial intermediaries. Upstream from the crisis, one fact became apparent rapidly. The quality of mortgage extended had profoundly deteriorated, even making allowances for the new clientele for whom they were intended. The clients' creditworthiness had been systematically overestimated by the intermediaries in charge of distributing the mortgages. The cause of this deterioration is evident. Beforehand, in the old school of bank lending, lenders originating a loan were the ones who collected it afterwards, so they had an incentive to evaluate creditworthiness correctly. With the advent of loan securitisation, the agent originating the credit sells it immediately in the financial markets. The incentives are totally changed. What counts is to increase the numbers, not to examine the quality of the client.

Step two: flippancy of the banks

However, this phenomenon is only the first level in the house of cards. The second story is the "flippancy" of the banks themselves. To profit to the maximum from the new opportunities in mortgage lending, the banks created new, off-balance-sheet structures – "Special Investment Vehicles" (the infamous SIVs). By placing their new activities in these ad hoc structures, the banks liberated themselves from prudential rules. They were able to exploit to the financial leverage to finance high yielding operations on credit, without having to make use of their equity capital. The machine for betting imprudently with other people's money was then set in motion.

The crisis that began in the summer of 2007 revealed the magnitude of the phenomenon. Losses are between 422 billion dollars, according to the OECD, and 945 billion according to the IMF. Whatever the final figure turns out to be, depending on how the current crisis evolves, a "reverse leveraging effect" is at work, what is called "deleveraging" on Wall Street. The banks will indeed be forced to reduce the volume of their lending, (re-)proportioning it to their equity capital, at the very moment when this equity is amputated by losses. A contraction of credit is inevitable, and this usually leads to a recession.

Phase three: the real estate bubble

This leads to the third and last story in the house of cards: the real estate bubble. Easy money in the year 2000 nourished an explosion in asset prices, especially housing prices.

This enabled American households to live on credit. A very lax system allowed them indeed to increase their debt progressively as the value of their real estate holdings rose. All goes well as long as prices rise. When price fall, the households whose mortgage debt exceeds the value of their house (negative equity) may want to or may be forced to default.

Phase four: the borrows become Panglossian

Panglossian reasoning applies again here, but this time on the part of borrowers. The most heavily indebted households have an incentive to bet on the continuation of the rise, ignoring the risk of market reversal. This is the where the greatest risk lies going forward. In the United States, the fall in real estate prices has now reached a 10% average annual rate. A vicious circle is in motion. The reduction in prices obliges households to declare bankruptcy, which leads the banks to put the unpaid houses up for sale, which brings down the prices still more. Many of the same households also borrowed to buy cars, run up credit card bills, etc, so 'deleveraging' by the little guys could spread the crises far beyond mortgage lending.

What easy money brought forth during the years 2000, tight credit will take away in the years to come. "Deleveraging" has begun on all levels: for the banks, for the financial institutions having used leveraging to the maximum, such as the hedge funds or the private equity firms, and for the households themselves. Is this the disenchantment of the financial world? No doubt - until the next round.

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Sinn: What can be learned from the banking crisis

17 December 2008

This column says the core of the crisis lies in the legal provisions of limited liability. Europe and the world need stricter rules for financial traffic which are vital for the functioning of the financial capital markets.

Now that the countries of the west have agreed to a three-trillion dollar bailout programme to rescue their banking systems, it is time to look forward and to draw lessons from the crisis. To do this we must understand the causes of the crisis.

The claims that the model of American capitalism has self-destructed are just as misguided as putting the blame on the greed of investment bankers and other groups in society. They only touch the surface of the problem.

The core of the crisis lies in the legal provisions of limited liability. Creditors of corporations have no claims against the personal assets of the owners (shareholders) of these corporations. These liability constraints lead to a systematic disregard of disaster

risks – occurrences with only a slight probability bring about gigantic losses. Investors that opt for high-risk projects with high potential gains and losses instead of safe projects with similar average profits can expect to gain, since they only have to bear a portion of the possible losses. If things go well, investors reap the full profit. If things go badly, at worst their losses would be limited to the stock of equity invested, because claims against private assets have been ruled out. This asymmetric situation encourages bold behaviour and risk-taking.

The conclusion that the limited-liability constraint should be eliminated would be too rash, however, because risk-taking also has its merits. Limited liability was introduced in the nineteenth century in the US and Europe in order to avoid uncontrollable burdens being placed on equity holders and to enable entrepreneurs to make enterprising economic decisions that they otherwise would not have had the courage to make. It brought about the productive forces that have created the wealth of today's generations.

In times of great economic insecurity, however, limiting liability can become a problem because it induces entrepreneurs to become gamblers. As always it is a matter of weighing up the advantages and disadvantages and finding the proper middle ground. The problem of gambling is particularly serious when corporations are allowed to determine the extent of their liability themselves by choosing the ratio of equity to business volume as they see fit. Then they tend to operate with too little equity and distribute to their shareholders too large as fraction of their profits as dividends. The five large US investment banks, of which three have already fallen victim to the crisis, unscrupulously pursued this strategy, their motto being that you can't lose what you don't have. The risks created incentives to minimise the stock of equity kept inside the firms, and the small amount of equity capital in turn created incentives to pursue overly risky operations. The interplay of these incentives is the actual cause of the crisis – and this is where reform must begin.

The privilege of limited liability is not a creation of the market; it was granted by the legislator, and because this is the case, the legislator himself must define his real intention. He cannot allow the beneficiaries themselves to make this definition. If they can, they will define the limitation in such a way that they assume almost no liability, as we have seen. US investment banks, which were not subject to American bank supervision, practised their business with equity-asset ratios in the region of 4%, which is much lower than the rate at which private commercial banks operate. In addition, they carried out very complex credit operations outside of their balance sheets, placing them thus away from investor control.

Some may point out in defence that gambling is prevented by the rating agencies. They argue that rating agencies give poor ratings when risks are excessive, forcing the banks to pay higher interest for the money they themselves have borrowed. In this way, so the argument, the market corrects itself and creates the proper amount of caution. The miserable failure of the rating agencies during the present crisis shows, however, how illusory this reasoning is. The agencies did not give sufficient warning, and their AAA ratings were only withdrawn when there was no other alternative. Since they live on the fees they collect from the financial institutions they rated and were dependent on their good-will, they could not afford to tell the truth. The nearly bankrupt major customers of the rating agencies in America were glamorised while comparably robust but smaller

customers in Europe were downgraded. This is also how the credit packages with claims against American homeowners, which were already in risky territory, were offered to the world far above value.

The best proof that the rating agencies and other information channels do not function and are not able to reliably inform purchasers of bank bonds and credit packages about the true circumstances lies in the fact that on the capital market equity capital is always more expensive than debt capital. If the purchasers of bank bonds had been correctly informed about the true repayment probability, they would have demanded adequate risk premiums on interest or sufficient reductions in the prices of these bonds, which would have made these liabilities just as expensive for the banks as equity. Finance theory designates this finding as the Modigliani-Miller theorem, after its authors. But this theorem fails to match reality. Everyone uses the leverage effects of debt capital up to the limit that the rating agencies establish in order to achieve higher yields from equity capital. Whoever does not do this and instead raises his equity-asset ratio to increase repayment probability is not rewarded for his virtue by the capital market.

Bank bonds and securitised risks are entwined in a cascade of interlinked legal claims at whose end there is somewhere a real investment project. These are products that even specialists cannot properly appraise. The purchasers are almost never able to assess the true repayment probabilities correctly. Only the sellers that assemble the securitised packages have some idea of what they are selling. In the language of economists, these bank products are lemon goods, that is goods whose quality can only be partially assessed by the customers at the time of purchase and for this reason are usually offered at inferior quality. The sellers exploit the customers' lack of information by reducing their costs at the expense of quality, knowing that the customers are not able to punish them by refusing to purchase or by demanding price discounts. Quality declines below the quality that would prevail in a market of informed customers. In order to prevent lemon markets, most countries have, for example, food regulators who set the lower limits for quality in food in the form of upper limits for unhealthy ingredients. In the case of pharmaceuticals, quality is safeguarded by the licensing procedures. The loans given to homeowners in the US – and that ended up as mortgaged-backed securities and collateralised debt obligations – are lemon products. In America higher rates of indebtedness are more common than in Germany. But the banks do not have the same claims to the private assets or income of homeowners than in Germany. If a low-income US homeowner chooses, he can hand over his house keys to the bank and has no repayment obligation. Conscious of this limited liability, US homeowners were much too cavalier in taking on real-estate which they could only afford if housing prices continued to rise. The real-estate bubble that began to burst one and a half years ago and that gave rise to the banking crisis arose this way.

Since the Reagan presidency a quarter century ago, Americans have increasingly become indebted to foreign creditors and have made a good life for themselves. They financed their investments from the capital streaming in from foreign countries and instead of saving relied on the increasing value of their real-estate. The deficit on the current account balance, that is the surplus of imported products and services over exports, reached a peak of 5.5% of GDP. This was financed with increasingly more sophisticated investment products that were certified with the stamp of the rating agencies – in the end

even the last investment manager of the German state banks noticed what junk was being sold here. The wheeling and dealing has now come to an end. No European bank escaped the painful experience that the expensive value-at-risk models of the investment bankers were just as worthless as the agency ratings.

Politicians must finally face the task of defining legal liability limitations for corporations by establishing strict minimum standards for equity capital requirement for the various business models of the banks, both in America and in Europe. Stricter rules are not a disadvantage for the economy, since the apparently so much more expensive equity capital, whose use is thus made compulsive, is not economically more expensive than debt capital, as shown by the burdens that the taxpayers must now bear. Furthermore, no scarcity of funds would arise as a result, since the savings of the world just suffices – independently of such rules – to finance the investments.

The necessary steps are as follows:

1. The US must finally participate in international agreements on the harmonisation of banking supervision. These agreements can be based on the Basel-II system, which must be under government control.
2. Europe needs a common system of financial supervision. Every state must pay for the losses of its own banks.
3. Investment banks, hedge funds and private equity firms must be subjected to the same rules as commercial banks.
4. Personal liability limitations for mortgages and other real-estate loans must be lifted in the US and wherever else they exist.
5. Conduits and other constructs for the shifting of investment banking business from the bank balance sheets should be limited in such a way that the risks that the banks take on are transparent in the bank balance sheets.

Free market advocates that argue against these remedies, without which a market economy cannot survive, confuse the market economy with anarchy. The market economy can only function when it is subjected to traffic regulations. Civil codes in many countries are full of rules that limit private contracts. Only a portion of the contracts that an uncontrolled market economy would develop is allowed, and because of this the system functions. Europe and the world need stricter rules for financial traffic. Such rules do not constitute a systemic break. They are vital for the functioning of the financial capital markets.

Editors' note: Published originally in German as „Ende des Verwirrspiels", WirtschaftsWoche, no. 42, 13 October 2008, p. 64-65.

Mariano: Do reputational concerns lead to reliable ratings?

12 July 2008

Rating agencies are currently plagued by conflicts of interest in building and rating financial products. But even with the right incentives, reliable ratings would be hard to

come by, this column argues. If market participants punish wrongly optimistic predictions more than wrongly pessimistic ratings, then an agency's good reputation and a good rating do not coincide.

In the recent debate about the role of rating agencies in the subprime debacle, conflicts of interest have received much attention. If rating agencies were not rating the financial products they helped construct, they would provide accurate information to market participants in order to safeguard their reputation, thus ensuring reliable ratings, or so the argument goes. But is it really the case that reputational concerns lead to reliable ratings?

In a recent paper, I argue that this is not the case: worrying about reputation *is not* the same as worrying about providing reliable ratings.

A rating agency assigns a rating based on information that is publicly available to all market participants and information that is privately assembled by its analysts or provided by the firm. This information goes through the rating agency's credit model to produce a rating. If privately available information is inaccurate or difficult to interpret, or if the credit model is flawed, this may prompt a rating agency to make mistakes and issue an incorrect rating.[60] When a rating agency that is aware of the imperfections in its ratings process finds itself in a situation in which a strongly held public opinion and its interpretation of its private information diverge, a rating agency might just *conform* to public opinion, issuing the rating that everyone expects, because of fears of being wrong.

Even when public opinion does not come down strongly on the side of either a good or bad rating, reputational concerns do not necessarily lead to reliable ratings. It is likely that market participants are more likely to find out about a mistake when a rating agency gives a good rating than when it gives a bad one - good ratings entail more investor interest and analyst coverage, and a wider range of investors will end up holding the securities of the rated firm. In a situation in which a rating agency faces no competition, it might want to be *conservative*, issuing bad ratings too often, ignoring both publicly and privately available information that indicate otherwise, as this behaviour minimises the chances of being identifiably wrong. In a situation in which a rating agency faces tough competition, it might prefer to be *bold* and issue good ratings too often, ignoring both publicly and privately available information that indicate otherwise, in order to gamble on increasing its reputation relative to its competitors.

Rating agencies can be too *conformist*, too *conservative*, or too *bold* precisely because they worry about reputation. Even if conflicts of interest were not an issue, governments and regulators should be cautious in giving rating agencies quasi-regulatory powers.

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[60] *Financial Times*, "Moody's error gave top ratings to debt products", May 20 2008.

Goodhart: The Financial Economists Roundtable's statement on reforming the role of SROs in the securitisation process

5 December 2008

Credit rating agencies were at the heart of the rise of securitisation, and securitised assets were at the heart of the Subprime problems. Plainly these agencies are slated for major reforms. This column presents the statement of an eminent group of financial economists on such reform.

During the last few decades, securitisation has become a primary channel for enlarging financial markets and transferring credit risk from lenders to investors. Outstanding issues of privately securitized assets peaked worldwide at just under $12 trillion in 2008.

Table 1. Estimated Size of the Global Asset-Backed Securities (ABS) Securitisation Market, Classified by Collateral Employed (in billions of dollars)

Prime Mortgage-Backed Securities	$3,800
Subprime Mortgage-Backed Securities	$780
Commercial Mortgage-Backed Securities	$940
Consumer ABS	$650
High-Grade Corporate Debt	$3,000
High-Yield Corporate Debt	$600
Collateralized Debt Obligations	$400
Collateralized Loan Obligations	$350
Other ABS	$1,100
Total	$11,920

Source: Compiled from a variety of sources including Goldman Sachs, JP Morgan Chase & Co, Lehman Brothers, Markit.com, Merrill Lynch and IMF Staff estimates.

Benefits of well-regulated securitisation

When properly structured and monitored, securitisation promises numerous benefits. It can generate opportunities for specialisation that reduce funding costs, increase the range of financial products available, encourage financial institutions to deploy capital more efficiently, and allow borrowers, lenders, and investors to manage their risks more flexibly. However, transferring risk undermines incentives to perform due diligence at virtually every stage in the securitisation process. In the last year, evident shortfalls of care and diligence in the origination, rating, and securitisation of mortgages have led to a collapse in the prices of securitisations related to subprime mortgages, alt-A mortgages and other leveraged loans. The suddenness and extent of this price decline has undermined confidence in the reliability and integrity of the ratings process for asset-backed securities, and has reduced prices and credit flows in every market in which investors count on ratings firms to ascertain the quality of debt.

Meeting in Glen Cove, New York in July 2008, the Financial Economists Roundtable (Roundtable) discussed the need to strengthen the securitisation process by changing the incentives under which Statistical Ratings Organisations (SROs) operate. SROs (profit-making firms that prefer to call themselves credit rating "agencies") play a central role in testing the quality of the pool of obligations being securitized and in creating and marketing "tranches" of graded claims to cash flows from the underlying mortgages or other debt. The scope and scale of ongoing ratings downgrades and defaults on securitized debt make it clear that the ways in which credit ratings are used and constructed must be reformed.

Three types of improvements

The Roundtable sees a strong need for three types of credit-rating reform.

6. The Roundtable supports strategies designed to improve SRO incentives by increasing the transparency of their modelling practices and holding their managements accountable for negligent ratings errors.
7. The Roundtable challenges the wisdom of incorporating SRO ratings in securities and banking regulations issued by governmental entities. By outsourcing public authority to private firms, this practice intensifies the conflicts of interest that SRO personnel must resolve.
8. To acknowledge differences in the degree of leverage that is imbedded in different issues of securitized debt, Roundtable recommends that SROs be required to state an express margin for error in their ratings for every tranche of securitized instruments.

Some Historical Perspective

Bond markets functioned internationally for 300 years before the first rating organisations appeared in the US. An active corporate bond market, largely in debt issued by railroad companies, emerged in the middle of the 19th century in the US more than half a century before the first SRO opened for business. SROs remained largely US-focused until the 1970s, when global capital markets began to re-emerge after fading in the interwar period.

In the pre-SRO era, underwriters performed some certification and monitoring for investors. Thereafter, third-party ratings mitigated asymmetric-information problems between issuers, underwriters, and investors by credibly centralizing efforts to collect and analyze the information needed to estimate, monitor, and update the probability of default of individual bonds.

Ratings data also expanded the range of investors willing to hold corporate bonds to include parties that lacked the resources to undertake a complete and independent credit analysis. SROs originally earned their revenue by selling ratings manuals directly to investors.

Building a reputation for accuracy is critical to the success of any SRO. Ratings firms prospered to the extent that their predictions of the probability of default proved reliable after the fact. Over time, the accumulation of reputational capital by successful SROs made entry difficult for new SROs. The result is that two or three SROs have dominated

the market for credit ratings, and did so long before the SEC began to designate particular SROs as Nationally Recognized Statistical Rating Organisations (NRSROs) in the 1970s.

In the early 1930s, incentives for SROs to produce reliable information for investors were complicated by introducing ratings into the regulatory process. Regulators of banks, insurance companies and pension funds began to use ratings to limit the riskiness of the assets held by regulated entities. Regulators now set two kinds of rules: rules that restrict the extent to which a firm can hold assets that fall below investment-grade or, as in the case of money market mutual funds, require a higher threshold than investment grade, and rules that link capital requirements to the ratings on individual securities, with lower capital charges for high-rated securities.[61] The existence of such regulatory consequences was bound to intensify pressure on SROs to inflate the grades of lower-rated securities, because regulated clients routinely explore and develop ways of reducing their regulatory burdens. Frank Partnoy (1999, p.684)[62] describes client pressure in this way: "[O]nce regulation … incorporates ratings, rating agencies begin to sell not only information but also valuable property rights associated with compliance with the regulation." As ratings became more widely used in trigger clauses in bond contracts, strong ratings conveyed additional benefits to the issuer.

Of course, a concern for protecting their reputations can act as a healthy counterincentive. Studies of ratings accuracy during the 20th century find that SROs have done a reasonably good job of predicting the probability of default of corporate bonds relative to regulatory indicators[63] of default risk and market measures of default risk. Still, grade inflation has occurred. Caouette et al. (2008) observe that though the ratings do represent relative risks (on average) reasonably well, they are less reliable as indicators of absolute

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[61] For example, (Sylla 2002, p. 37) notes that in 1936, the US Comptroller of the Currency issued a regulation prohibiting banks from purchasing investment securities with characteristics that were "distinctly or predominantly speculative," and then added that "the terms employed…may be found in recognized rating manuals, and where there is doubt as to the eligibility of a security for purchase, such eligibility must be supported by not less than two ratings manuals." The latter phrasing, referring to recognized raters, was attacked as placing too much authority in the private rating agencies, and on that ground it was deleted from the regulation in 1938, although in a less formal way it remained in effect with regulators. For additional details see Richard Sylla, 2002, "An Historical Primer on the Business of Credit Rating," in *Ratings, Rating Agencies, and the Global Financial System*, edited by Richard M. Levich, Giovanni Majnoni, and Carmen Reinhart, The New York University Salomon Center Series on Financial Markets and Institutions, Kluwer Academic Publishers, pp. 19-40.

[62] Frank Partnoy, 1999, "The Siskel and Ebert of Financial Markets? Two Thumbs Down for the Credit Rating Agencies," *Washington University Law Quarterly*, 77, October.

[63] For example, Hickman (1960) used legal investment lists for savings banks adopted by regulatory authorities in the states of Maine, Massachusetts, and New York as an indicator of regulatory ratings. For additional details see W. Braddock Hickman, 1960, *Statistical Measures of Corporate Bond Financing since 1900*, Princeton: Princeton University Press.

credit risks; default probabilities associated with specific rating levels drift over time and therefore need to be frequently updated.[64]

The spread of photocopying technology facilitated unauthorized reproduction of SRO rating manuals, which undermined the traditional user-pays revenue model. SROs responded by shifting to a business plan in which the issuer pays for their services. This plan intensified SRO conflicts of interest with issuers. Issuers and underwriters actively shopped for ratings and were unwilling to pay for ratings they deemed too low.[65] In the case of the newer securitized debt, pressure for favourable ratings has been particularly intense because the large underwriters of structured debt could direct substantial future revenue to a cooperative NRSRO, thus increasing the potential for undue influence. SROs argued that concern for maintaining their reputational capital would nevertheless insulate ratings decisions on securitized debt from undue influence by issuers. This argument became increasingly less persuasive as income from rating structured debt began to increase sharply and account for almost half of the revenues of the three dominant firms.

A further weakness inherent in issuer-pays arrangements is that they undercut SRO incentives to monitor and downgrade securities in the post-issuance market. The re-rating of securities is usually paid for by a maintenance fee that is collected in advance from each issuer. Few issuers are eager to be monitored closely, especially when monitoring is apt to result in downgrades, and so it is not surprising that ratings are seldom downgraded until long after public information has signalled an obvious deterioration in an issuer's probability of default.[66]

Not until 1975 did the SEC confront the problem of how to determine whether a particular SRO could be relied upon to provide ratings of sufficiently high quality that they could be used in the regulatory process. The SEC's solution to this problem was to certify particular SROs as meeting sufficiently high standards to be designated by the SEC as an NRSRO. Other regulatory agencies, Congress, and many private agreements made use of the SEC's designation of qualified NRSROs. For potential new entrants to

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[64] See J. Caouette, E. Altman, P. Narayanan, *Managing Credit Risk*, 2nd edition, John Wiley & Sons, NY, 2008. The expected dollar-denominated default rate on non-investment grade corporate bonds in 1984 was 1.6% per year, but is now 3.9% per year. As late as 2007, Fitch reported that the default rate on structured products through 2006 was similar or lower than that on corporate bonds. Subsequently, results for structured products deteriorated sharply.

[65] The June 2008 settlement between the New York Attorney General and the ratings agencies mandated charging separate fees for indicative ratings. While the intent was to reduce shopping for ratings, some FER members raised concerns that it may have the opposite effect by lending tacit official approval to the practice of shopping for ratings.

[66] E. Altman, H Rijken, "How Rating Agencies Achieve Rating Stability," *Journal of Banking & Finance*, 28 (2004), 2629-2714, and E. Altman & H. Rijken, "A Point in Time Perspective on Through the Cycle Ratings," *Financial Analysts Journal*, 62, No. 1, (2006), 54-70.

the ratings industry, the costs and uncertainty of obtaining NRSRO status imposed an additional, legal barrier on top of their already substantial reputational disadvantage. From 1975 to 2002, although the SEC received numerous applications from entities in the US and abroad, only one new general-purpose NRSRO was approved.

The NRSRO designation strengthened the market power of the dominant three incumbent firms: Moody's, Fitch, and Standard & Poors. In turn, the oligopolistic position these firms enjoy reduces their incentives to compete in ratings methods and procedures. For example, even though SROs inevitably lack long histories and through-the-cycle data on innovative instruments, they have all been slow to draw on the information generated by derivatives trading (especially in credit default swaps) and from secondary markets for debt and equity, both of which would help them analyze potential defaults in a forward-looking context. Nor have SROs developed procedures for supplying information on correlations that investors need to protect against concentrations in risk exposure that might exist in a portfolio of securities.

Despite the potential benefits of strengthening competitive forces in the SRO industry, the three major NRSROs have been permitted to acquire competitors virtually without challenge.[67] The Roundtable believes that the regulators could enhance competition among SROs by more vigorous application of antitrust policy. Although the SEC recently recognized a handful of additional firms as NRSROs in the last two years in response to pressure from Congress to ease barriers to entry, it will take considerable time for new entrants to wean much market share away from the three dominant firms.

Roundtable's Evaluation of the SEC's Proposals for Reform

Because some market participants are bound to base investment decisions primarily on credit ratings, efforts to improve ratings quality are important. In June, the SEC proposed several ways to improve the work of SROs and to increase competition in the ratings industry in three ways. The avowed and laudable purpose of these proposals is to foster increased transparency, accountability, and competition in the credit rating industry for the benefit of investors. The precise models used by SROs are proprietary and to encourage an individual SRO to invest in improving its models, the models themselves must remain proprietary. At the same time, to hold SROs accountable for their performance requires that each SRO release enough information on data input into its models to allow outside experts to verify its conclusions or provide alternative results.

The SEC's first proposal seeks to mitigate conflicts of interest, enhance disclosures, and improve internal policies and business practices at SROs. The second proposal would require NRSROs to differentiate the ratings on structured products from those that they issue on traditional bonds and loans, and perhaps to provide a timely and relevant accompanying narrative. The third proposal would nearly eliminate the role of ratings in

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[67] For example, Moody's purchased the market-based credit risk and portfolio management firm, KMV, in 2001 and Duff & Phelps was purchased by Fitch in the early 1990s. Although KMV was not formally an NRSRO, it competed directly with NRSRO firms.

SEC regulations. Roundtable supports the thrust of each proposal. To explain why, we discuss each in turn.

Conflicts of interest, disclosure, and improve business practices

In the important areas of disclosure and incentive conflicts, the SEC's first proposal would require SROs to:

- Publish all ratings and subsequent re-ratings in ways that facilitate comparisons of SRO performance in a timely manner. Disclosures would include performance statistics for spans of 1, 3, and 10 years within each rating category.[68]
- Disclose all information used to determine ratings for structured products. In addition, this would require each SRO to explain whether and how it might rely on the due diligence of others to verify the character of the assets underlying a structured product and to include sufficient information on the changing value of underlying assets to permit outside analysts (i.e., persons who are not paid by the issuer) to evaluate the riskiness of the structured claims issued against them.
- Explain how frequently credit ratings are reviewed, whether different models are used for ratings surveillance than for setting an initial rating, and whether, when changes are made in an SRO's models and procedures, they are applied retroactively to existing ratings.

The Roundtable is less enthusiastic about the SEC's proposed prohibition against letting an SRO act as both a rater of and a paid advisor for a tranched securitisation. Although we appreciate that acting in these dual capacities intensifies SROs' conflicts of interest, we believe that the customary industry practice of presenting alternative structures for an SRO to rate makes it impossible for the courts to distinguish ratings services from advisory services in a definitive way. Moreover, we believe the enhanced disclosures will ease this conflict of interest.

The SEC or Congress might also impose disclosure requirements on issuers. Every US issuer of securitised claims could be required to provide a monthly balance sheet and income statement for each and every securitisation structure it creates, even if the securities are to be marketed offshore. The revenue-generating pool of underlying assets constitutes the structure's assets and the tranches set by the securitisation structure constitute claims against these assets. When underlying assets lose value, whether through rating downgrades or outright defaults, prospective revenues diminish and the values of affected tranches deteriorate. These easy-to-interpret disclosures would make pending deteriorations in cash flows more visible to investors and permit the joint distribution of risk statistics for the various tranches to be studied more effectively.

Differentiating structured products from traditional bonds and loans

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[68] Although SROs provide data on default rates for bonds and loans by rating categories, data on structured products have been provided less frequently and ought to be published faster and more extensively in times of market turmoil.

The SEC's second proposal seeks to differentiate ratings on securitisations in the future from those on ordinary bonds. Because of their imbedded leverage, securitised instruments may have a much deeper downside loss exposure than ordinary bonds. Using the same grading scale for both kinds of instruments reduces the effectiveness of restraints on institutional risk taking built into longstanding regulatory protocols. This renders many inherited regulatory strategies obsolete and was bound to confuse at least some investors. As an estimate, every credit rating carries a calculable margin for error. Introducing a differentiated scale is one way to alert investors that downside margins for error are much larger for securitised claims than for ordinary debt. Because imbedded leverage and downside margins for error grow larger when claims on an underlying asset pool are tranched and retranched, SROs should be required to express ratings on securitised debt in a two-dimensional fashion (i.e., with an accompanying estimate of their particular margin for error). This would be much more useful than merely developing a separate scale for securitised instruments. SROs might either use estimates of potential downside variability to rate claims in an interval framework (e.g., a particular rating might be expressed as lying in the range from A to AAA) or prepare and publish the volatility estimates themselves.

Eliminate ratings' role in SEC regulations

The SEC's third proposal addresses its practice of basing rules and reporting procedures on NRSRO ratings. The concern is that the use of NRSRO ratings in supervision simultaneously outsources some of the regulatory authority's political accountability to profit-making firms and appears to confer an official seal of approval on their methods that might reduce the willingness of other parties to undertake due diligence and invest in securities analysis. The SEC proposes to remove references to NRSRO ratings from virtually all of its rules and protocols.[69]

The Roundtable discussion divided references to NRSRO ratings in SEC regulations into two categories:

- Prescriptive mandates that tell asset managers what they must do; and
- Quasi-safe-harbour provisions that provide firms, managers and directors some protection from liability for adverse outcomes.

The Roundtable strongly endorses eliminating from SEC regulations every prescriptive mandate that is or would be based solely on credit ratings set by NRSROs. We believe this will have three advantages. First, the prudence of investment decisions must ultimately be evaluated in a portfolio context and cannot be assured by constraining the

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[69] An exception is drawn for rules and forms that "relate to non-public reporting or recordkeeping requirements used to evaluate the financial stability of large brokers or dealers or their counterparties and are unlikely to contribute to any undue reliance on NRSRO ratings by market participants." (Quoted from SEC 17 CFR Parts 229, 230, and 240, Release No. 33-8940; 34-458071; File No. S7-18-08, p. 5.) These include rules which impose certain recordkeeping and reporting requirements for holding companies that own broker-dealers and of supervised investment-bank holding companies and reports regarding the risk exposures of large broker-dealers and OTC derivatives dealers.

credit quality of individual assets an institution holds, regardless of how accurate the SRO ratings might be. Second, depriving SRO ratings of regulatory consequences will remove a major source of pressure for ratings inflation. Third, in the absence of SEC mandates, managers and directors can and will subject the prudence of their decision making to review by a much wider array of outside monitors. In particular, they will expand their use of directors and officers insurance and introduce letters of assurance from well-respected experts. Whether or not these other monitors aspire to attain SRO status, they would supplement, extend, and challenge the assessments of individual securities made by SROs, thereby injecting valuable competition into the market for rating services.

The Roundtable found it harder to assess the net benefits of quasi-safe-harbours (offered mainly to directors and officers of money market mutual funds) based on credit ratings.[70] Some members felt that removal of quasi-safe-harbours would yield benefits from increased managerial diligence and reduced pressures for grade inflation that would more than offset the increased compliance costs and costs of defending nuisance lawsuits. Other members believed that there are efficiencies to be achieved by use of intermediaries specialized in credit review. They argued that the rating requirements for money market mutual funds had worked reasonably well (apart from the current credit crisis) and that increased compliance costs, especially for smaller funds, would swamp any benefits that might emerge from increased managerial effort. Moreover, it was agreed that retaining this role for NRSROs would provide SROs with an incentive to register for NRSRO status and comply with the enhanced disclosure requirements. Even if the SEC should decide to continue to offer quasi-safe-harbours based on credit ratings, requiring a new ratings scale for securitised debt means that the content of such provisions has to be analyzed afresh to acknowledge the implications of the distinctions created. A new scale will similarly force banking agencies and state regulatory bodies to rethink and rephrase all rules and regulations that rely on credit ratings. In view of the importance of regulation-induced innovation in creating financial turmoil, such rethinking is long overdue.

Implications for Other Regulators

Although the SEC stressed that it had consulted with the President's Working Group on Financial Markets, the Financial Stability Forum and the Technical Committee of the International Organisation of Securities Commissions (IOSCO), the SEC's proposed removal of references to ratings in its regulations diverges sharply from reform strategies currently being implemented by other regulators in the US and abroad. For example, the Treasury's temporary insurance of money market mutual funds relies on compliance with rule 2a-7 that relies on rating as a useful indicative guidance, and the Treasury's recent plan to recapitalize banks will be contingent on ratings to some extent. Roundtable sees the SEC's third proposal as providing a timely challenge to other regulators to re-

[70] This protection is at best a quasi- safe- harbor because rule 2a-7(c) (3) states that the board must take into consideration "factors pertaining to credit quality in addition to any rating." It might better be viewed as indicative guidance.

examine the extent to which they plan to employ SRO ratings in their own regulatory schemes.

Although new rules and enhanced supervision might induce slightly better SRO performance, it is unlikely that increased government oversight of the production of credit ratings can improve SRO performance over time and improve the performance of investment managers as effectively as market forces can. It is particularly important for banking regulators to reconsider their reliance on ratings decisions. By adopting Basel II, they are linking minimum capital requirements for some banks to ratings issued by whatever SROs they recognize in each individual nation. Some banks will be free to use Basel II's Standardized Approach, which the EU and Japan have already begun to implement and is proposed for implementation in the US. In this scheme, capital charges are assigned to each bank's assets according to their credit ratings, with unrated assets receiving a 100% risk weight. Since loss reserves are already based on anticipated losses, capital requirements are intended to provide a buffer against unexpected risks. Thus, it is illogical to use credit ratings to establish capital requirements, since they convey no information about the volatility of an asset's return around expected loss experience. In addition, ratings may be useful for establishing loss reserves for particular assets, but they say nothing about how a bank's net worth or its portfolio of assets may vary in value. The amount of capital that must be set aside to achieve a particular target level of safety has to be linked explicitly to measures of the volatility of its earnings, not asset ratings.

Since the subprime crisis has had a world-wide reach, regulatory authorities in other countries are also thinking about how to regulate SROs. Despite the SEC's attempt to coordinate its actions with IOSCO, it is clear that different countries may respond to the crisis in different ways. The use of ratings is hard-wired into many EU regulations. The EU's internal market commissioner is thinking of introducing some exacting regulatory requirements to make sure ratings are not "tainted" by the conflicts of interest inherent to the ratings business. The European Commission has proposed a registration and oversight regime that would have two features. The first charges the Committee of European Securities Regulators (CESR) with the responsibility for choosing an individual country to register, coordinate and consolidate oversight of individual SROs. The second creates a central supervisor, financed from the EU budget, to license rating organisations. As capital markets become more closely integrated, ratings organisations are bound to find it difficult to operate under different rules in different locations. Also differences in rules would complicate cross-country comparisons of ratings for investors and regulators. If a single supervisory approach is to be adopted, Roundtable strongly supports the SEC's strategy which relies on greater transparency, increased competition and the abandonment of the practice of incorporating NRSRO ratings in regulatory mandates. The Roundtable hopes that other regulators will follow the SEC's lead.

FINANCIAL ECONOMISTS ROUNDTABLE MEMBERS SIGNING STATEMENT

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Business School; Lemma W. Senbet, University of Maryland; Franklin Edwards, Columbia University; Jeremy Siegel, University of Pennsylvania; Robert Eisenbeis, Economic Consultant; Chester Spatt, Carnegie Mellon University; Wayne Ferson, University of Southern California; Robert Stambaugh, University of Pennsylvania; Charles Goodhart, London School of Economics; Laura Starks, The University of Texas at Austin; Martin Gruber, New York University; Marti Subrahmanyam, New York University; Lawrence Harris, University of Southern California; Ingo Walter, New York University; Richard Herring, University of Pennsylvania.

Pedersen: Liquidity risk and the current crisis

15 November 2008

What is liquidity? Why is it at the heart of the crisis? How can we fix it? This column explains it all in terms any trained economist can understand.

What is liquidity risk and how can it help us understand the current crisis? How do we solve the crisis - and which measures will only hurt?

Here I provide some answers. The column is based on my 20 October 2008 talk at the International Monetary Fund and the Federal Reserve Board. To see the slides with lots of figures and graphs, click here.

What is liquidity risk?

There are two kinds of liquidity: market liquidity, and funding liquidity.

- A security has good market liquidity if it is "easy" to trade, that is, has a low bid-ask spread, small price impact, high resilience, easy search (in OTC markets).
- A bank or investor has good funding liquidity if it has enough available funding from its own capital or from (collateralised) loans.

With these notions in mind, the meaning of liquidity risk is clear.

- Market liquidity risk is the risk that the market liquidity worsens when you need to trade.
- Funding liquidity risk is the risk that a trader cannot fund his position and is forced to unwind.

For instance, a levered hedge fund may lose its access to borrowing from its bank and must sell its securities as a result. Or, from the bank's perspective, depositors may withdraw their funds, the bank may lose its ability to borrow from other banks, or raise funds via debt issues.

We are experiencing extreme market and funding liquidity risk

Liquidity generally varies over time and across markets, and currently we are experiencing extreme market liquidity risk. The most extreme form of market liquidity

risk is that dealers are shutting down (no bids!), which is currently happening in a number of markets such as those for certain asset-backed securities and convertible bonds. We are also experiencing extreme funding liquidity risk since banks are short on capital, so they need to scale back their trading that requires capital, and also scale back the amount of capital they lend to other traders such as hedge funds, that is, hedge funds now face higher margins. In short, if banks cannot fund themselves, they cannot fund their clients. The two forms of liquidity are linked and can reinforce each other in liquidity spirals where poor funding leads to less trading, this reduces market liquidity, increasing margins and tightening risk management, thus further worsening funding, and so on.

Liquidity risk and asset prices

An illiquid security has a higher required return to compensate investors for the transaction costs. Since market liquidity may deteriorate when you need to sell in the future, investors face market liquidity risk as discussed above. Investors naturally want to be compensated for this, so market liquidity risk increases the required return. Indeed, the liquidity-adjusted capital asset pricing model shows how liquidity betas complement the standard market beta. The higher required return in times of higher market liquidity risk leads to a contemporaneous drop in prices, according to this theory, consistent with what we are seeing in the current marketplace. An overview of the liquidity literature is available here.

Liquidity risk and the current crisis: downward liquidity spirals

The trigger of the crisis was the bursting of the housing bubble, combined with a large exposure by the levered financial institutions. This led to significant bank losses with associated funding liquidity problems. This started the systemic liquidity spirals. As banks' balance sheets deteriorated, they had to de-lever. To do this, they:

- started selling assets;
- hoarding cash;
- tightening risk management.

This put stress on the interbank funding market (as measured e.g. by the TED spread, see slides) as everyone was trying to minimise counterparty exposures.

Banks' funding liquidity problems quickly spread. Other investors, especially those that rely on leverage such as hedge funds, face funding risk when banks become less willing to lend, they raise margins, and, in the extreme, when the banks fail as Lehman did.

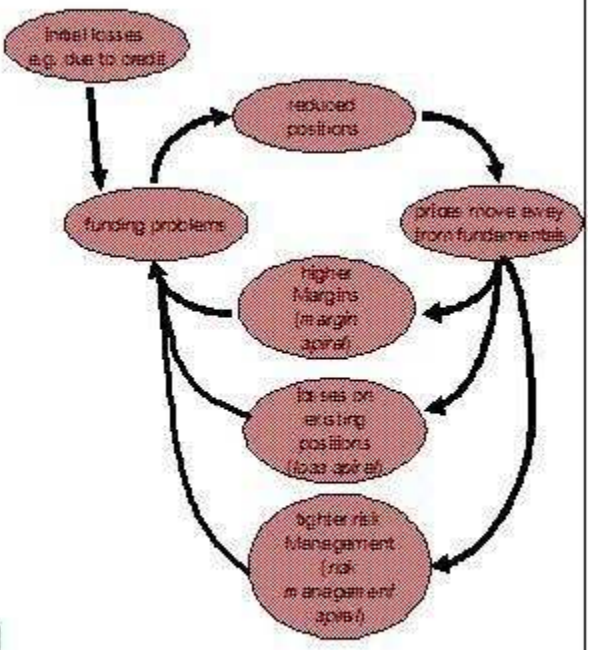
When banks such as Bear Stearns and Lehman started to look vulnerable, their clients risked losing capital or having it frozen during a bankruptcy, and they started to withdraw capital and unwind positions, leading to a bank run.

This funding liquidity crisis naturally lead to market illiquidity with bid-ask spreads widening in several markets, and quoted amounts being reduced by dealers with less available capital. This market illiquidity, and the prospect of further liquidity risk, scared investors and prices dropped, especially for illiquid assets with high margins.

This is the downward liquidity spiral as illustrated in the chart.

Chart 1

Some traders hit or near margin constraints (or risk limits) and reduce positions, which:
1. moves prices against them (and others with similar positions) leading to further losses, and
2. increases volatility and reduces market liquidity
3. increases margins and tightened risk management.
All of which lead to further funding problems.
This leads to reduced positions and the 3 cycles restart.
Continue until a new equilibrium is reached



Sources: Garleanu and Pedersen (2007) and Brunnermeier and Pedersen (2008)

The crisis spreads to other asset classes

The crisis has been spreading across asset classes and markets globally. There are currency crashes as traders unwind carry trades and lose faith in weak currencies. Further, as an example of the gravity of the liquidity crisis, the "Covered Interest Rate Parity" – the most basic arbitrage condition in the world's thickest market (foreign exchange) – currently fails to hold even for the major currencies. This must mean that no one can arbitrage because no one can borrow uncollateralised, no one has spare collateral, and no one is willing to lend – arbitrage involves both borrowing and lending.

The increased risk and illiquidity has also lead to a spike in volatility, contributing to the higher margins. Further, correlations across assets have increased as everything started trading on liquidity.

The crisis spreads to Main Street

Clearly, the crisis is having a significant effect on the real economy as homeowners see their property value deteriorate, consumers access to borrowing is reduced, main street companies face higher cost of equity and especially debt capital and a lower demand for their products, unemployment goes up, etc.

What can - and what cannot - solve a liquidity crisis?

If the problem is a liquidity spiral, we must improve the funding liquidity of the main players in the market, namely the banks. Hence, banks must be recapitalised by raising new capital, diluting old equity, possibly reducing face value of old debt. This can be

done with quick resolution bankruptcy for institutions with systemic risk, i.e. those causing liquidity spirals.

Further, we must improve funding markets and trust by broadening bank guarantees, opening the Fed's discount window broadly (giving collateralised funding with reasonable margins), and ensuring the Commercial Paper market function. Further, risk management must acknowledge systemic risk due to liquidity spirals and the regulations must consider the system as a whole, as opposed to each institution in isolation.

If we have learned one thing from the current crisis, it is that trading through organised exchanges with centralised clearing is better than trading over-the-counter derivatives because trading derivatives increases co-dependence, complexity, counterparty risk, and reduces transparency. Said simply, when you buy a stock, your ownership does not depend on who you bought it from. If you buy a "synthetic stock" through a derivative, on the other hand, your ownership does depends on who you bought it from - and that dependence may prevail even after you sell the stock (if you sell through another bank). Hence, when people start losing confidence in the bank with which they trade, they may start to unwind their derivatives positions and this hurts the bank's funding, and a liquidity spiral unfolds.

Banning short selling is a bad idea

In the debate about how to solve the crisis and prevent the next one, it has been suggested that policymakers should ban short selling and impose a transaction tax on stocks. I believe that neither is a good idea. First, short sellers bring new information to the market, increase liquidity, and reduce bubbles (remember the housing bubble started this crisis) so preventing this can be very costly and prohibiting short sales does not solve the general funding problem. While temporarily banning new short sales of financial institutions can be justified if there is risk of predatory trading, this is rarely a good idea since short sellers are often simply scapegoats when bad firms go down fighting. (See here for how shortselling works.)

Tobin taxes are a bad idea

Second, a transaction tax on stocks is problematic for several reasons, most importantly because it moves trading away from the official exchanges and into the derivatives world, thus increasing the systemic risk. One of the main arguments in favour of such a transaction tax is that it helps to prevent bubbles, but there is little or no empirical evidence to support this. For instance, in the UK there is a 0.5% tax on trading stocks and a higher tax on trading real estate (up to 4%), but the UK arguably had one of the larger housing bubbles. Further, with a depressed and vulnerable stock market, this does not appear to be the best time to introduce transactions taxes related to potential stock price bubbles in the far future.

To see the problem, consider what happened in the UK due to their transaction tax. The professional investors such as hedge funds found a way around the regulation by executing their trades using derivatives rather than trading stocks directly (while individual investors are unable to avoid the tax). Specifically, in the UK hedge funds typically trade via swaps with counterparties such as investment banks to avoid the transaction tax. There is little doubt that this would also happen in the US if such a tax

was introduced here. This would increase counterparty dependencies, systemic risk, and worsen risk management spirals as discussed above.

Another serious problem with the tax is that it lowers liquidity in the marketplace as trading activity may move abroad, move into other markets, or disappear. On top of these distortions to the stability of the financial system, this tax may raise capital costs for Main Street firms because of higher liquidity risk in US financial markets. Indeed, buying US stocks will be less attractive to investors – domestically and internationally – if they must pay a tax to buy and if they anticipate reduced liquidity in the future when they need to sell.

This could make it harder for US corporations to raise capital. And, the importance of being able to raise capital is what this crisis is all about.

Conclusion

Market liquidity risk is an important driver of security prices, risk management, and the speed of arbitrage. And the *funding liquidity* of banks and other intermediaries is an important driver of market liquidity risk. Liquidity crisis are evolve through liquidity spirals in which losses, increasing margins, tightened risk management, and increased volatility feed on each other. As this happens, traditional liquidity providers become demanders of liquidity, new capital arrives only slowly, and prices drop and rebound.

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Persaud: How risk sensitivity led to the greatest financial crisis of modern times

7 October 2008

Subprime mortgages account for less than 1% of the world's debt stock. How could they cause the greatest financial crisis in modern times? "Risk sensitivity" is this column's answer. Regulators gave bankers incentives to combine bad loans with good ones and securitise the package in complex structures. The inseparability of the suspect parts meant problems with one package questioned the value of all packages. The least liquid banks failed, triggering a vicious cycle of fear and failure.

As banks fail and world stock markets plummet, the questions on many investors lips is how could rising delinquency rates in sub-prime mortgages, which account for less than

1% of the world stock of debt, trigger one of the biggest financial crises of all times? And how do we reverse it?

The answer to the first question lies in the two-word mantra of bankers and bank regulators over the past decade: "risk sensitivity". Like all mantras, this sounded good but was dangerous in its oversimplification. The pursuit of "risk sensitivity" led to a re-organisation of bank assets away from lending on the basis of the banker's private views about the borrower - regulators considered this hard to quantify and a little suspect – towards lending on the basis of an external credit rating. The higher the rating, the lower the capital banks had to set aside against the loan. Regulators saw this as not only risk-sensitive but transparent and quantifiable. Banking by numbers was oh so modern.

One of the implications of this risk sensitivity is that bankers were given incentives to enhance the credit rating of lending to reduce their capital charges and improve their profitability. They did so in multiple ways with Bear Sterns, Lehman Brothers, and AIG often acting as the brokers. The result was that the unit of lending was no longer a known borrower, but an indivisible hodge-podge of bits of originated and purchased loans and hedges that when combined, justified good ratings.

The focus on the rating led to the complexity that inevitably follows from using quantitative models to try and combine enough risky things to make the whole safer. But when something happened to question the rating of one package of loans, the complexity of these packages led the ratings of all packages to be questioned. Assets with the highest ratings, against which banks carried very little capital to protect them from the less than 1% probability of default, are now trading at 90 cents on the dollar. This is more of an uncertainty premium – reflected in liquidity – than it is a credit risk premium. It is the revenge of relationship banking.

One of the other consequences of lending by rating is that banks cannot easily quarantine the suspect parts of these loan packages because they are integral parts of the rated instrument. Because banks cannot easily do so, they do not trust other banks to have done so, so they stopped lending to each other. This forced the less liquid banks to fail, which encouraged the remaining banks to hoard liquidity, snatching it from the mouths of their clients whenever possible. This is how some problems in one small part of a subset of the financial system can bring the entire edifice down.

The good news is that the problem is partly artificial and therefore solvable. The trouble is that banks and others don't know how to value their assets because of the way they have been "organised", not that their assets don't have any value. The vast majority of governments, corporations, and individuals are servicing their debts. The bad news is that to re-organise loans and allow a greater dispassion in their valuation requires time. The definition of a crisis of confidence is that there is no time. This points to a few ways of reversing the current free fall of credit, markets, and economic activity.

First, as my friend Willem Buiter has suggested, the central bank could guarantee all short-term interbank loans – there is more than enough room for inter-bank rates to fall even if the central bank charged for this guarantee. It may buy the authorities some time and it would serve to revive the interbank market rather than disintermediate it. Second, if the cycle of asset write-downs has depleted a bank's capital, it makes sense for governments to inject capital in return for debtors accepting some partial debt for equity

swap. There is value locked up in these balance sheets. Third, we need to bring back buyers of credit, fast. The government could use ten-year loans to capitalise long-term buyers of credit instruments – like an insurance company or an investment fund with lock ups – prepared to hold assets either to maturity or long enough to pay back the government's capital. This gets around the mark-to-market problem, the problem of the public sector pricing and owning complex credit instruments, and may even encourage other investors to follow suit. It is not a million miles away from J.P. Morgan's rescue of the US financial system a hundred years ago. It is sad how little we have learned about the market's frequent insensitivity to risk.

Frank, González-Hermosillo, & Hesse: Transmission of liquidity shocks: Evidence from the 2007 subprime crisis

13 September 2008

The recent credit crisis started as a credit shock and then rapidly promulgated in the form of market and funding illiquidity before inducing solvency problems at some financial institutions. This column presents empirical evidence mapping the transmission channels of the crisis.

The rapid transmission of the US subprime mortgage crisis to other financial markets in the US and abroad during the second half of 2007 raises some important questions:

9. Through which mechanisms were the liquidity shocks transmitted across US financial markets during this period?
10. What was the relative strength of these potential linkages?
11. Did the episode of funding illiquidity in structured investment vehicles (SIVs) and conduits turn into an issue of bank insolvency?

Conceptually, a number of transmission mechanisms are likely to have been established during the recent period of turbulence, either through increased market liquidity, funding liquidity, or even default risks. In addition, re-enforcing liquidity spirals may be observed.

Market liquidity is an asset-specific characteristic measuring the ease with which positions may be traded without significantly affecting their corresponding asset price. In contrast, funding liquidity refers to the availability of funds such that a solvent agent is able to borrow in the market in order to service his obligations.

In general, the mechanisms through which liquidity shocks influence the market-clearing process may operate through different channels during normal times than in the midst of an episode of financial stress. During tranquil periods, market illiquidity shocks are typically short-lived, as they create opportunities for traders to profit and, in doing so, provide liquidity and contribute to the price-discovery process. However, during periods of crisis, several mechanisms may amplify and propagate liquidity shocks across financial markets, creating systemic risks. These mechanisms can operate through direct

linkages between the balance sheets of financial institutions but also indirectly through asset prices. Specifically, these price movements are set in motion when financial institutions face marked-to-market losses. As a consequence, positions are deleveraged, and if the value of the corresponding assets is significantly affected, the creditworthiness of the respective institutions will deteriorate due to rising risk of default. Here, leverage is procyclical and can amplify the financial cycle.

Transmission channels in the subprime crisis

The recent crisis' initial shock, the deteriorating quality of US subprime mortgages, was a credit event rather than a liquidity issue. Increased delinquencies on subprime mortgages resulted in uncertainty surrounding the value of a number of structured credit products that had these assets in their underlying portfolios. As a result, rating agencies downgraded many of the related securities and announced changes in their methodologies for rating such products, first in mid-July but then again in August and October. Meanwhile, asset-backed securities indices saw rapid declines, and the liquidity for initially tradable securities in their respective secondary markets evaporated. The losses, downgrades, and changes in methodologies shattered investors' confidence in the rating agencies' abilities to evaluate risks of complex securities, a result of which, investors pulled back from structured products in general.

The main channels of transmission were:

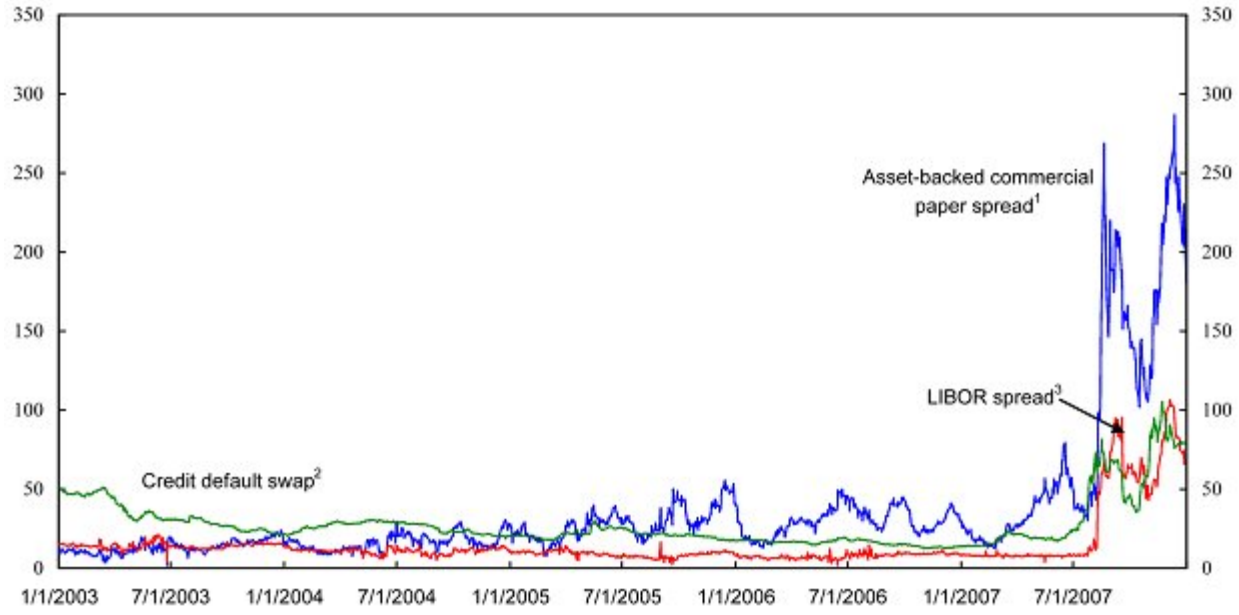
- *Asset-backed commercial paper funding liquidity*: Investors became unwilling to roll over the asset-backed commercial paper (ABCP) by which SIVs and conduits funded themselves. This idiosyncratic funding liquidity shock reflected increasing uncertainty with regard to the value of underlying securities.
- *Bank funding liquidity*: The SIVs began calling on the contingent credit lines from the sponsoring banks, and the balance sheets of those financial institutions were strained by the reabsorption of the SIVs, which was amplified due to declining asset values. As a result, the level of interbanking lending declined both for reasons of liquidity and credit risk, leading to higher LIBOR spreads.
- *Market liquidity and volatility*: As turbulence related to the US subprime mortgages heightened, financial markets more generally showed signs of stress, as investor preference moved away from complex structured products in a flight to transparency. Subsequently, positions were shifted in order to invest in only the safest and most liquid of all assets, such as US Treasury bonds. Furthermore, hedge funds that held asset-backed securities and other structured products were burdened by increased margin requirements, driven in turn by greater market volatility.
- *Bank solvency*: The crisis also brought to the forefront concerns about the soundness of some of the largest banks, as witnessed by the collapse of Bear Stearns. Financial institutions saw a decline in the values of the securitised mortgages and structured securities on their balance sheets, resulting in extensive write-downs. Also, funding liquidity pressures forced rapid deleveraging during this period at depressed asset prices. Finally, refinancing costs increased due to

rising money market spreads, amplified by banks' increasing reliance on wholesale funding.

Mapping the transmission channels

In a recent paper (Frank, González-Hermosillo, and Hesse 2008), we use a model of five variables which act as proxies for overall market liquidity, funding liquidity, default risk and volatility to examine the linkages across the different channels. For example, as Figure 1 shows, the ABCP spread, proxying for ABCP funding liquidity, the Libor spread, capturing bank funding liquidity and the CDS spread as a measure of bank default risk, all sharply increased at the onset of the subprime crisis.

Figure 1. Aggregate bank credit default swap rate and selected spreads



Sources: Bloomberg LP and IMF staff estimates

Notes: Spreads are expressed in basis points. Asset-backed commercial paper spread is the spread between yields on 90-day US ABCP and three-month US Treasury bills. Credit default swap is the unweighted daily average of the five-year credit default swaps for the following institutions: Morgan Stanley, Merrill Lynch, Goldman Sachs, Lehman Brothers, JPMorgan, Deutsche Bank, Bank of America, Citigroup, Barclays, Credit Suisse, UBS, and Bear Sterns. LIBOR spread is the spread between yields on three-month US LIBOR and three-month US overnight index swap.

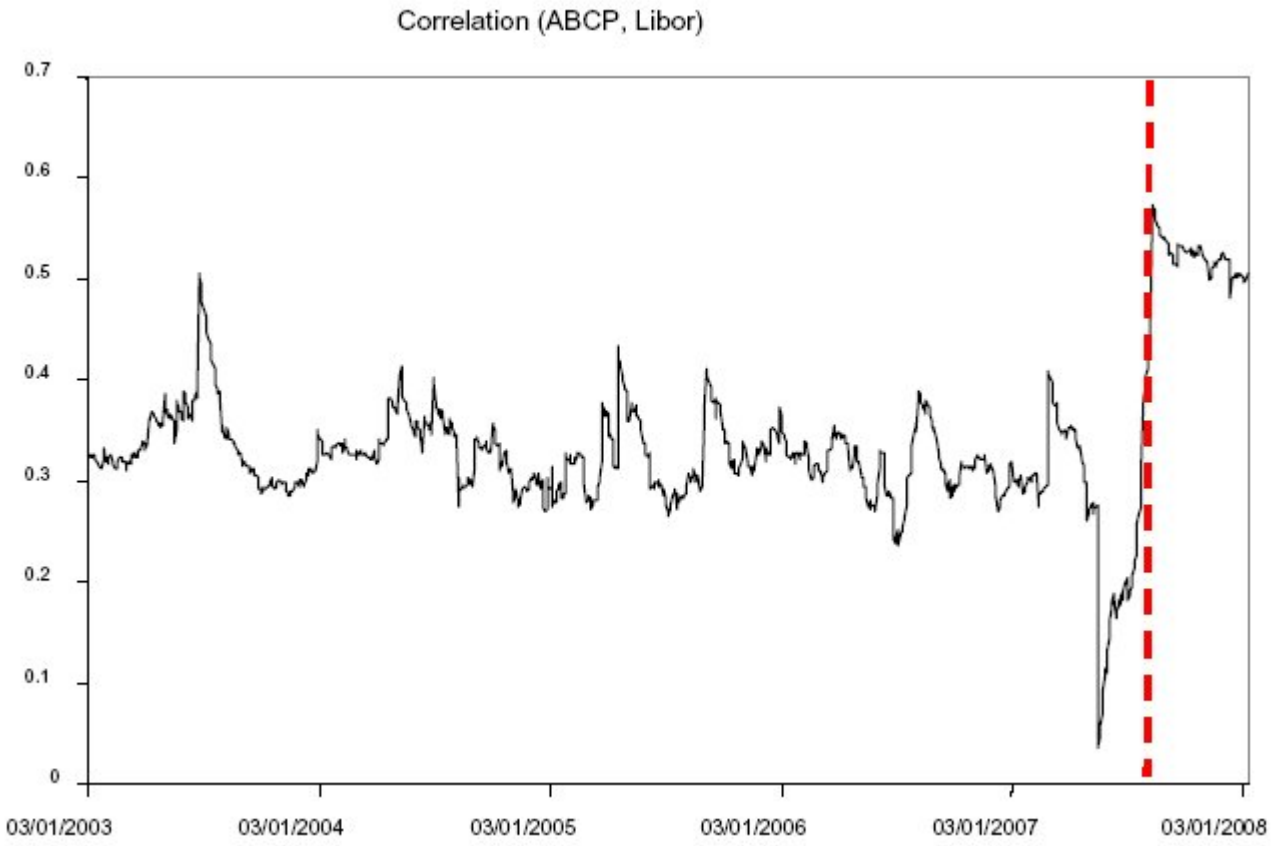
We adopt a multivariate generalised autoregressive conditional heteroscedasticity (GARCH) framework that accounts for structural breaks to analyse the co-movement of markets by inferring the correlations of the changes in the spreads discussed above, which in turn is essential in understanding whether the recent episode of financial distress has become systemic.

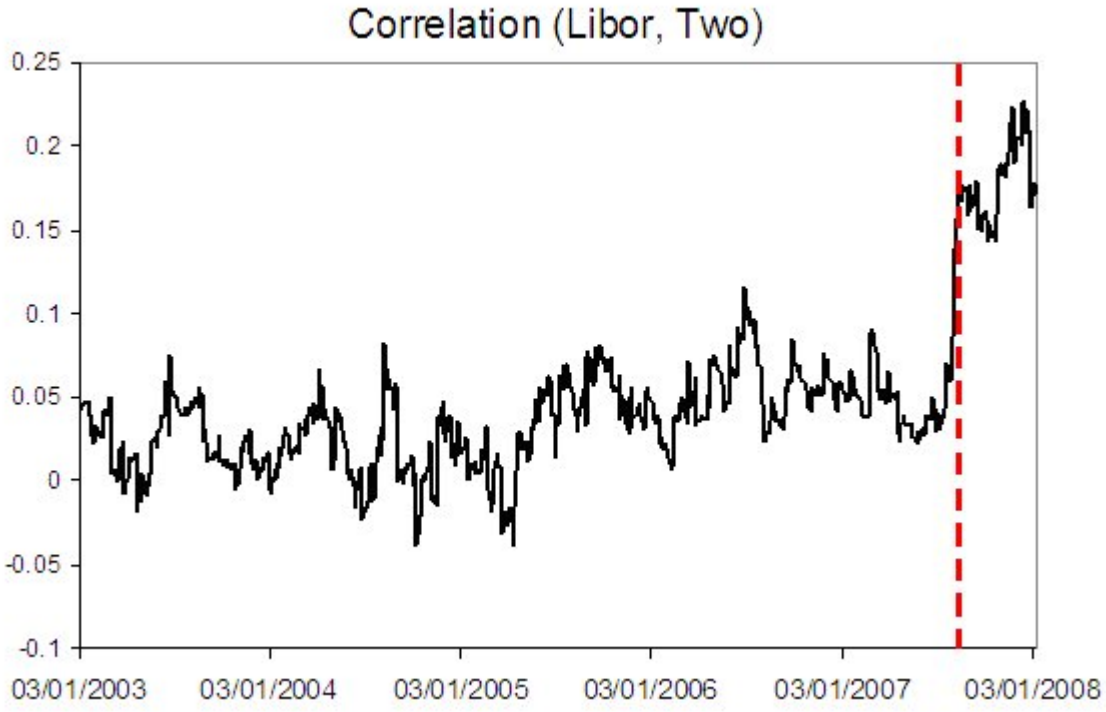
Figure 2 presents some results of the GARCH specification. There is strong evidence of increased interaction between the proxies for market and funding liquidity. The implied correlations between the ABCP and Libor spreads rise from a pre-crisis average of

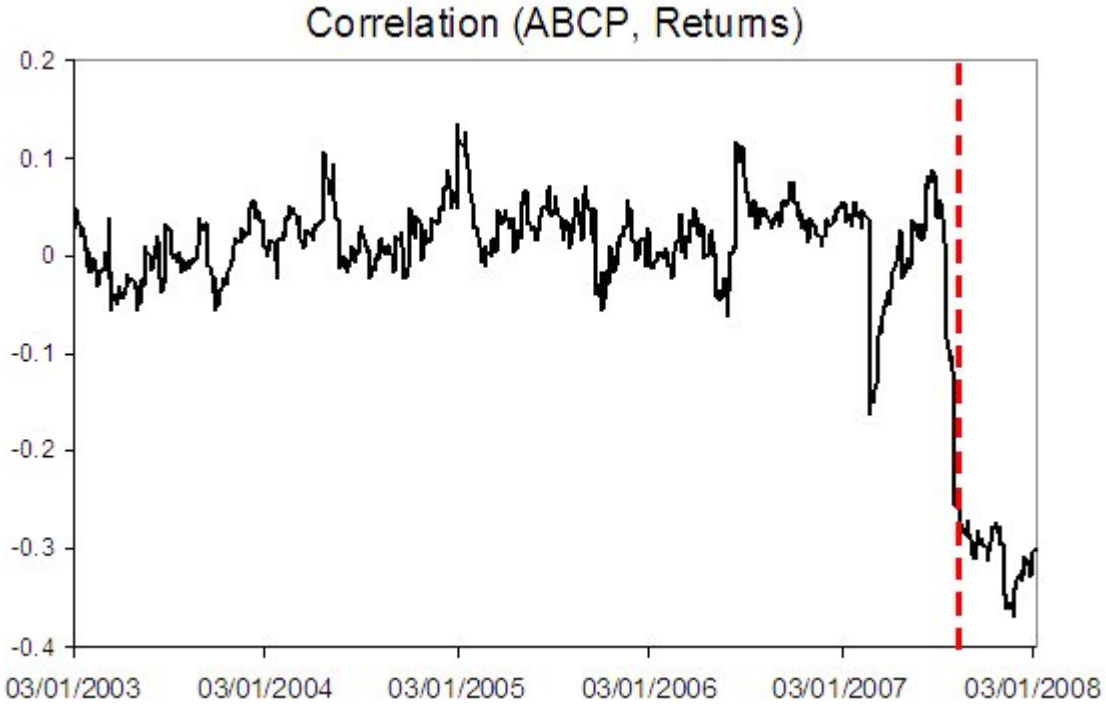
approximately 0.3 to above 0.5, a level at which they remain. Furthermore, the linkages between these two funding liquidity measures and the 2-year on-the-run/off-the-run spread, proxying for market liquidity, jump from around zero to 0.2.

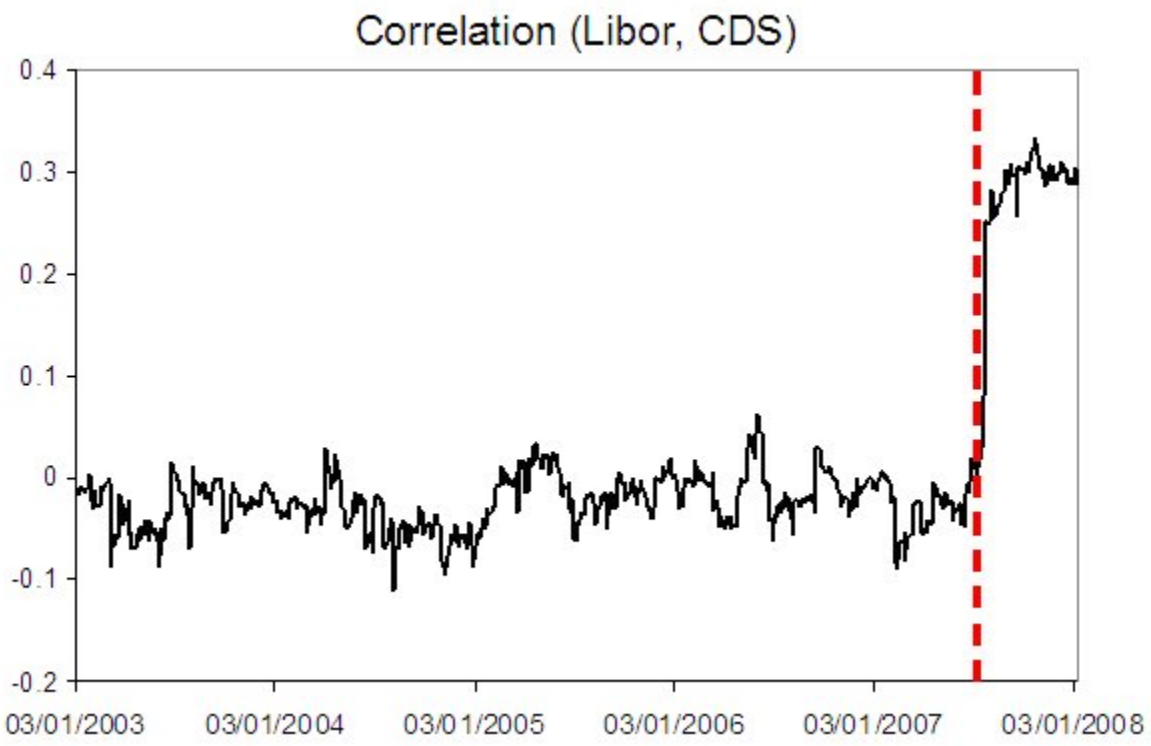
Furthermore, stronger interactions across the bond and the stock markets are evident, with S&P 500 returns and the ABCP spread becoming more highly correlated amongst each other, as well as with all other variables. Finally, the co-movement between liquidity and solvency is sharply increased. Before the hypothesised break date at the end of July 2007, changes in the credit default swap spreads remain approximately uncorrelated with all other measures, whereby the magnitude of these correlations increase to between 0.25 and 0.5 in absolute value. Whilst implied correlations had been fairly small in the pre-crisis period, the results presented here suggest that new channels of transmission of liquidity shocks were established during the second half of 2007.

Figure 2. Crisis correlations




Correlation (Libor, Two)
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
03/01/2003
03/01/2004
03/01/2005
03/01/2006
03/01/2007
03/01/2008


Correlation (ABCP, Returns)
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
03/01/2003
03/01/2004
03/01/2005
03/01/2006
03/01/2007
03/01/2008



The results of a very pronounced interaction between market and funding liquidity are consistent with the emergence of re-enforcing liquidity spirals during the crisis period. On the one side of this liquidity spiral, financial institutions were exposed to refinancing needs in the form of issuing ABCP, a situation where market illiquidity in complex structured products led to funding illiquidity. In this regard, the results also show that increased correlations between the ABCP and Libor spreads reduced the possibilities of funding from the interbank money market, thus highlighting systemic risks. On the other side of this spiral, many European banks that had large exposures to US asset-backed securities had difficulties accessing wholesale funding, inducing subsequent market illiquidity in different market segments. Due to the major importance of the interbank money market, central banks in turn intervened by reducing interest rates and providing additional liquidity to the markets in order to reduce pressures.

In addition to the described period of illiquidity, the US subprime crisis increasingly became one of insolvency, as banks such as Northern Rock, IKB, and Bear Stearns had to be rescued. This is captured by the implied correlations between the CDS and other variables in the GARCH model, which show clear signs of a structural break during the crisis period. Furthermore, these correlations have remained at elevated levels since then, suggesting that solvency concerns remain an issue.

Finally, it is also shown that seemingly unrelated stock and bond markets were affected during these times of severe stress. These transmission mechanisms were not restricted to the US financial markets but were also observed across other advanced and key emerging market economies. In particular, many of these markets abroad were also subject to heightened implied correlations between funding and market liquidity, and their respective domestic stock and bond markets.

Conclusion

The financial turbulence that originated in US financial markets has so far been very protracted. What started out as a liquidity crisis turned into a solvency issue. Indeed, a number of major central banks have intervened heavily in order to maintain the stability of the global financial system. Many of the largest complex financial institutions had to replenish their balance sheet positions through capital injections from Sovereign Wealth Funds and by other investors. The analysis presented here suggests that innovation, such as structured credit products and banks' increased ability to move risk off their balance sheets as well as augmented interconnectedness of large complex banks, made market and funding liquidity pressures readily turn into issues of insolvency.

The views expressed here are those of the author(s) and do not necessarily represent those of the IMF or IMF policy.

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Freixas and Parigi: The lender of last resort of the 21st century

22 December 2008

This column argues that the financial crisis of 2007 and 2008 redefines the functions of the lender of last resort, placing it at the intersection of monetary policy, supervision and regulation of the banking industry, and the organisation of the interbank market.

Since the creation of the first central banks in the 19th century, the existence of a lender of last resort (LOLR) has been a key issue for the structure of the banking industry. Banks finance opaque assets with a long maturity with short-lived liabilities – a combination that is vulnerable to sudden loss of confidence. To avoid avoidable disasters when confidence evaporates, the classical view (Thornton 1802 and Bagehot 1873) is that the central bank should lend to illiquid but solvent banks, at a penalty rate, and against collateral deemed to be good under normal times.

With the development of well-functioning financial markets, this view has been considered obsolete. Goodfriend and King (1988) in particular argue that the central bank should just provide liquidity to the market and leave to banks the task of allocating credit and monitoring debtors. This view, however, assumes that interbank markets work perfectly and in particular are not plagued by asymmetric information – but that is one of the main reasons why banks exist. The problem with asymmetric information is that liquidity shocks affecting banks might be undistinguishable from solvency shocks, thus making it impossible to distinguish between illiquid and insolvent banks (Goodhart 1987 and Freixas, Parigi and Rochet 2004).

LOLR and bank closure policy

LOLR is thus connected with the efficient bank closure policy and, more generally, with the costs of bank failures and of the safety net. In cases of illiquidity, the LOLR is channelling liquidity and improving the efficiency of the monetary policy framework. In insolvency cases, the LOLR acts as part of a safety net and thus is directly related to the overall regulatory framework.

Clearly, the design of an optimal LOLR mechanism has to take into account both the banking regulation context and the monetary framework that is intended to cope not only with inflation but also with the management of aggregate liquidity.

These issues are compounded by the fact that financially fragile intermediaries are exposed to the threat of systemic risk. Systemic risk may arise from the existence of a network of financial contracts from several types of operations: the payment system, the interbank market, and the market for derivatives. The tremendous growth of these operations recent decades has increased the interconnections among financial intermediaries and among countries. This has greatly augmented the potential for contagion (Allen and Gale 2000 and Freixas, Parigi and Rochet 2000).

The panic of 2008 and subprime crisis of 2007

The panic of 2008, originating with the subprime crisis of 2007, offers key insights into systemic risk and illustrates vividly the new role of a lender of last resort.

Years of accommodating monetary policy, regulatory arbitrage to save capital, and waves of financial innovations – which by definition tend to escape traditional prudential regulation – have created the conditions for slack credit standards and rating agencies that fail to call for adequate risk premia.

The opacity of the assets of the banks and of the financial vehicles they created to hold mortgages resulted in a dramatic and sudden reappraisal of risk premia. As with a thin market typical of the Akerlof lemons problem (Freixas and Jorge 2007), financial intermediaries have become reluctant to lend to each other if not for very short maturities. The fear that the interbank market might not work well and might fail to recycle the emergency liquidity provided by the central banks around the world in various and coordinated ways has induced banks to choose the rational equilibrium strategy of hoarding some of the extra liquidity instead of recycling it to the banks in deficit.

The resulting equilibrium closely resembles the gridlock described by Freixas, Parigi and Rochet (2000), where the fear that a debtor bank will not honour its obligations induces the depositors of the creditor bank to withdraw deposits, thus triggering the liquidation of assets in a chain reaction. This is the modern form of a “bank run” – financial intermediaries refuse to renew credit lines to other intermediaries, thus threatening the very survival of the system.

Liquidity in a non-functioning interbank market

Clearly channelling emergency liquidity assistance through the interbank market will not work if the interbank market is not functioning properly. Thus, to limit the systemic feedbacks of the sudden deleveraging of financial institutions, the Fed has taken the unprecedented steps of both increasing the list of collateral eligible for central bank lending and extending emergency liquidity assistance to investment banks, government sponsored entities, money market mutual funds, and a large insurance company (AIG).

Preventing a complete meltdown of the financial system has required the central bank to guarantee (and accept potential losses) that most if not all claims on financial institutions will be fulfilled.

The panic of 2008 has showed that it would be erroneous to adopt a narrow definition of the LOLR, stating that its role should be limited to the funding of illiquid but solvent depository institutions, while capital injections should be the Treasury's responsibility. This would lead to a very simplistic analysis of the LOLR's functions, as the complex decisions would be either ignored or handed over to the Treasury. Such a narrow view of the lender of last resort would create an artificial separation between lending by the lender of last resort at no risk and the closure or bail-out decision by the Treasury. In fact, the recent crisis has proved that the lender of last resort cannot deny support to a systemic, too-big-to-fail financial institution in need.

To understand the interventions of the lender of last resort in the current crisis, the view of its role has to be a broad one encompassing the closure or bail-out decision defining the lender of last resort as an agency that has the faculty to extend credit to a financial institution unable to secure funds through the regular circuit.

LOLR policy as part of the banking safety net

Once we establish that the lender of last resort policy has to be part of the overall banking safety net, the interdependence of the different components of this safety net becomes clear.

- First, the existence of a deposit insurance system limits the social cost of a bank's bankruptcy, and therefore, reduces the instances where a LOLR intervention will be required.
- Second, capital regulation reduces the probability of a bank in default being effectively insolvent, and so has a similar role in limiting the costly intervention of the LOLR.
- Third, the procedures to bail-out or liquidate a bank, determined by the legal and enforcement framework will determine the cost-benefit analysis of a LOLR intervention.

Adopting a perspective of an all-embracing safety net does not mean that the safety net has to be the responsibility of a unique agent. Often several regulatory agencies interact, because different functions related to the well functioning of the safety net are allocated to different agents.

It is quite reasonable to separate monetary policy from banking regulation, and the separation of the deposit insurance company from the central bank makes the cost of deposit insurance more transparent. Also, the national jurisdiction of regulation makes cross-border banking a joint responsibility for the home and host regulatory agencies, an issue of particular concern for the banking regulatory authorities in the EU.

Lessons for the LOLR's role

- First, we have witnessed how an additional aggregate liquidity injection is not a sufficiently powerful instrument to solve the crisis.

The illiquidity of financial institutions around the world is, in fact, directly linked not only to their solvency but also to asset prices.

- Second, central banks around the world have been much more flexible in providing support to the banking industry than initially expected.

In other words, that central bank cannot credibly commit to a bail-out policy. Indeed, the arguments regarding the bail-out of banks only if their closure could have a systemic impact (too-big-to-fail), that were intended for an individual bank facing financial distress were soon discarded in favour of a more realistic approach.

The case of Northern Rock, certainly not a systemic bank, illustrates this point. Its liquidation in such a fragile banking environment would have triggered a domino effect with contagion from one institution to another. From that perspective the lesson is that when facing a systemic crisis, the LOLR has to take into account also the "too-many-to-fail" issue, and consider how it will treat all banks that are in a similar position.

- A third point is that, in a systemic crisis, the safety net is extended to non-bank institutions.

This may be the result of financial innovation. Yet, because AIG had been issuing credit default swaps, its bankruptcy would have affected the fragility of the banking industry by leading to losses and a lower capital.

- Fourth, regulators around the world have a mandate to protect the interests of their national investors.

The international coordination of regulators, and in particular, the European coordination has been helpless when faced with the real cost of the Icelandic crisis. So, the theoretical models of non-cooperative behaviour are the ones to cope ex-ante with the burden-sharing issue.

Editor's note: This article draws in part on the work Freixas and Parigi (2008).

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Persaud: Reason with the messenger; don't shoot him: value accounting, risk management and financial system resilience

12 October 2008

The US Economic Emergency Act of 2008 allows the SEC to suspend mark-to-market accounting rules. But a blanket suspension would be counter-productive. Crises are times when uncertainty quickly turns to panic. Now is not the time to increase uncertainty by changing accounting standards. This column proposes an alternative: mark-to-funding.

The Economic Emergency Act of 2008 reaffirms the authority of the SEC to suspend fair value accounting. Observers elsewhere support a suspension of this accounting rule. It is a widespread view, especially amongst bankers, that International Financial Reporting Standards (IFRS) on fair value accounting compounded the recent financial crisis. Application of the IAS 39 rule that governs loan-loss provisions and extends mark-to-market valuation of assets meant that when credit prices fell sharply and asset values were written down, banks were forced to sell assets and pull back credit lines to raise capital, which lowered asset prices further, causing more write downs and more capital losses. The jump in mark-to-market *volatility* compounded the problem by keeping buyers away. When lower prices do not drag out bargain hunters, but instead, more sellers, liquidity vanishes into what I have called a Liquidity Black Hole.

In the Liquidity Black Hole of 2007/8 credit risk instruments were being priced, not in terms of the probabilities of default, but in terms of they would fetch if they had to be sold tomorrow in a massive clearance sale, to the diminishing number of buyers who do not require credit to purchase the assets and do not care about mark-to-market volatility. Consequently, prices have plummeted far below any measure determined by the risk of default. These prices represent liquidity-risk, not credit-risk. But a blanket suspension of mark-to-market rules would be counter-productive.

Crises are a time when rumours are rife and uncertainty quickly turns to panic. It is not the time to increase uncertainty by changing accounting standards. Moreover, this would work against future crisis avoidance. Financial crashes are not random: they follow booms. Offering forbearance from mark-to-market accounting rules during a crisis, yet using these rules during the preceding boom, would promote excessive lending and

leverage in the good times. This asymmetry in the application of rules could contribute to more frequent and severe crashes. There is room for a principled revision to the application of mark-to-market rules, not a revision based on relying on the messenger's every last word in good times and shooting him when things turn bad.

There is another important issue that points the way to resolution of this issue. Under Basle I, the mechanism by which falling prices of assets lead to further declines in the price of assets was driven in large part by value accounting of assets. Under Basle II, market prices enter into both valuation and risk assessment. The very philosophy of Basle II – risk sensitivity – is about incorporating market prices into the assessment and response to risk. It should be no surprise that putting market prices at the heart of the system whose purpose is to avoid market failure will lead to systemic collapse. But the point is that simply changing the value accounting, but continuing to use market prices and their proxies such as credit ratings in assessment of the riskiness of assets will not pull us out of the liquidity black hole.

From a risk management perspective, the problem with the current value accounting rules is that the focus is on the asset: its perceived liquidity and the intention of the asset holder to hold it to maturity or to trade it. We have seen how asset liquidity and holder intentions can change rapidly in a crisis leading to an increasingly artificial view of value and solvency. We should instead focus on the funding liquidity of the asset. Where assets are funded with short-term liabilities, then whatever the perceived liquidity or intentions of the asset owners, it is appropriate to mark the value of that asset to market in case funding dries up and the assets need to be sold tomorrow. But where assets are funded with long-term liabilities or set against long-term liabilities, as is typically the case with a young pension fund, then marking asset values to market is not appropriate and can lead to an artificial view of risk and investment decisions based on a risk that is not important to the holder.

The valuation "window" and the duration of risk management should be linked directly to the maturity of funding. The scope for banks to switch away from mark-to-market accounting under my proposal will be less than they are currently employing by re-classifying assets from trading to hold to maturity. But the scope this presents would be more credible for being less artificial. Moreover, this proposal which I may call "mark-to-funding" would provide scope for banks and other institutions to create (risk absorbing) pools of capital – funded with long-term liabilities – that could buy assets that are at a distressed price today, without being held back by short-term price volatility.

To date crisis management efforts have been focused on trying to reduce the selling of assets: getting buyers back to the market place would also help.

Editors' Note: This column is a precis of a presentation given by the author and hosted by the Banque de France on October 12 in Washington at the annual IMF/World Bank meetings.

Heinemann: Escaping from a Combined Liquidity Trap and Credit Crunch

26 October 2008

The dizzying falls in equity prices seem to have stopped. If they restart, it may be time for radical measures. This column suggests one motivated by bubble theory. The Fed could temporarily guarantee a lower bound for the S&P 500 through targeted purchases of market portfolios via open-market operations and financed by injecting cash.

Between the collapse of Lehman Brothers on 15 September and the announcements of European and US bank recapitalizations on 13 and 14 October, stock prices fell daily, producing double-digit percentage-point losses in most major markets. The muscular interventions agreed on 13 and 14 October seem to have quelled the worst of the panic, but stock prices have not rebounded.

The current situation is worrisome. Private investors are liquidating all kinds of real-valued assets and are instead hoarding liquidity at banks considered safe due to government guarantees. Banks are selling their shares and are calling in debts to minimize loses and save their remaining equity and to simply remain solvent. They are parking their liquidity at central banks and are not issuing new loans.

Monetary policy is currently ineffectual. Interest rate cuts are not being passed on and the expansion of the money supply has also failed to influence credit terms.

We are in a credit crunch – albeit not for lack of liquidity in the banking sector, but rather due to banks' naked fear of having to write off more debts and, thereby, of endangering their own solvency.

As monetary policy can presently neither reduce market interest rates nor stimulate the issuance of private loans, we are, furthermore, in a liquidity trap. The novelty here is that this liquidity trap is occurring at significantly positive interest rates, whereas it appeared in Japan through the zero bound on nominal interest rates.

A Pessimistic Forecast

If the large scale selling of stocks continues, the assets of banks and insurance companies will continue to fall in value until these institutes are insolvent.

Banks and insurance companies may be nationalized as governments infuse these institutions with fresh capital in exchange for shares.

This will be financed through the issuance of new government debt that will be accepted by markets as investors are fleeing to safe nominal assets.

Should governments not be able to finance themselves on capital markets, due to a loss of confidence by the markets, they would still have access to a final recourse: the purchase of these government debts by central banks.

Alternatively, central banks could prop up banks by recapitalizing them. Here, a lasting expansion of the money supply would be necessary.

The last two possibilities would inevitably lead to higher inflation.

Textbook Wisdom

There are two ways out of a liquidity crisis:

1. An increase in government expenditures (fiscal policy). This is already being accomplished indirectly through the partial nationalization of the banking sector. Additional government expenditures to stimulate the demand for goods could reduce the consequences of the crisis for the real economy, but would likely lead to large distortions and inefficiencies. Increased aggregate demand will not, however, stimulate investment if banks do not provide loans. Therefore, multiplier effects fail to unfold.

2. Increasing inflation expectations. This would lead to a reduction in real interest rates even with constant nominal rates and normally would stimulate investment demand. In the current situation, however, the latter is unlikely, as investment demand is irrelevant for markets so long as banks are not issuing new loans.

Textbook wisdom on escaping a liquidity trap is unlikely to work in the current situation, because we are in the unique situation of a combination of a liquidity trap and a credit crunch.

Downward spiral

We are currently experiencing a downward spiral. Banks are selling their assets to maintain their solvency. As all banks are acting in the same way, this reduces the value of assets, destroying banks' equity. As a result, banks are forced to sell even more assts. Private investors are also acting in the same way to limit their losses. Since October 13, there are signs, however, that the downward spiral is coming to a halt.

What to do if the downward spiral resumes

Real value underlies stocks and mortgages. The downward spiral leads to a negative price bubble as was last seen in 2002. The dividend returns then exceed the returns on fixed income instruments and the risk for long-run oriented investors becomes very small. Eventually, investors will shift their portfolios and take advantage of the depressed prices to enter the stock and real estate markets.

When will the flow of capital turn around?

It is inevitable that expectations of a future rise in prices eventually prevail over expectations of a continuation in price decreases. For this to happen, however, a significant disequilibrium would have to occur first.

Theory

We are seeing an increasing (positive) bubble in fix-income investments, government bonds and other investments considered "safe". (As their nominal value provides the basis of measurement, this is equivalent to a negative bubble in real values.) Here, Abreu and Brunnermeier (2003) and Brunnermeier and Morgan (2005) are applicable: every market participant is aware of the mistaken valuation, the lack of common knowledge, however, hinders the bubble's bursting. The turnaround in capital flows can be expedited by a common signal, a piece of information that provides the markets with common knowledge that investment in real-valued assets is worthwhile.

What could such a signal look like?

The coordinated lowering of target interest rates on October 8 was apparently not a sufficient signal. From theoretical research and experimental results regarding coordination games and bubbles, we know that a common signal has an impact on behaviour and beliefs about others' behaviour only when the signal by itself has an impact on expected payoffs.

That means:

1. A signal must change the relative return expectations even in the absence of immediate changes in behaviour.

2. Due to the changes in return expectations, there is an increase in market participants' propensity to change their investment positions.

3. As the signal is common knowledge, market participants expect that others will also change their positions.

4. Due to strategic complementarities, participants react more strongly to the signal than they would have solely due to 1.

The coordinated lowering of interest rates did create common knowledge, but failed to fulfil condition 1, since changes in central bank rates are currently ineffectual or are considered ineffectual by the markets.

A coordinated recapitalization of banks, as was decided during the week from October 13 to October 17, might not suffice, as banks have no interest in buying stocks or expanding lending under current conditions. Although banks are required to expand lending to the real sector as a condition for recapitalization by the government, it is not yet clear whether this stipulation will have any impact on the credit crunch and lead to the desired turnaround in market expectations.

Concrete suggestions:

A turnaround in the dynamics could be achieved by several signals:

1. Several large private investors, whose actions comment sufficient attention, invest their liquid funds in stocks. Warren Buffet already did something along these lines with his investment in Goldman Sachs. This was, though, only a recapitalization of one bank and, so had only a small impact. What would have been necessary was the purchase of a broader set of assets on a much larger scale. I do not think that private investors hold enough funds to invest on the necessary scale.

2. Sovereign wealth and pension funds engage in large-scale purchases of stocks. These funds, like private investors, have no interest in coordinating their purchases for the common good, as they would thereby eliminate the bargains they would otherwise be able to get. If only in the interest of their investors, pension funds are not in a position to make coordinated purchases.

3. China uses its foreign exchange reserves to buy stocks on US markets and makes its intentions publicly known. One could also question China's interest in announcing its intentions, but China would be the hero of the US financial system if it were to succeed. It could, furthermore, increase its strategic holdings and finally get rid of its exposure to Dollar-denominated government bonds. It would be a realistic chance for China to

participate in stock markets without provoking knee-jerk political reactions. Thus far, however, China does not appear to be seriously involved in discussions.

4. The Fed could buy up the excess supply of stocks and guarantee a clearly defined lower bound for the major stock indices for a limited time. This could be easily achieved through the targeted purchase of market portfolios in exchange for cash (Concrete example: the backing of the S&P 500 through the sharing of costs and acquired shares by the participating reserve banks).

5. A credible announcement by the Fed of inflationary policy for a limited time.

Options 4 and 5 seem the most realistic, so I focus on them and, in the end, recommend option 4.

Temporary guarantee of a lower bound on stock prices:

I assume that the guarantee will be at a level that is clearly below the present value of expected future revenues (fundamental value). Thus, it should only be effective if there really is a negative bubble; and, in the long run, potential purchases are expected to be profitable.

Pros: The announcement alone should prevent further sales from occurring. The Fed would actually only need to engage in limited purchases in an initial period to ensure the credibility of their announcement. By eliminating the downward risk, the flow of capital would reverse immediately and prices would advance significantly past the announced lower bound.

Cons: A guaranteed lower bound creates moral hazard problems. Thus, any such guarantee must be temporary in nature.

Inflation expectations: As the expiration of the guarantee nears, there are three possible scenarios to consider:

1. The crisis has come to a halt. Stock prices are sufficiently above the announced lower bound, and the expiration date has no significant effect on the level (apart from some temporarily higher volatility).

2. The crisis has come to halt, but markets expect that the guarantee is still a binding restriction. Stock owners will sell to the Fed well before the expiration date and the Fed is forced to acquire a large amount of stocks.

3. The crisis continues up to the expiration date of the guarantee: In this case, the Fed may decide to extend the guarantee or let it expire and stand ready to acquire a large amount of stocks.

If the Fed really is forced to buy a large amount of stocks, this will be conducted through open-market operations, increasing the money supply, and, thereafter, increasing inflation. As there is an ex ante positive probability that one these negative scenarios realizes, inflation expectations should increase immediately after the credible announcement of such a guarantee.

To the extent that there is immediate action and a well-defined expiration date, the suggestion comes close to a foolproof way of escaping a liquidity trap in the spirit of Svensson (2003).

Note, however, that in the period leading up to the expiration date, inflationary expectations will exceed actual inflation. According to textbook wisdom, this should have contractionary effects on the demand side and tend to raise savings. In the current situation, however, with a liquidity trap occurring simultaneously with a credit crunch, such reductions in demand will hardly affect GDP, because current GDP is restricted by credit, not by demand. This is the same reason why fiscal policy is unlikely to have multiplier effects (see above).

Long-term impact: this action would continue to create a moral hazard problem in the future, as market participants would expect that the systemic risk in future crises would be borne by the Fed. On the other hand, current actions aimed at refinancing and recapitalizing banks have the same effect – but even more, because they are directly aimed at helping those institutions that created systemic risk. The latter creates a bailout arbitrage in which institutions have an additional incentive to magnify systemic risk.

A guarantee of a lower bound on stock prices is appealing in comparison with the original Paulson plan of buying troubled assets from banks, as the former exploits market mechanisms for injecting equity into the banking sector. There is no asymmetry distorting relative prices and the moral hazard problem is limited to systemic risk. Buying troubled assets, instead, preferentially rewards those institutions that caused the crisis by accumulating these assets.

Announced temporary increase in inflation targets:

Pros: -A temporary increase in inflation targets is credible under current circumstances.

If the downward spiral continues, an increase in inflation is already inevitable.

Higher inflation expectations lead to a shift in real return expectations from fixed-income assets to stocks and real estate and make real assets more attractive in one fell swoop.

A joint signal along these lines could serve to coordinate market participants' portfolio realignments and, thereby, lead to a turnaround in the flow of capital. The turnaround would become self-propagating and continue until the negative exaggerations in stock markets have been corrected.

As a large fraction of Dollar-denominated debt is held abroad, the associated burden (inflation tax) will be borne by foreigners.

Cons-1: Consequences for monetary policy

A temporarily higher inflation target must be accompanied by a monetary policy that actually delivers the increases in price levels associated with the changed target. This would create the credibility that will be necessary for the subsequent period of disinflation after the cessation of the temporary target. Additionally, undercutting inflation expectations would lead to contractionary effects in the real economy that would necessarily have to be avoided as they would otherwise lead to a strengthening of the recession that is already expected.

In the long run, markets would have to accept and price the possibility of inflation temporarily exceeding its target. This possibility would have to be weighed against the probability of a systemic banking crisis (that will no longer be neglected in the future). This would lead to an inflation-risk premium on long-term debt obligations and would,

above all, make financing government debt more costly. A higher inflation bias in the sense of Barro and Gordon (1983) is not likely though, as wage contracts generally have shorter maturities.

Cons-2: Political consequences

A temporarily higher inflation leads to a de facto one-time real devaluation of savings deposits. This places the burden of financing the financial crisis on those parties who were least responsible for its inception, including older people whose savings are to a larger extent invested in nominal bonds.

I cannot foretell what consequences this might have for politicians and decision makers. To me, it would not seem to be a popular way to solve the crisis.

Conclusion

I recommend policy 4:

In the event that the downward spiral in asset prices resumes, the Fed should agree to temporarily guarantee a clear lower bound for the S&P 500. It should arrange the implementation of this guarantee through targeted purchases of market portfolios. This action should be carried out by open-market operations and financed by injecting cash.

The portfolios thusly acquired can be sold for profit at a later date, reducing inflationary pressure in the long run, or to repay the government debt that has already been accumulated in various bailouts.

For a more elaborate descriptions of a downward spiral, see e.g. Adrian, T., and H.S. Shin (2008), Liquidity and Financial Cycles, BIS working paper No. 256.

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Danielsson: Complexity kills

29 September 2008

Complex financial models and intricate assets structures meant extraordinary profits before the crisis. Markets for structured products became overly inflated as even the banks did not have a clear view of the state of their investments. Given complexity's role in today's mess, future regulation should focus on variables that are easy to measure and hard to manipulate (e.g. leverage ratios).

Uncertainty about asset values is a key factor in the wave of financial institutions failures we have been experiencing. It used to be that banks became insolvent because their loans went sour. Now it is the complexity of assets that lets them down. It may well be that the Lehmans of this world would have been able to cover their liabilities in the long run, but their downfall was triggered by a lack of liquidity because they were unable to demonstrate to the market that their assets were sound.

At first, complexity was a virtue

Before the crisis, sophisticated financial models and intricate assets structures enabled many banks to reap extraordinary profits, by enabling them to identify profit opportunities and risks in enormous detail. Complexity became a virtue. However, this complexity often meant that banks did not have a clear view of the state of their investments. Indeed, the greatest profit opportunities often lie at the edge of chaos. Unfortunately, at that point it takes little to send you over the edge.

In such complex financial models, mathematics often assumes far greater importance than the accurate depiction of reality. The models generally ignored liquidity as well as the fact that in a downturn assets that were previously well diversified move together, sharply increasing their correlation. The subprime industry only started after the previous recession, and the models therefore did not consider the possibility of economic downturns.

Consequently, valuations and risk assessments of structured products became increasingly out of sync with economic fundamentals and the underlying assets. Unfortunately, few mechanisms existed for identifying the looming problems. If the models indicate everything is fine, backed up by mark to market accounting practices, it is not surprising that the markets for structured products became overly inflated.

A sense of invulnerability: Mark to market, model or magic

A sense of invulnerability, or hubris developed within the financial system. “It is hard for us, without being flippant, to even see a scenario within any kind of realm of reason that would see us losing one dollar in any of those transactions" said Joseph J. Cassano, the former AIG executive, who was in charge of the AIG CDS operation that ultimately led to its failure in August 2007. See Lo (2007) and Danielsson (2008) for more on these issues.

Eventually, in August 2007 the bubble burst. At the beginning of the crisis banks comforted themselves with the belief that that the crisis in the credit markets was a temporary phenomenon. After all, from a mark-to-market point of view the assets retained their values. What they did not realise was that it was the models themselves were wrong. Mark to market in the absence of a liquid market implies mark to model, or simply mark to magic.

Without liquidity, complexity became a vice

When credit markets collapsed and liquidity disappeared, complexity became a vice. In a crisis, banks gain access to liquidity by being able to demonstrate that they are solvent. If assets are so complicated that nobody, not the regulators, not the clients and not even the banks are unable to get any realistic assessment of valuations and risk, of course investors

will refuse to supply liquidity. Banks simply became too sophisticated for their own good.

Given the role model complexity played in fuelling the crisis, the reaction of banking regulators has been on occasion incomprehensible. The regulators have allowed and on occasion encouraged the use of sophisticated models by banks, and they have gauged the health of the financial system with the output of these models. This approach is an important component of both the Basel 2 Accord for banks and Solvency 2 for insurance companies.

Before the current crisis there was some logic to this process. But given the role of model-driven complexity in the crisis, regulators should now be focusing on alternatives. An implementation of the leverage ratio as a means to determine minimum capital would be a good step forward. Unfortunately, while the leverage ratio is in use in the US and being advocated by Switzerland, the rest of the world's regulators have so far rejected it.

It is the nature of financial regulations that they tend to be reactions to previous crisis episodes and slow to adapt to the dynamic nature of the financial system. Existing regulations and the Basel 2 Accord address the problems of the financial system circa 1995. Hopefully, this crisis will lead to both banks and regulators to develop a healthy scepticism for the complex models that helped to get us into this crisis. Regulations should focus on variables that are easy to measure and hard to manipulate, such as the leverage ratio, and encourage transparency and simplicity in a bank's operations.

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See my May 2008 Vox column.

Bloom: Will the credit crunch lead to recession?

4 June 2008

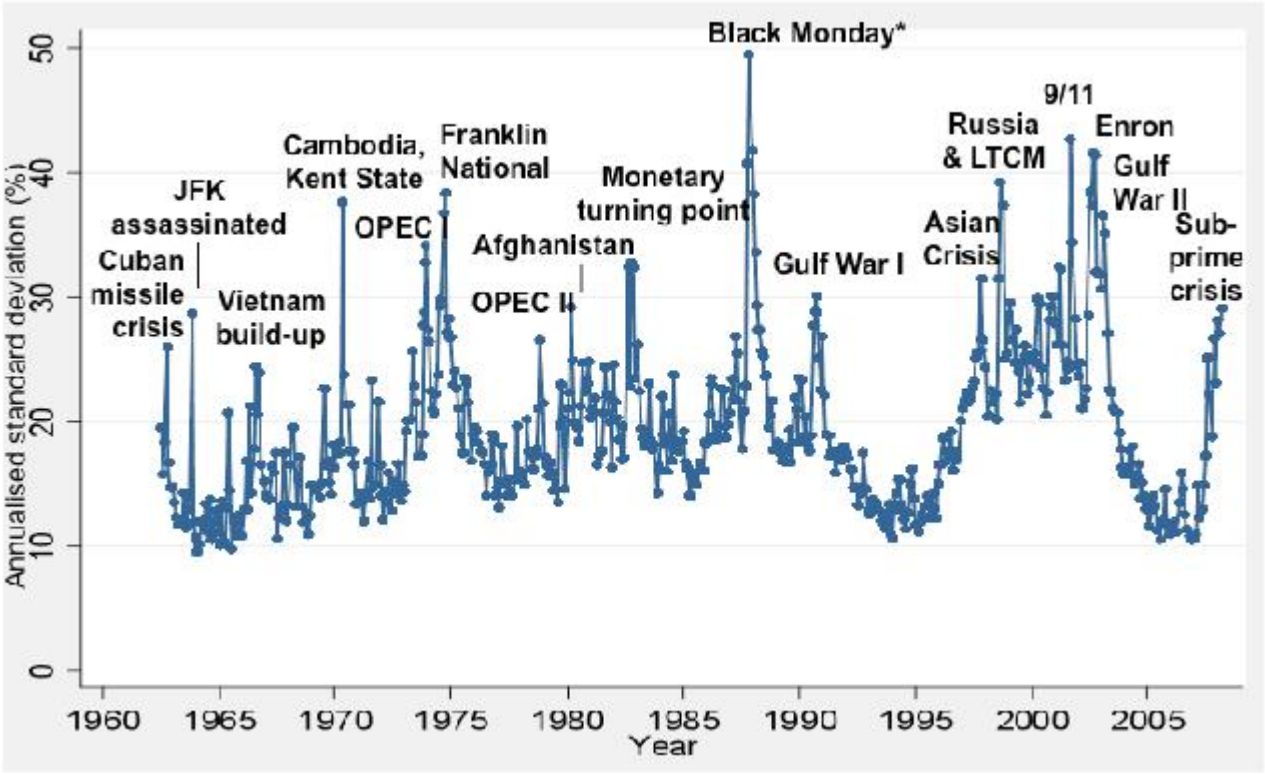
The credit crunch has produced significant volatility in the stock market. This column argues that the wave of uncertainty troubling the markets will likely induce a recession – and render policy instruments powerless to prevent it.

One of the most striking effects of the recent credit crunch is a huge surge in stock market volatility. The uncertainty over the extent of financial damage, the identity of the next banking casualty, and the unpredictability of the policy response of central banks and governments have all led to tremendous instability.

A standard measure of uncertainty – the "implied volatility" of the S&P100 of the US stock market, commonly known as the index of "financial fear" – has more than doubled since the subprime crisis first emerged in August 2007. This jump in uncertainty is of

similar magnitude to those that followed the Cuban missile crisis, the assassination of President Kennedy, the Gulf War, and the terrorist attacks of 9/11 (see Figure 1).

Figure 1. Monthly US stock market volatility 1962 - 2008



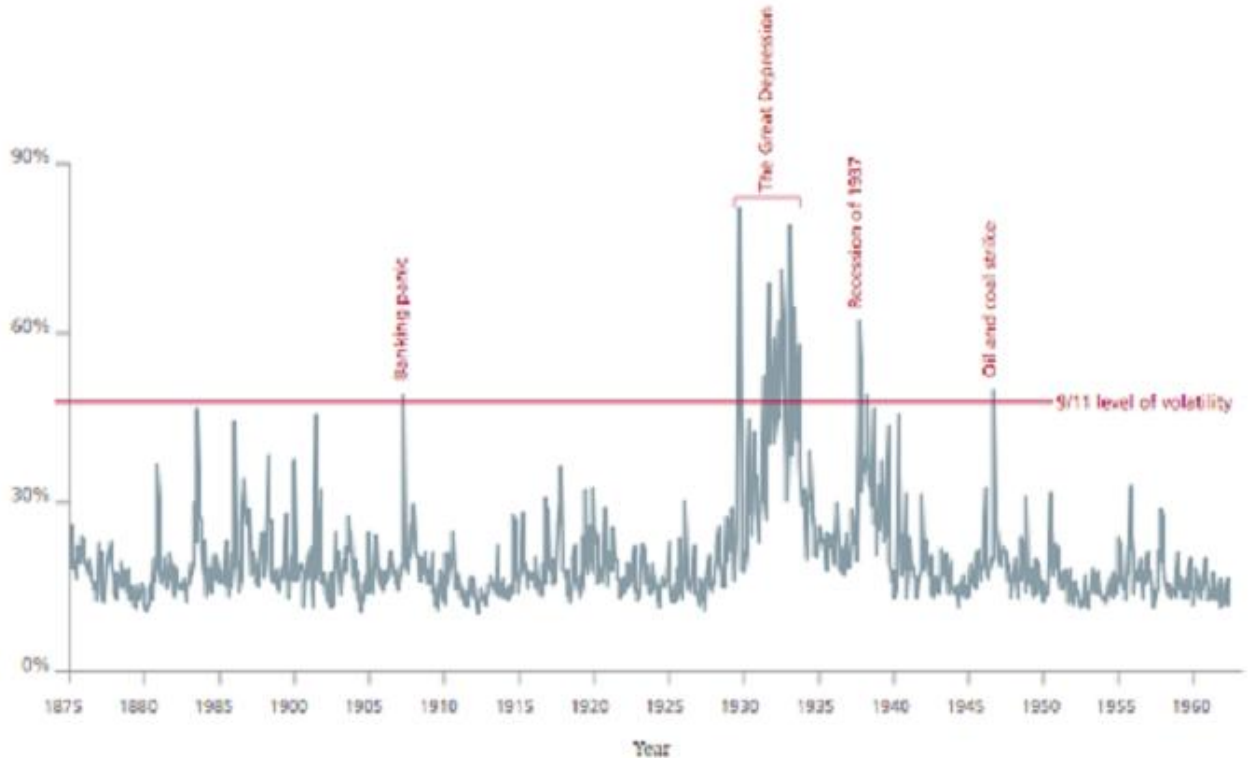
Note: Prior to 1986, "annualised standard deviation" is calculated as the percentage actual volatility of monthly returns on the S&P500 index of the US stock market. After 1986, it is calculated using the percentage "implied volatility" from an option on the S&P100 index.

But after these earlier "shocks", volatility spiked and then quickly fell back. For example, after 9/11, implied volatility dropped back to baseline levels within two months. In contrast, the current levels of implied volatility have remained stubbornly high for the last seven months, rising rather than abating as the crisis continues.

In recent research, I show that even the temporary surges in uncertainty that followed previous shocks had very destructive effects. The average of the 16 shocks plotted in Figure 1 (before the credit crunch) cut US GDP by two percent over the next six months (Bloom 2007).So the omens for the impact of the current credit crunch are worrying. If these earlier temporary spikes in uncertainty had such a significant effect on economic activity, the impact of the current persistent spike in uncertainty is likely to be far worse. On these numbers, a recession is almost inevitable.

For a broader historical comparison to the credit crunch, we can also go back 70 years to the Great Depression. This was the last time that volatility was persistently high (see Figure 2).

Figure 2. The Great Depression's volatility



Note: The vertical axis shows a measure of volatility derived from Schwert (1990), which contains daily stock returns to the Dow Jones composite portfolio from 1885 to 1927, and to the Standard and Poor's composite portfolio from 1928 to 1962.

Much like the credit crunch today, the Great Depression began with a stock market crash and a meltdown of the financial system. Banks withdrew credit lines and the interbank lending market froze up. The US central bank – the Federal Reserve – desperately scrambled to restore calm but without success.

What followed were massive levels of stock market volatility and a recession of unprecedented proportions. From 1929 to 1933, US GDP fell by 50%, a bigger drop than in every recession since World War II combined. On these numbers, a recession not only looks almost inevitable, but its longer-run effects start to become alarming.

The cost of uncertainty

So why is this rise in uncertainty likely to be so damaging for the economy? The reason is that firms typically postpone making investment and hiring decisions when business conditions are uncertain. It is expensive to make a hiring or investment mistake – so if conditions are unpredictable, the best course of action is often to wait.

If every firm in the economy waits, then economic activity slows down. This directly cuts back on investment and employment, two of the main drivers of economic growth. But it also has knock-on effects in depressing productivity growth.

Most productivity growth comes from "creative destruction" – productive firms expanding and unproductive firms shrinking. But if every firm in the economy pauses, then creative destruction temporarily freezes – productive firms do not grow and unproductive firms do not contract. This leads to a stalling of productivity growth.

Similarly damaging effects also happen on the consumers' side: when uncertainty is high, people avoid buying consumer durables like cars, fridges and TVs. The housing market is also hit hard: uncertainty makes people cautious about upscaling their house.

One reassuring fact is that global policy-making is in safe hands. The damaging effects of uncertainty shocks are well known to Fed chairman Ben Bernanke. His doctoral thesis of more than 25 years ago explored the negative effects of uncertainty shocks.

The main paper from that thesis was pioneering in the way it formalised the negative effects of uncertainty in causing recessions, noting that: "events whose long-run implications are uncertain can create an investment cycle by temporarily increasing the returns to waiting for information" (Bernanke 1983).

Policy problems

So what is stopping Chairman Bernanke from acting to counteract this rise in uncertainty and forestall the recession? Well, as Bernanke also knows, the same forces of uncertainty that lead to a recession also render policy-makers relatively powerless to prevent it.

When uncertainty is high, firms become cautious, so they react much less readily to monetary and fiscal policy shocks. According to research on UK firms, which I conducted with two colleagues, uncertainty shocks typically reduce the responsiveness of firms by more than half, leaving monetary and fiscal policy-makers relatively powerless (Bloom et al. 2007).

So the current situation is a perfect storm – a huge surge in uncertainty that is not only generating a rapid slowdown in activity but also limiting the effectiveness of standard monetary and fiscal policy to prevent this.

Policy-makers are doing the best they can – making huge cuts in interest rates, dishing out tax rebates and aggressively pouring liquidity into the financial markets. But will this be enough? History suggests not. A recession looks likely.

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Bloom: The credit crunch may cause another great depression

8 October 2008

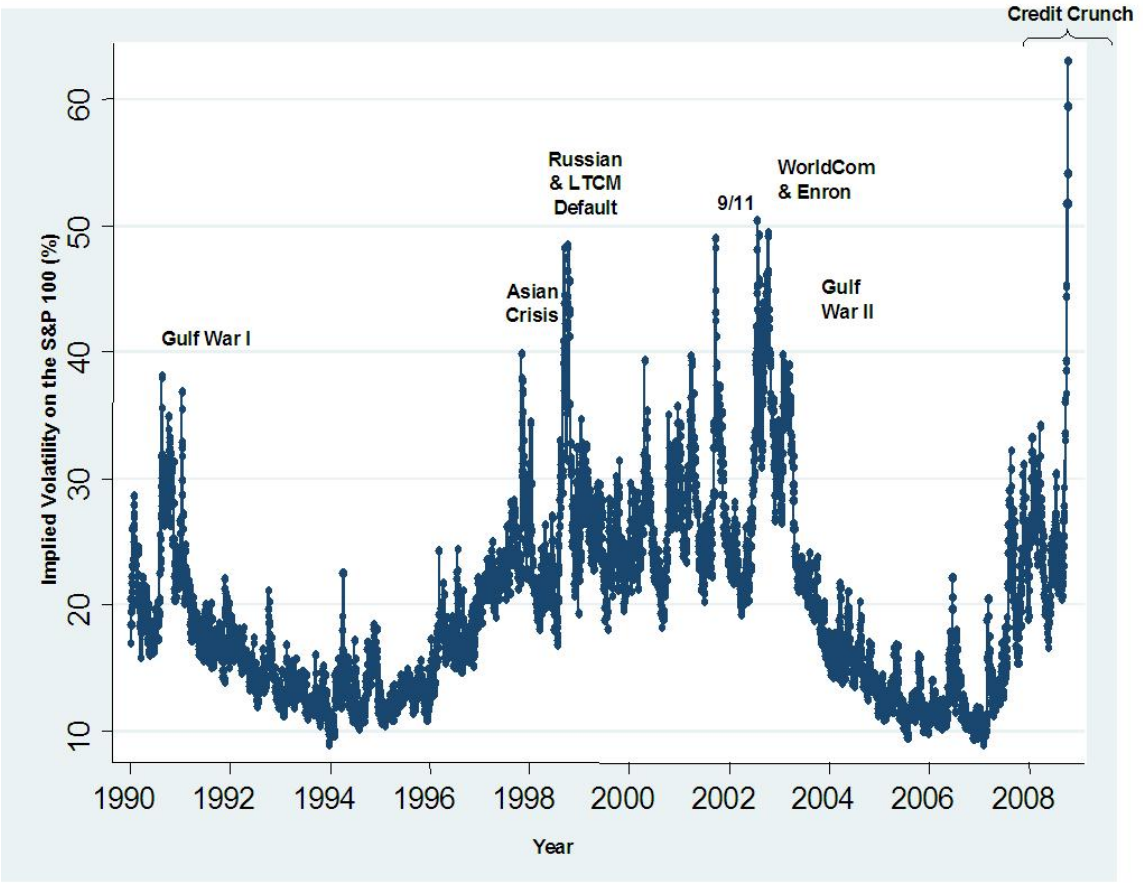
The crisis is shaping up to be a perfect storm – a huge surge in uncertainty that is generating a rapid slow-down in activity, a collapse of banking preventing many of the few remaining firms and consumers that want to invest from doing so, and a shift in the political landscape locking in the damage through protectionism and anti-competitive policies.

Back in June 2008 I wrote a piece for VOXEU predicting a mild recession in 2009. Over the last few weeks the situation has become far worse, and I believe even these pessimistic predictions were too optimistic. I now believe Europe and the US will sink into a severe recession next year, with GDP contracting by 3% in 2009 and unemployment rising by about 3 million in both Europe and the US. This would be the worst recession since 1974/75. In fact the current situations has so many parallels with the Great Depression of 1929-1932, when GDP fell by about 50% in the US and by about 25% in Europe, that even my updated predictions could again be over optimistic.

Uncertainty is higher then it's been in 20 years

One of the most striking effects of the recent credit crunch is the huge surge in stock market volatility this has generated. The uncertainty over the extent of financial damage, the identities of the next banking casualty and the unpredictability of the policy response have all led to tremendous instability. As a result the implied volatility of the S&P100 – commonly known as the index of "financial fear" - has more increased almost six-fold since August 2007. In fact since the outbreak of the Credit Crunch it has jumped to levels even greater than those witnesses after the events of the 9/11 Terrorist attacks, the Gulf Wars, the Asian Crisis of 1997 and the Russian default of 1998 (see Figure 1).

Figure 1. Daily US implied stock market volatility



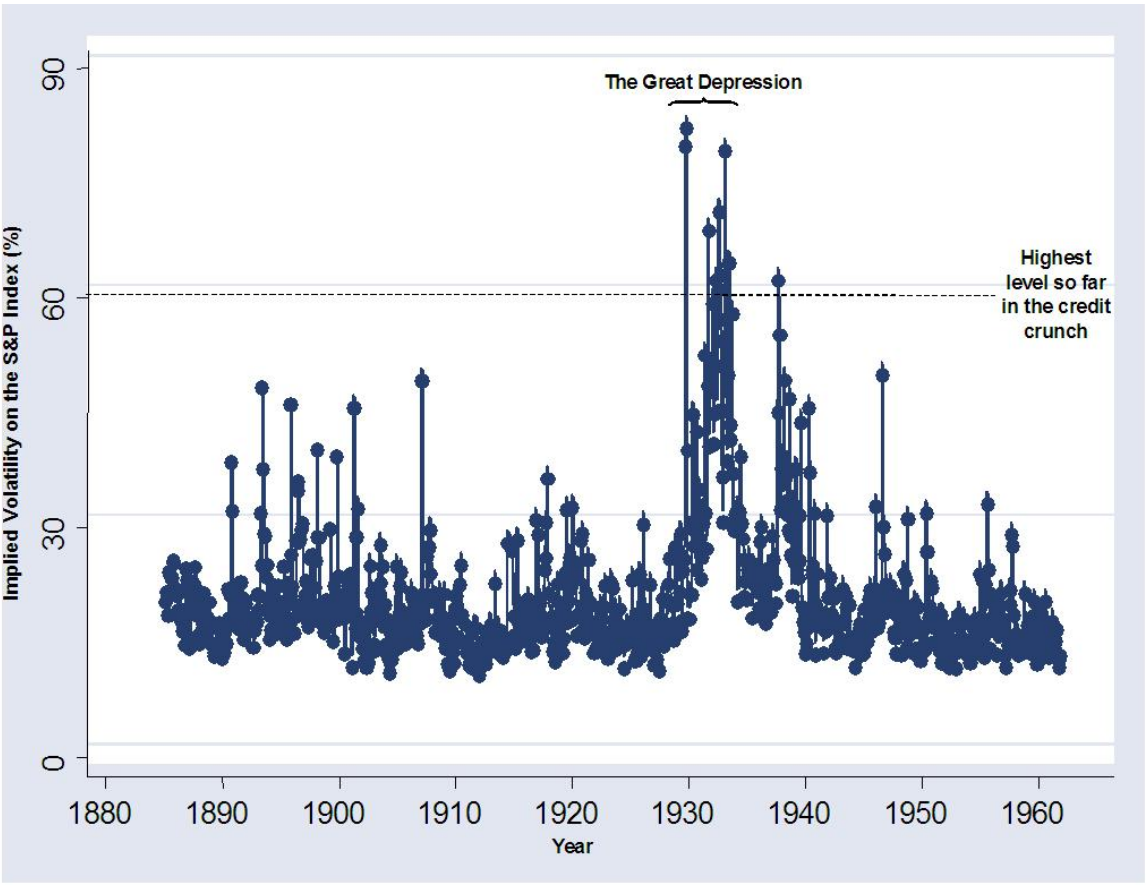
But after these earlier shocks volatility spiked and then quickly fell back. For example, after 9/11 implied volatility dropped back to baseline levels within 2 months. In comparison the current levels of implied volatility have been building since August 2007 and are likely to remain stubbornly high.

But even these more moderate surges in uncertainty after these earlier shocks had very destructive effects. The average impact of the sixteen shocks I examined in prior research was to cut GDP by up to 2% in the following six-months. The current shock is both larger than these on average and also appears to be more persistent. If these earlier temporary spikes in uncertainty led to a 2% drop in GDP the impact of the current persistent spike in uncertainty is likely to be far worse.

The rise in uncertainty and banking collapse look like the Great Depression

For a broader historical comparison to the credit crunch we can also go back 70 years to the Great Depression. This was the last time that volatility was persistently high (Figure 2). Much like today, the Great Depression began with a stock-market crash and a melt-down of the financial system. Banks withdrew credit lines and the inter bank lending market froze-up. The Federal Reserve Board desperately scrambled to restore calm but without success. What followed were massive levels of stock-market volatility and a recession of unprecedented proportions.

Figure 2. Stock market volatility since the Great Depression



From 1929 to 1933 GDP fell by 50% in the US and about 25% in Europe, a bigger drop then in every recession since World War II combined. On these numbers a recession not only looks almost inevitable, but its longer run effects start to become alarming.

So why is this banking collapse and rise in uncertainty likely to be so damaging for the economy? First, the lack of credit is strangling firm's abilities to make investments, hire workers and start R&D projects. Since these typically take several months to initiate the full force of this will only be fully felt by the beginning of 2009. Second, for the lucky few firms with access to credit the heightened uncertainty will lead them to postpone making investment and hiring decisions. It is expensive to make a hiring or investment mistake, so if conditions are unpredictable the best course of action is often to wait. Of course if every firm in the economy waits then economic activity slows down. This directly cuts back on investment and employment, two of the main drivers of economic growth. But this also has knock-on effects in depressing productivity growth. Most productivity growth comes from creative destruction – productive firms expanding and unproductive firms shrinking. Of course if every firm in the economy pauses this creative destruction temporarily freezes – productive firms do not grow and unproductive firms do not contract. This leads to a stalling productivity growth.

And much like the Great Depression politicians may make this worse

Finally, on top of the survey in uncertainty and collapse in credit we also have the spectre of a damaging political response. One of the major factors compounding the Great Depression was that politicians moved to hinder free trade and encourage anti-

competitive practices. The infamous Smoot-Hawley Tariff Act of 1930 was introduced by desperate US policy-makers as a way of blocking imports to protect domestic jobs, but helped worsen the recession by freezing world trade. At the same time policy-makers were encouraging firms to collude to keep prices up and encouraging workers to unionize to protect wages, exacerbating the situation by strangling free markets. The current backlash against capitalism could lead to a repeat, with politicians swinging towards the left away from free-markets. This happened after the Great Depression, it happened after the major recession of 1974/75 and I think it will happen again now. This will lock in the short-run economic damage from the current credit crunch into longer run systematic damage from anti-growth policies.

So the current situation is a perfect storm – a huge surge in uncertainty that is generating a rapid slow-down in activity, a collapse of banking preventing many of the few remaining firms and consumers that want to invest from doing so, and a shift in the political landscape locking in the damage through protectionism and anti-competitive policies.

An inconvenient recession

In fact the only upside of all this is that the massive slow-down in economic growth will rapidly cut the growth rates of CO_2 emissions. Pollution is tightly linked to the level of economic activity, so that a few years of negative growth would lead to reductions in pollution levels not seen since the 1970s. It seems ironic that the greed of Wall Street may have inadvertently achieved what millions of well intentioned scientists, activists and politicians have failed to achieve – a slowdown in global warming.

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Repullo and Suarez: The procyclical effects of Basel II

14 July 2008

Basel II's goal was to reduce incentives for excessive risk taking. Making banks' capital requirements risk-sensitive, however, also set the system up for credit crunches during economic down turns. This column argues that small cyclical adjustments to the confidence levels set by regulator could preserve Basel II's value-at-risk foundation while avoiding painful credit crunches during periods of economic distress.

The global charter that regulates banks' capital requirements – known as Basel II – aims to make each bank's capital holdings proportional to its potential credit losses.[71] The idea was to reduce the incentives for excessive risk-taking and the opportunities for regulatory arbitrage supposedly offered by the old regime – Basel I.

Even before the Subprime crisis, there was widespread concern about the possibility that the risk-sensitivity of the new requirements may amplify business cycle fluctuations, forcing banks to restrict their lending when the economy goes into recession (Kashyap, and Stein 2004).

In recent research, we assess the impact of Basel II on banks' cyclical lending capacity taking into account that banks will possibly respond to the new regulatory environment by modifying their buffers of capital held in excess of the regulatory minima. Our analysis suggests that, despite their attempt to reduce the procyclical effects by increasing their buffers, Basel II implies a much larger contraction in credit supply than Basel I when the economy enters a recession.

We also show that there are some easy fixes that would drastically ameliorate the problem. These would involve some wise adjustments in the cyclical profile of the levels of solvency (or "confidence") targeted by the regulators.

Can bank regulation be procyclical?

Even under the essentially flat capital requirements of Basel I, bank capital regulation has the potential to be procyclical because bank profits may turn negative during recessions, impairing banks' lending capacity. Additionally, the Internal Ratings Based Approach (IRB) of Basel II makes capital requirements an increasing function of banks' estimates of their loans' probability of default and loss given default, which are both likely to increase during downturns. This might substantially exacerbate the negative impact of recessions on banks' supply of credit and, thereby, on the economy as whole, hence the concern on the procyclicality of Basel II.

However, there are some necessary conditions for capital requirements to have contractionary effects:

Some banks must find it difficult to respond to the accumulation of losses or higher capital requirements by issuing new equity.

The borrowers of the constrained banks must be unable to switch to other sources of finance.

If these conditions hold, capital requirements may be responsible for an aggregate contraction in the supply of credit – a credit crunch – during recessions.

Relationship banking and capital buffers

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[71] In 2004, after years of discussion, the Basel Committee on Bank Supervision reached an agreement, known as Basel II, which introduces a major revision of the original agreement on International Convergence of Capital Measurement and Capital Standards of 1988. Its most tangible change is the enriched treatment of credit risk in bank capital requirements.

Are these conditions likely to hold? The informational features of banking relationships suggest so.

If lending makes banks privately informed about their borrowers, then informational asymmetries are likely to plague the market for seasoned equity offerings, making urgent recapitalisations prohibitively costly. As the Basel II Accord notes, "it may be costly for banks to raise additional capital, especially if this needs to be done quickly or at a time when market conditions are unfavourable" (paragraph 757c). Intuitively, the market for seasoned equity offerings might be what economists describe as a "market for lemons"—after a negative shock, the banks with lower quality borrowers would be more interested in issuing equity than the banks with higher quality lending relationships, resulting in prices for new equity that are unattractive to the latter, collapsing the market or engendering large price discounts.

The informational contents of bank relationships also implies that borrowers may become dependent upon the banks with which they maintain a relationship, as they might be locked in by the switching costs and stigma faced when switching to another bank (especially if they come from a bank in trouble).

However, banks involved in information-intensive lending relationships tend to appropriate rents from their continued lending and may hold buffers of capital, in excess of the minimal regulatory requirements, in order to reduce the effect of negative shocks on their lending capacity. So the key question is whether the losses and additional capital requirements associated with recessions will overwhelm banks' precautionary capital buffers? Answering that question requires a model of how banks will behave under Basel II.

In our recent paper, we build a dynamic equilibrium model of relationship banking in which business cycle fluctuations affect borrowers' default rates. Assuming that equity financing is more costly than deposit financing, we show that capital requirements increase equilibrium loan rates but have an analytically ambiguous effect on capital holdings. On the one hand, the higher prospects of ending up with insufficient capital necessitates holding larger buffers; on the other hand, higher capital requirements reduce the profitability of future lending and thus a bank's interest in preserving its future lending capacity.

We use numerical simulations in order to assess which effect will dominates under the Basel II requirements. For our simulations, we assume that credit losses conform to the single risk factor model that rationalizes the formula of the IRB capital requirements of Basel II. Importantly, under such a model, capital requirements have an exact value-at-risk interpretation: required capital is such that it can absorb the potential losses of a loan portfolio over a one-year horizon with a probability of 99.9%.[72]

Results

Under realistic parameterisations, Basel II leads banks to hold buffers that range from about 2% of assets in recessions to about 5% in expansions. The procyclicality of these

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[72] See Gordy (2003) on the use of the single factor model as a foundation for the capital requirements of Basel II.

buffers reflects the fact that banks are concerned about the upsurge in capital requirements that takes place when the economy goes into a recession. We find, however, that these equilibrium buffers are insufficient to neutralise the effects of the arrival of a recession, which may cause a very significant reduction in the supply of credit – ranging from 2.5% to 12% in our simulations, depending on the assumed cyclical variation of the default rates.

There are significant differences between Basel I and Basel II. Under the flat (risk-insensitive) capital requirement of Basel I, the same banks would keep slightly countercyclical buffers and the economy would suffer very small credit crunch effects. However, the probabilities of bank failure under Basel I are substantially greater than under the new risk-sensitive approach. This suggests that designing the optimal policy involves evaluating a trade-off between the importance of long-term solvency of the banking sector and the short-term effects on the availability of credit. Yet, we show that a minor policy adjustment would allow regulators to make progress on both fronts.

Policy response: adjusting the cyclical profile of confidence levels

Small cyclical adjustments to the confidence levels set by the regulator could ameliorate the procyclical impact of Basel II. If the regulator replaced a constant confidence level with a cyclical profile of confidence levels, it would be possible to keep the long-term average confidence at its current level—99.9%—while lowering the target during periods of economic distress in which current regulations might induce a painful credit crunch.

Using our model, we evaluate the effects of some specific cyclical adjustments that would reduce the confidence level to 99.8% during periods of high default and raise it above 99.9% during prosperous periods. Our simulations suggest that these approaches would achieve significant gains in terms of alleviating credit rationing without incurring major costs in terms of banks' solvency. Such cyclical adjustment would preserve the value-at-risk foundation of the Basel II requirements, while addressing the very real concern that risk-sensitive capital requirements – in their present form – may exacerbate credit crunches.

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Goodhart: Central banks' function to maintain financial stability: An uncompleted task

24 June 2008

Central banks cannot achieve price and financial stability with one instrument (interest rates). A counter-cyclical regulatory system is needed to dampen asset booms and to smooth busting bubbles. To use such macro-prudential instruments effectively, regulators

need courage, quantitative triggers, and independence; they will be criticised by lenders, borrowers and politicians in both booms and busts.

The events of the last year have reminded us all that a central bank does not just have one responsibility, that of achieving price stability. It is indeed its first core purpose (CP1); but as the sole institution that can create cash, and hence bank reserve balances, a central bank has a responsibility for acting as the lender of last resort and maintaining financial stability. This is its second core purpose (CP2).

Two goals but only one instrument

One of the major problems of central banking is that the pursuit of these two core purposes can often conflict, not least because the central bank currently appears to have only one instrument, its command over the short-term interest rate. Indeed, a central purpose of the first two great books on central banking, Henry Thornton's (1802), *Inquiry into the Paper Credit of Great Britain*, and Walter Bagehot's (1878), *Lombard Street*, was to outline ways to resolve such a conflict, especially when an (external) drain of currency threatened maintenance of the gold standard at the same time as an internal drain led to a liquidity panic and contagious bank failures.

Under such circumstances, however, with rising risk aversion, the central bank would find that it had two instruments, due to its ability to expand its own balance sheet, e.g. by last-resort lending, at the same time as keeping interest rates high, (to deter gold outflows and unnecessary (speculative) borrowing). The greater problem, then and now, was how to avoid excessive commercial bank expansion during good times. With widespread confidence, the commercial banks neither want nor need to borrow from the central bank. A potential restraint is via shrinking the central bank's own balance sheet, open market sales, thereby raising interest rates. But increasing interest rates during good times, (gold reserves rising and high; inflation targets met), i.e. 'leaning into the wind', is then against the 'rules of the game', and such interest rates adjustments small enough to be consistent with such underlying rules are unlikely to have much effect in dampening down the upswing of a powerful asset price boom-and-bust cycle.

CP1: 'Price stability' versus CP2: 'Financial stability'

Although the terminology has altered, this basic problem has not really changed since the start of central banking in the 19th century. An additional analytical twist was given by Hy Minsky, who realised that the better the central bank succeeded with CP1 (price stability), the more it was likely to imperil CP2 (financial stability). The reason is that the greater stability engendered by a successful CP1 record is likely to reduce risk premia, and thereby asset price volatility, and so support additional leverage and asset price expansion. The three main examples of financial instability that have occurred in industrialised countries in the last century (USA 1929-33, Japan 1999-2005, sub-prime 2007/8) have all taken place following periods of stellar CP1 performance.

We still have not resolved this conundrum. It shows up in several guises. For example, there is a tension between trying to get banks to behave cautiously and conservatively in the upswing of a financial cycle, and being prepared as a central bank to lend against whatever the banks have to offer as collateral during a crisis. Again, the more that a central bank manages to constrain bank expansion during euphoric upswings, e.g. by

various forms of capital and liquidity requirements, the greater the disintermediation to less controlled channels. How far does such disintermediation matter, and what parts of the financial system should a central bank be trying to protect? In other words, which intermediaries are 'systemic'; do we have any clear, *ex ante*, definition of 'systemic', or do we decide, *ex post,* on a case-by-case basis?

Bank risk and bank-system risk

Perhaps these problems are insoluble; certainly they have not been solved. Indeed, recent developments, notably the adoption of a more risk-sensitive Basel II CAR and the move towards 'fair value' or 'mark-to-market' accounting, have arguably tilted the regulatory system towards even greater pro-cyclicality. A possible reason for this could be that the regulators have focussed unduly on trying to enhance the risk management of the *individual* bank and insufficiently on the risk management of the financial *system* as a whole. The two issues, individual and systemic risk performance, are sometimes consistent, but often not so. For example, following some financial crisis, the safest line for an individual bank will be to cut lending and to hoard liquidity, but if all banks try to do so, especially simultaneously, the result could be devastating.

The bottom line is that central banks have failed to make much, if any, progress with CP2, just at the time when their success with CP1 has been lauded. This is witnessed not only by the events of 2007/8, but also by the whole string of financial crises (a sequence of 'turmoils') in recent decades. Now, there are even suggestions that central banks should have greater (even statutory) responsibility for achieving financial stability, (e.g. the Paulson report). But where are the (regulatory) instruments that would enable central banks to constrain excess leverage and 'irrational euphoria' in the upswing? Public warnings, e.g. in Financial Stability Reviews, are feeble, bendy reeds. All that central banks have to offer are mechanisms for picking up the pieces after the crash, and the more comprehensively they do so (the Greenspan/Bernanke put), the more the commercial banks will enthusiastically join in the next upswing.

Counter-cyclical instruments

Besides such public warnings, which the industry typically notices and then ignores, the only counter-cyclical instruments recently employed have been the Spanish pre-provisioning measures, and the use of time-varying loan to value (LTV) ratios in a few small countries, e.g. Estonia and Hong Kong. But the Spanish measures have subsequently been prevented by the latest accounting requirements, the IFRS of the IASB; and the recent fluctuations in actual LTVs have been strongly pro-cyclical, with 100+ LTVs in the housing bubble being rapidly withdrawn in the housing bust.

Indeed, any attempt to introduce counter-cyclical variations in LTVs or in capital/liquidity requirements will always run into a number of generic criticisms:

- It will disturb the level playing field, and thereby cause disintermediation to less regulated entities (in other segments of the industry, or in other countries). It will thus both be unfair and ineffective.
- It will increase the cost of intermediation during the boom and thereby reduce desirable economic expansion (and financial innovation).

- It will increase complexity and add to the informational burden.

These criticisms have force. Indeed, there are empirical studies that suggest that countries which allow a less regulated, and more innovative and dynamic, financial system grow faster than their more controlled brethren, despite being more prone to financial (boom/bust) crises. Nevertheless it should be possible to construct a more counter-cyclical, time-varying regulatory system in such a way as to mitigate these problems, so long as the regulations *are* relaxed in the downturn after having been built up in the boom.

But those same generic criticisms will also mean that regulators/supervisors will be roundly condemned for tightening regulatory conditions in asset prime booms by the combined forces of lenders, borrowers and politicians, the latter tending to regard cyclical bubbles as beneficent trend improvements due to their own improved policies. Regulators/supervisors will need some combination of courage, reliance on quantitative triggers, and independence from government if they are to have the strength of mind and purpose to use potential macro-prudential instruments to dampen financial booms.

Giovannini: Let banks be banks, let investors be investors

22 November 2008

Simplicity and transparency, two major causalities of recent financial market changes, are essential to restoring trust in financial markets. This column suggests that distinguishing two types of financial intermediaries – client servicers and capital managers – would be a big step in the right direction. Today's lack of distinction means one set of regulations is applied to the two very different functions.

Simplicity and transparency – two vital ingredients of trust in financial dealings – are casualties of financial market changes in the recent years. To restart the financial system and the world economy we need to re-establish them, a point acknowledged in the recent G20 communiqué.

Restoring simplicity and transparency is a task for world governments. I propose a straightforward method for doing so. Here is the sound-bite version: let banks be banks, let investors be investors.

Essential distinctions among financial intermediaries

Intermediaries in financial markets (and in particular, in securities markets) necessarily fall into one of two categories:

- Client servicers
- Capital managers.

The client business is defined by proximity to clients. It consists of selling access to markets (primary, i.e. capital raising, and secondary, i.e. brokerage), and all its ancillary activities such as research and advice (on capital raising, mergers and acquisitions). The client business also includes supplying derivative contracts tailored to client needs, so

these are hedged in the books of the client servicer. Finally, client business includes borrowing and lending cash, as well as borrowing and lending securities performed only to fulfil client requests.

The capital management business is completely different. The simple and robust criterion for distinguishing capital management from client servicing is that the franchise of the capital management business is not counterparties, but shareholders. The client business gains in value if it provides good service to its counterparties. The capital management business has no special regard for counterparties; it gains in value if it provides good investment returns to shareholders. Capital managers may invest their shareholders' moneys on a leveraged or un-leveraged basis and provide exposure to the whole spectrum of financial risks. While their transactions may be the same as those of the intermediaries in the client business and therefore their balance sheets may look very similar, their objectives and their risk profile is completely different.

A dangerous muddling of functions

What is wrong with the financial system now? That there is no clear distinction between these two functions, and as a result regulations and functions have grown too far apart.

Banks and investment banks mix client business and capital management business – despite the fact that the proximity of these two businesses gives rise to very serious conflicts of interest. In addition, the capital management business within banks and investment banks is not transparent (who knows how much money comes from proprietary investments?), and is not subject to efficient capital constraints.

Consider this simple example: a bank can hold risk-weighted assets up to 12.5 times its capital (the capital requirement is 8% of risk weighted assets, equal 1/12.5). Is this a constraint appropriate to the low-risk world of client business (which, as explained above, by definition systematically hedges away financial risk) or the potentially much higher risk of investment management? In the past year or so, the largest dollar losses caused by the financial turmoil have come from banks. By definition, these large losses imply that the banks that have incurred in them have taken excessive risks. The hypothesis that an inappropriate regulatory framework led these institutions to take on excessive risks is by now the most credible one.

Capital management is also performed by asset managers and hedge funds (in addition to the banks mentioned above). But hedge funds are institutions that are subject to very different rules than asset managers, despite the fact that they do the same business. The very fact that most hedge funds are corporations based in offshore centres illustrates the lack of a satisfactory institutional setup for an industry that in recent years has become the most dynamic part of the financial system.

How do we let banks be banks and let investors be investors?

The answer, in a nutshell, is to create a regulatory regime (or better, adapting current regulations) that clearly distinguishes between the two types of intermediaries – client businesses and investors – and provides a consistent set of rules for each.

This idea may look similar to recent proposals to re-instate Glass-Steagall legislation prohibiting banks from dealing in securities or to return to narrow banking (see Paul De Grauwe 2008). It is in fact quite different.

Consider Glass-Steagall first. It can be argued conceptually and it has been shown empirically that the presumed conflicts of interest between lending and capital markets (issuance of bonds) activities are insignificant.[73] In a financial system where securities have become, appropriately, a dominant medium of transactions, it makes little sense to separate out securities activities from the rest of the activities of client businesses. Proponents of narrow banking, by contrast, argue for ways to eliminate liquidity transformation.[74] I do not think this should be an objective of a well-working financial system, because liquidity transformation is a socially productive activity and, as the recent experience has shown, liquidity risk never goes away from securities markets. There are, however, ways to mitigate and control liquidity risk, as I discuss below. In conclusion, banks and broker dealers should only be that; they should not be investment managers.

Consider now the capital management business. The second fundamental pillar of a well-working financial system is a consistent institutional framework for capital managers. All capital (or investment) managers, mutual funds and hedge funds, should be subject to the same rules (which of course recognize the different degrees of risk of different asset classes and investment styles). Thus, all hedge funds should be onshore, and subject to the appropriate regulations (like other asset managers, prudential rules and investor protection rules). Such rules are not expected to prevent professional hedge fund managers to carry out their business as they have done so far. My impression is that those who claim that hedge funds were much less hit in their investments by market turmoil because they were offshore and unregulated are overstating the potential perverse incentives caused by investment management rules.

Dealing with financial instabilities

It is apparent that both categories of intermediaries, client businesses and capital managers, may be subject to financial instabilities that are caused by liquidity mismatches and can be aggravated by leverage. Banks are subject to runs. Even money market mutual funds can be subject to runs (the recent $540 billion bailout of US money-

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[73] Proponents of the separation of lending and securities businesses were inspired by the hypothesis that lenders may offload unwanted credit risks by issuing bonds by the same borrower to the public. The many defaults that occurred in the early 1930s were at the origin of that hypothesis and of the legislative initiatives in the US. However, the hypothesis does not take into account the fact that capital markets activities are repeated, and that selling bonds that subsequently default causes large damage to such activities. In addition, for empirical analysis showing that in the early 1930s United States broker-dealers'-issued corporate bonds were not significantly less risky than banks'-issued corporate bonds, See Kroszner and Rajan (1994).

[74] For example, De Grauwe (2008) suggests that matching the duration of assets and liabilities of banks would amount to a return to narrow banking. While this rule would eliminate interest-rate risk from banks balance sheet, it would not eliminate liquidity risk, which is more specific to the nature of the assets and liabilities held. In other words, it is not the sensitivity of assets' and liabilities' values to interest-rate movements that determines their liquidity.

market funds is a good example) and, a fortiori, those hedge funds that use leverage and invest in relatively illiquid securities. These events may spread in the financial industry, causing systemic risks.

The avoidance of systemic risk has to come from the combination of three things:

- Appropriate capital structures for every type of intermediary;
- Full knowledge of intermediaries by public institutions responsible for financial stability; and
- Appropriate ex-post intervention by authorities.

The fact that an appropriate capital structure is the first defence against runs is almost a tautology. The choice of appropriate capital structures does not need to be mandated, though regulations could for example allow different investors to access investment managers depending on their business and the safeguards provided by their capital structure.

We should support the creation of a new and comprehensive system of disclosure of all risk positions, on- and off-balance sheet, to authorities in charge of market stability. This information should allow them to aggregate and analyze the macro issues and identify the areas of weakness, as well as to communicate to individual institutions their fragilities.

While this is a big and complex task, it should be greatly facilitated by the clear separation of the different classes of intermediaries described above. Does this not look like a simpler financial system than what we have today?

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Coutert and Gex: Stormy Weather in the Credit Default Swap Market

13 October 2008

Credit default swaps (CDSs) – bilateral insurance contracts against bond default – are now in the eye of the storm. Worries about counterparty risk are mounting among market players and is multiplied by the lack of global netting. This column discusses lessons from the 2005 crisis in CDSs.

Are credit derivatives markets particularly prone to speculation and contagion? The answer is certainly yes if we take a look at the credit default swaps (CDSs), which are the most widely traded credit derivatives.

Hedging or speculation?

As most derivative instruments, such as forward markets or options, CDSs were originally designed to hedge out investors' risks. CDSs are aimed at insuring against the risk of borrowers' default. Suppose that an investor holds a bond on a given borrower (called X). He can buy a CDS on X to get his money back in case the borrower defaults. In the CDS contract on X, the buyer (A) agrees to pay a certain amount of money, called "premium", to the seller (B) over a given period of time. The seller B receives the premium and is committed to give the buyer a pay-off only in case X defaults on his debt. This pay-off offsets investor A's loss as it is equal to the difference between the face value of the bond and its depreciated market value.

In practice, as most other derivative products, the huge development of the market is not to be imputed to hedging purposes, but to arbitrage and speculation. Suppose that an investor holds neither bonds nor debts on company X, but thinks that this company may default. He can buy a CDS on X and pockets the pay-off in case of default. This strategy is equivalent, but more straightforward than short-selling bonds. The CDS market is also reported to have recently been used to bet on companies' default after the ban on short-selling in financial stocks.

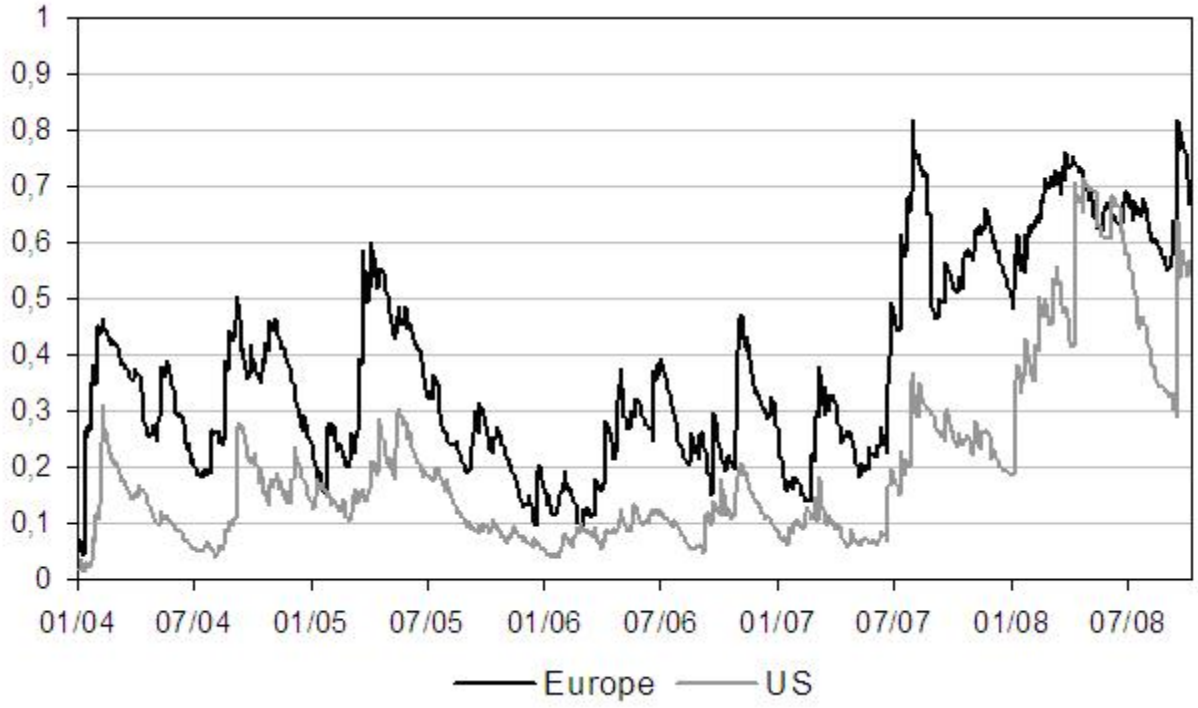
The size of the market has soared well above the value of the underlying debt that they are supposed to insure (reaching about USD 62 trillion at the end of 2007). This has become clear since 2005, when Delphi, the auto parts maker, went bankrupt: the CDS on Delphi's debt in the market exceeded the value of its bonds tenfold.

The rise in correlations

All major financial actors are deeply involved in the market. From the beginning, in the mid-nineties, banks have used CDSs to escape from their capital requirements. But nowadays, banks, hedge funds, insurance companies and pension funds are hugely exposed as buyers or sellers, or both. By transferring the risk, the CDSs have acted as a kind of insurance and provided incentives for risk-taking. They are therefore at the heart of the present crisis.

Since the start of the crisis last summer, the CDS market has been especially affected. Premia have been driven upward, and reached all-time peaks, especially in the high-yield segment. As the whole market has been hit, not only distressed firms, one can assume that there have been contagion effects. To check this, contagion can be defined as a simultaneous move in asset prices which results in a rise in correlations (Kaminsky and Reinhart (2000), Forbes and Rigobon (2002)). In fact, the CDS market has exhibited a stunning rise in its correlations since the start of the crisis in August 2007 (see Graph below).

Figure 1. Average correlations between CDS premia



Source: Bloomberg

Note: *Europe* : 66 European CDS (in the iTraxx Main since 2004), *US* : 73 North American CDS (in the CDX NA IG since 2004). Correlations are calculated by EWMA and averaged accross all pairs of CDS

Fears on counterparty risk

The CDS market is now in the eye of the storm. The reason is straightforward, because this crisis is about credit risk. A credit bubble has ballooned for years, being enhanced by the existence of credit derivatives. As credit originators can pass their risk to other agents, they have been less careful about the quality of their loans. In that sense, CDS have given an incentive for distributing more credit to more risky borrowers.

As banks and all financial institutions have massively committed themselves in the CDS market, they are now highly dependant on market continuity and its smooth functioning. The failure of a major participant, or worse a whole set of participants, can put at stake all the others. Bankruptcies of Bear Sterns, then that of AIG, two key counterparties, could have brought about a complete meltdown of the market. This has certainly been taken into account when the US government decided to step in and prevent them from going bankrupt. However, faith in the reliability of the market has been deeply shaken by these events. Lehman Brothers' bankruptcy has also severely hit the whole market, as it was among the ten main participants.

As long as the financial system was sound, there was no fear that counterparty risk could be a problem. Today, after the near-failure of three key participants, the counterparty risk is the major worry and raises widespread fears of a market collapse. The main drawback stems from the very nature of this market, which is over-the-counter (OTC). Each buyer negotiates with a seller directly, without global clearing. The buyer thinks he escapes

from the default risk of company X, but is still exposed to the counterparty risk of the CDS seller. If no netting is done, when trying to exit from a contract, the buyer has to sell another contract, which theoretically offsets its default risk but does not cancel the counterparty risk. In this framework, counterparty risks are multiplied by the lack of global netting. On-going projects to switch to an organised market with a global clearing-house seek to tackle this issue, as it would drastically reduce the counterparty risk. However, they are not likely to solve the problem in the short run, as the bulk of contracts have been made at a 5-year maturity on an OTC basis.

Another cause for concern is that the market is unregulated. CDSs act as insurance against default, but they are not submitted to any regulations as is the case for insurance companies. The latter have to meet required reserves and are closely monitored by public authorities. On the CDS market, no reserves are required from the sellers of protection, only very thin margins, ranging from 2% to 5% of the amount insured. However, the danger is even greater than insuring against natural catastrophes for example, because of the high correlation of default risk, which is linked to the business cycle.

The first warning: the May 2005 crisis of GM and Ford

Looking back on its short historical evolution, this is not the first time the CDS market has been routed. There was already a big meltdown of the CDS market in May 2005. At that time, General Motors (GM) and Ford were downgraded by the rating agencies from investment grade to "junk" grade, which triggered a violent crisis.

The 2005 crisis was a premonitory event. The GM and Ford downgrades had a large impact on the market due to the huge size of the two leading multinational firms. At that time, the CDS premia of both firms posted a sharp rise and the whole of the CDS market was affected, as well as the bond market. Acharya *et al*. (2007) have highlighted the liquidity shock that this crisis brought about on the market.

Coudert and Gex (2008) investigate the contagion effects of the GM and Ford crisis within the market. To do so, they calculate the conditional correlations between each of 226 CDSs on major US and European firms that are included into the main indices. Their results show that the correlations significantly increased during the crisis, especially in the first week. Both the US and the European markets were affected, pointing to the strong international integration of the credit markets.

They also analyze the links with the other financial markets. Theoretically, as a CDS is aimed at protecting investors against a borrower's default, its premium should be close to the borrower's bond spread, for a given maturity, even if in practice, they differ slightly. Usually, the CDS market is considered to lead the bond market, in the sense that price innovations go from the CDS market to the bond price (Blanco *et al*., 2004). This relationship between the two markets was somewhat mitigated during the 2005 crisis. At that time, CDS spreads tended to increase more than bond spreads, as investors bid up the price of protection; this points to the speculative nature of the market.

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Giavazzi: Why does the spread between LIBOR and expected future policy rates persist, and should central banks do something about it?

2 June 2008

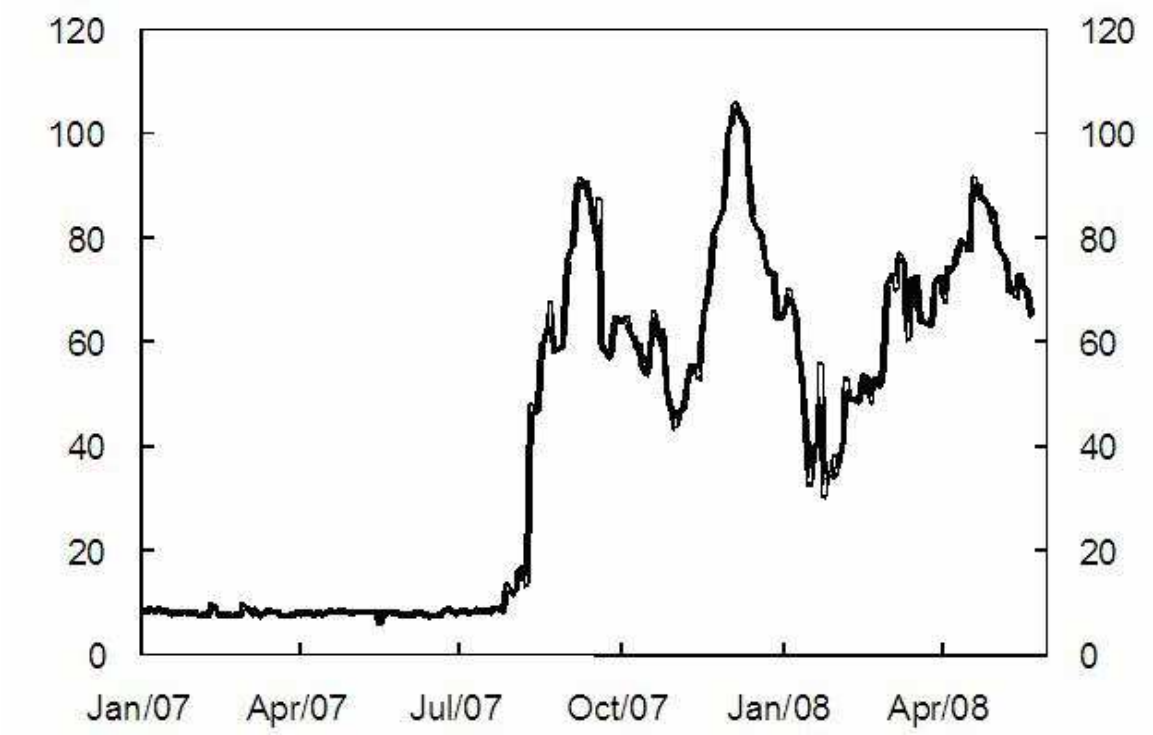
There has been a persistent spread between the rate at which banks lend each other money and government-backed securities yields in recent months. This column describes hypotheses explaining the spread – including the possibility that banks aren't lending in order to bankrupt acquisition targets.

For a few months now the markets have been concerned by the persistence of a spread between the 1- and 3-month LIBOR ("London Interbank Offer Rate" – the interest rate at which banks lend money to each other without posting collateral) and the comparable overnight index swap rates (OIS), i.e. future expected policy rates (the Federal Funds rate in the U.S. and similar rates in the U.K and in the euro area) over the same horizon.[75] The persistence of such a spread is surprising because banks should in principle be able to arbitrage it away – up to the cost of the insurance they need to buy if they want to protect themselves against future fluctuations in policy rates. To arbitrage, they simply need to borrow overnight on the money market – for instance at the Federal Funds rate – roll over the funds for three months and use them to lend to another bank at LIBOR.

Until summer 2007, the spread between LIBOR and future expected policy rates was very small, about 10 basis points – which probably reflected the cost of insurance. Since then, it has fluctuated between 50 and 100 basis points in various markets, including the U.S. dollar, British pound, and euro. Today the spread is about 70-75 basis points. See Figure 1, which shows a time series of the spread for the U.S. dollar since January 2007.

Figure 1 LIBOR-OIS spread, U.S. Dollar, 2007-2008 (basis points)

[75] This column is the result of conversations with Olivier Blanchard, Ricardo Caballero and Steve Cecchetti – who of course are not responsible for what is written here.



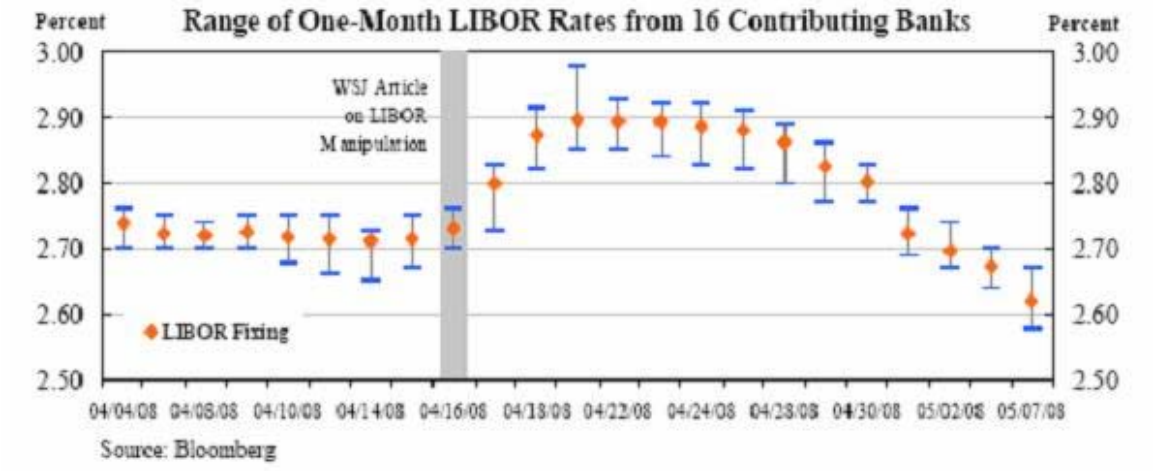
A European view

There are two views as to why such a spread persists and whether central banks might reduce it. Europeans tend to think that the spread reflects credit risk, as LIBOR loans are not collateralised. Since there remains widespread uncertainty about the strength of banks' balance sheets, LIBOR loans are risky and the spread simply reflects the market assessment of such risk. Assuming that this is the reason, European central bankers think that it would be inappropriate for them to try to eliminate a "market price". Thus we should live with it. It has been suggested that this explains why the European Central Bank and Bank of England have very reluctantly followed the Federal Reserve in announcing the swap lines created among the three central banks (in early May) to make it possible for Euro area and U.K. banks to borrow overnight dollars – and symmetrically for U.S banks to borrow pounds and euros. The Fed proposed these swaps – which are in effect credit lines – to try and bring the spread down; the Europeans thought this was inappropriate, or in any case useless.

We can compute the market's assessment of the probability that a loan may not be reimbursed, i.e. that the bank fails and completely foregoes its obligations – admittedly an extreme case, since a fraction of the loans is typically repaid. In the Euro area, with (annualised) overnight rates at 4%, a 50 basis point (bp) spread implies (assuming risk neutrality, which may not be right) a default probability of about 5% over a three-month loan. When the spread was 80 bp (as in December 2007), the default probability was 7.5%. In the U.S., with the Fed Funds at 2%, a 50 bp spread implies a default probability of about 10%. In both cases, these are not small numbers.

A problem with the "European" view is that if the LIBOR reflected the creditworthiness of banks, spreads should vary across banks depending on the perceived state of their balance sheets. This does not appear to be the case. Figure 3 shows that the range of

LIBOR rates for 16 reporting banks is rather small: 10 basis points, hardly a reflection of a market characterised by widespread credit concerns.



Source: William C. Dudley, "May You Live in Interesting Times: The Sequel," Remarks at the Federal Reserve Bank of Chicago's 44th Annual Conference on Bank Structure and Competition, 15 May 2008

An American view

The Fed seems to hold a different view, which starts from the presumption that after the Bear Stearns episode it is very unlikely that a U.S bank will be allowed to fail – and that even if it did the Fed would intervene to protect bondholders (including the banks that lent to the failed institution at LIBOR) and shift the loss entirely onto shareholders. The Fed suggests instead that what underlies the spread is a "shortage of bank capital".

Consider a bank that has enough capital: it can borrow and make a new loan without with the capital it has, without going beyond its target level of leverage. In other words, the shadow price of its capital is zero. Such a bank will arbitrage between LIBOR r^{Libor} and the expected cost of rolling over overnight funds $\hat{r}^{OIS}$ and insuring against fluctuations in the overnight rate.

$$r^{Libor} - (\hat{r}^{OIS} + \text{insurance premium}) = 0$$

Consider instead a bank that, in order to make a new loan, must raise new capital, or reduce the capital it has assigned to other activities. For such a bank the spread between the lending rate and the cost of borrowing must equal the shadow price of capital.[76]

$$r^{Libor} - (\hat{r}^{OIS} + \text{insurance premium}) = \text{shadow price of capital}$$

For instance, with a capital requirement, under current Basel rules, of 1.6% and a shadow price of capital of 20% (what many banks are promising to attract new investors), the spread between LIBOR and the overnight rate (net of the insurance premium) is 32 bp.

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[76] Here too, knowing the marginal capital requirement needed to make a new LIBOR loan, we could compute the equilibrium spread.

Before the crisis the insurance premium was around 10 bp: it may have risen considering the increase in volatility. This gives an overall spread of 42 bp and possibly more, depending on the current level of the premium. This explains some of the divergence from historical levels, but it is far from the peaks observed during the crisis.

This view has an additional problem. It requires that all banks are capital constrained. This is unlikely to be true, and just a few unconstrained banks could arbitrage away the spread. For this to happen, however, the unconstrained banks should be large relative to the market. Otherwise, as they lend at Libor, they will also eventually hit a capital constraint.

Predatory banks

The bottom line is that both the European and the Fed's view have problems. An interesting alternative explanation has been suggested by MIT's Ricardo Caballero. Banks could be engaging in "predatory behaviour". Banks that have "free" capital might be tempted to behave strategically and refrain from lending to banks which need the funds to overcome a liquidity crisis. Here is how the argument goes.

Since we cannot assume that the Fed will bail out all banks in trouble, it is possible that a liquidity crisis might result in a bank failing. The experience of Bear Stearns then suggests that, faced with a possible failure, the Fed would protect bondholders but wipe out shareholders. This means – as in the Bear Stearns-JPMorgan case – that the bank with "free" capital can acquire a competitor to which it has denied a loan at a price close to zero. Predatory behaviour could explain the persistence of the spread even in the presence of a few large banks that are not capital constrained.

Finally let's come to central banks and what they can do to reduce the spread. The simplest option would eliminate the need for banks to borrow at LIBOR from other banks by providing the funds they need directly through the Term Auction Facility (TAF). The facility (created earlier this year) allows a bank to borrow reserves from the Fed by posting assets (of any quality) as collateral. Currently the TAF is a 28-day facility. To pursue this route and make it equivalent to borrowing at LIBOR, the Fed might need to extend the horizon of the TAF from 28 to 90 days. (The ECB and the Bank of England have similar facilities.) One remaining difference is the need to post collateral, which is a requirement to access the TAF, while no collateral is needed in the case of interbank borrowing. But since the Fed accepts almost any asset as collateral, this would not be a serious constraint.

Saving banks

There remains an underlying problem. How credible is the Fed's commitment to supply funds to banks through the TAF – even in the case of a liquidity crisis that might bring a bank down – without affecting the monetary base? This question has often been raised in recent months as markets worried what might happen when the Fed "runs out of TBills".

There are three ways in which the Fed could expand its balance sheet without affecting the outstanding stock of base money: (i) if it were allowed to issue its own Bills (as some other central banks do, e.g. the People’s Bank of China), (ii) if it could induce banks to hold more reserves for any given level of the monetary base, (iii) if the Treasury were to issue more Bills than it needs to finance the deficit and the Fed bought them back from

the market. Option (iii) is straightforward: however it is not unlimited, unless Congress raises the yearly limit of Treasury issues. Options (i) and (ii) are related but only (i) would put the Fed in the position of issuing an unlimited amount of Bills to buy banks' paper. To compare options (i) and (ii), it is useful to consider their implications on the Fed's balance sheet.

(i)	*Assets*	*Liabilities*	*(ii)*	*Assets*	*Liabilities*
	TBills	*M*		*TBills*	*M*
	FedBills ↑	*Reserves*		*Banks' paper* ↑	*Reserves*
	Banks' papers ↑				

It is unclear whether today the Fed has the authority to issue its own Bills, and the Fed hopes that the law currently being discussed in Congress that would allow it to pay (starting in October 2011) interest on reserves might contain a line that explicitly authorises the Fed to issue its own Bills.

Options (i) and (ii) are obviously very different. If the Fed could issue its own paper, its ability to expand its balance sheet would be unlimited – and its commitment to bail out any bank without affecting M would be fully credible. Inducing banks to increase their reserves is much less powerful. If we compare the balance sheet of the Fed with that of the ECB (which pays interest on reserves) we see that this could add some $100 billion to the liabilities side: not small but not unlimited either. Moreover, banks can certainly be induced to hold a higher volume of reserves if these are remunerated, but in order to do so – at an unchanged level of base money – banks must liquidate other assets. This would happen but only with time.

Conclusion

The two competing views about why a Libor-OIS spread persists – credit risk or a shortage of bank capital – both have problems. The possibility that banks with still abundant capital might be engaging in predatory behaviour seems a better explanation for the persistence of the spread. Central banks, particularly the Federal Reserve, in principle have the power to get rid of the spread: they could simply eliminate the need for banks to borrow at LIBOR from other banks and provide them the funds they need directly through the Term Auction Facility. This leaves us with a final basic question: can central banks credibly commit to provide unlimited high quality paper to banks without affecting the monetary base? In the U.S. case such a commitment would require Congress to explicitly authorise the Fed to issue its own bills.

The proper governmental response

Eichengreen: Anatomy of the financial crisis

23 September 2008

The crisis solution depends upon its causes. Here one of the world's leading international macroeconomists explains how the world got into this mess. This is the 'Director's cut' of his 18 September 2008 column on Project Syndicate.

Getting out of our current financial mess requires understanding how we got into it in the first place. The dominant explanation, voiced by figures as diverse as Thomas Friedman and John McCain, is that the fundamental cause was greed and corruption on Wall Street. Though not one to deny the existence of base motives in the institutional investor community, I would insist that the crisis has roots in key policy decisions stretching back over more than three decades.

At the domestic level, the key decisions in the United States were to deregulate commissions for stock trading in the 1970s and then to eliminate the Glass-Steagall restrictions on mixing commercial and investment banking in the 1990s. In the days of fixed commissions, investment banks could make a comfortable living booking stock trades for their customers. Deregulation meant greater competition, entry by low-cost brokers like Charles Schwab, and thinner margins. The elimination of Glass-Steagall then allowed commercial banks to encroach on the investment banks' other traditional preserves. (It was not only commercial banks of course, but also insurance companies like AIG that did the encroaching.)

In response, investment banks to survive were forced to branch into new lines of business like originating and distributing complex derivative securities. They were forced to use more leverage, funding themselves through the money market, to sustain their profitability. Thereby arose the first set of causes of the crisis: the originate-and-distribute model of securitisation and the extensive use of leverage.

It is important to note that these were unintended consequences of basically sensible policy decisions. It is hard to defend rules allowing price fixing in stock trading. Deregulation allowed small investors to trade stocks more cheaply, which made them better, off other things equal. But other things were not equal. In particular, the fact that investment banks, which were propelled into riskier activities by these policy changes, were entirely outside the regulatory net was a recipe for disaster.

Similarly, eliminating Glass-Steagall was a fundamentally sensible choice. Conglomeratisation allows financial institutions to better diversify their business. Combining with commercial banking allows investment banks to fund their operations using a relatively stable base of deposits rather than relying on fickle money markets. This model has proven its viability in Germany and other European countries over a period of centuries. These advantages are evident in the United States even now, with Bank of America's purchase of Merrill Lynch, which is one small step helping to staunch the bleeding.

Again, however, the problem was that other policies were not adapted to the new environment. Conglomeratisation takes time. In the short run, Merrill, like the other investment banks, was allowed to lever up its bets. It remained outside the purview of the regulators. As a self-standing entity, it was then vulnerable to inevitable swings in housing and securities markets. A crisis sufficient to threaten the entire financial system was required to precipitate the inevitable conglomeratisation.

The other key element in the crisis was the set of policies giving rise to global imbalances. The Bush Administration cut taxes, causing government dissaving. The Federal Reserve cut interest rates in response to the 2001 recession. All the while the financial innovations described above worked to make credit even cheaper and more widely available to households. This of course is just the story, in another guise, of the subprime, negative-amortization and NINJA mortgages pushed by subsidiaries of the like of Lehman Brothers. The result was increased U.S. consumer spending and the decline of measured household savings into negative territory.

Of equal importance were the rise of China and the decline of investment in much of Asia following the 1997-8 crisis. With China saving nearly 50 per cent of its GNP, all that money had to go somewhere. Much of it went into U.S. Treasuries and the obligations of Fannie Mae and Freddie Mac. This propped up the dollar. It reduced the cost of borrowing for U.S. households by, on some estimates, 100 basis points, encouraging them to live beyond their means. It created a more buoyant market for Freddie and Fannie and other financial institutions creating close substitutes for their agency securities, feeding the originate-and-distribute machine.

Again, these were not outright policy mistakes. The emergence of China is a good thing. Lifting a billion Chinese out of poverty is arguably the single most important event in our lifetimes. The fact that the Fed responded quickly to the collapse of the high-tech bubble prevented the 2001 recession from becoming worse. But there were unintended consequences. Those adverse consequences were aggravated by the failure of U.S. regulators to tighten capital and lending standards when abundant capital inflows combined with loose Fed policies to ignite a ferocious credit boom. They were aggravated by the failure of China to move more quickly to encourage higher domestic spending commensurate with its higher incomes.

Now we are all paying the price. As financial problems surface, a bloated financial sector is being forced to retrench. Some cases, like the marriage of BofA and Merrill, are happier than others, like Lehman. But either way there will be downsizing and consolidation. Foreign central banks like China's are suffering immense capital losses for their unthinking investment. As the People's Bank and other foreign central banks absorb their losses on U.S. Treasury and agency securities, capital flows toward the United States will diminish. The U.S. current account deficit and Asian surplus will shrink. U.S. households will have to begin saving again. All this is of a piece.

The one anomaly is that the dollar has strengthened in recent weeks against pretty much every currency out there. (The one exception is the yen, which is being supported by Mrs. Watanabe keeping more of her money at home.) With the U.S. no longer viewed as a supplier of high-quality financial assets and the appetite of foreign central banks for U.S. treasury and agency securities falling off, one would expect the dollar to weaken. The

dollar's strength reflects the reflex action of investors rushing into U.S. treasuries as a safe haven. It is worth recalling that the same thing happened in early August 2007, when the Subprime Crisis first erupted. Once investors realised the extent of U.S. financial problems, the rush into treasuries subsided, and the dollar resumed its decline. Now, as investors recall the extent of U.S. financial problems – and even more so as they realise the U.S. Treasury debt is going to rise significantly as the authorities are forced to recapitalise the banking system – we will again see the dollar resume its ongoing decline.

Emphasising greed and corruption as causes of the crisis leads to a bleak prognosis. We are not going to change human nature. We can't make investors less greedy or to prevent them from cutting corners when they see doing so as in their self interest. But emphasising policy decisions as the mechanism amplifying these problems into a threat to the entire financial system suggests a more optimistic outlook. Policy mistakes may not always be avoidable. Unintended consequences cannot always be prevented. But they at least can be corrected. Correcting them, however, requires first looking more deeply into the root causes of the problem.

Editors' note: A shortened version of this appeared in Project Syndicate on 18 September 2008.

Calomiris: The subprime turmoil: What's old, what's new, and what's next

22 August 2008

The subprime crisis is the joint product of perverse incentives and historical flukes. This column explains why market actors made unrealistic assumptions about mortgage-backed securities and how various regulatory policies exacerbated the problem. The crisis will necessitate changes in monetary policy, regulation, and the structure of financial intermediation.

The financial system is working through a major shock. It started with problems in the subprime mortgage market but has spread to securitisation products and credit markets more generally. Banks are being asked to absorb more risk – moving off-balance-sheet assets back onto their balance sheets – when their ability to do so is reduced by massive losses. The result is a bank credit crunch as the scarcity of bank equity capital is forcing banks to limit exposure to new risk.

Origins of the turmoil

There are both old and new components in the origins of the subprime shock. The primary novelty is the central role of "agency problems" in asset management.

In previous real estate-related financial shocks, government financial subsidies for bearing risk seem to have been key triggering factors, along with accommodative monetary policy, and government subsidies played key roles in the most severe real estate-related financial crises. While the subsidisation of borrowing also played a role in

the current US housing cycle, the subprime boom and bust occurred largely outside the realm of government-sponsored programmes.

Investors in subprime-related financial claims made *ex ante* unwise investments, which seem to be best understood as the result of a conflict of interest between asset managers and their clients. In that sense, sponsors of subprime securitisations and the rating agencies – whose unrealistic assumptions about subprime risk were known to investors prior to the run up in subprime investments – were providing the market with investments that asset managers demanded in spite of the obvious understatements of risk in those investments.

The subprime debacle is best understood as the result of a particular confluence of circumstances in which longstanding incentive problems combined with unusual historical circumstances. The longstanding problems were (1) asset management agency problems of institutional investors and (2) government distortions in real estate finance that encouraged borrowers to accept high leverage when it was offered. But these problems by themselves do not explain the timing or severity of the subprime debacle. The specific historical circumstances of (1) loose monetary policy, which generated a global savings glut, and (2) the historical accident of a very low loss rate during the early history of subprime mortgage foreclosures in 2001-2002 were crucial in triggering extreme excessive risk taking by institutional investors. The savings glut provided an influx of investable funds, and the historically low loss rate gave incentive-conflicted asset managers, rating agencies, and securitisation sponsors a basis of "plausible deniability" on which to base unreasonably low projections of default risk.

What is the evidence for this? How do we know that asset managers willingly over-invested their clients' money in risky assets that did not adequately compensate investors for risk?

Detailed analyses by Joseph Mason and Joshua Rosner, by the IMF, and by others describe in detail why the assumptions that underlay the securitisation of subprime mortgages and related collateralised debt obligation (CDOs) were too optimistic. These facts were known to sophisticated market participants long before the subprime collapse.

Consider, for example, rating agencies assumptions about the underlying expected losses on a subprime mortgage pool. They assumed a 6% expected loss on subprime mortgage-backed securities pools in 2006 – a number that is indefensibly low. Expected losses prior to 2006 were even lower. Independent observers criticised low loss assumptions far in advance of the summer of 2007.

The 6% assumption is not a minor technical issue. It was hugely important to the growth of subprime mortgage-backed securities in the four years leading up to the crisis. It goes a long way toward explaining how subprime mortgages were able to finance themselves more than 80% in the form of AAA debts, and more than 95% in the form of A, AA, or AAA debts, issued by subprime mortgage-backed securities conduits.

So long as institutional investors buying these debts accepted the ratings agencies' opinions as reasonable, subprime conduit sponsors and ratings agencies stood to earn, and did earn, huge fees from packaging loans with no pretence of screening borrowers.

Where did expected loss estimates come from?

How were the low loss assumptions justified, and why did institutional investors accept numbers ranging from 4.5% to 6% as reasonable forward-looking estimates of expected pool losses?

Recall that subprime mortgages were a relatively new product, which grew from humble beginnings in the early 1990s, and remained small even as recently as several years ago; not until the last three years did subprime origination take off. Given the recent origins of the subprime market, which postdates the last housing cycle downturn in the US (1989-1991), how were ratings agencies able to ascertain what expected losses would be on a subprime mortgage pool? A significant proportion of subprime mortgages defaulted in the wake of the 2001 recession. Although the volume of outstanding subprime mortgages was small, a very high proportion of them defaulted; in fact, only in the last quarter has the default rate on subprime mortgages exceeded its 2002 level. The existence of defaults from 2001-2003 created a record of default loss experience, which provided a basis for the 6% expected loss number.

Of course, this was a very unrepresentative period on which to base loss forecasts. Low realised losses reflected the fact that housing prices grew dramatically from 2000 to 2005. In a flat or declining housing market – the more reasonable forward-looking assumption for a high-foreclosure state of the world – both the probability of default and the severity of loss in the event of default would be much greater (as today's experience demonstrates). The probability of default would be greater in a declining housing market because borrowers would be less willing to make payments when they have little equity at stake in their homes. Loss severity would be greater in a declining housing market because of the effect of home price appreciation on lenders' recoveries in foreclosure.

This error was forecastable. For the most part, the housing cycle and the business cycle coincide very closely. Most of the time in the past (and presumably, in the future) when recession-induced defaults would be occurring on subprime mortgages, house prices would be not be appreciating. This implies that the loss experience of 2001-2003 (when house prices rose) was not a good indicator either of the probability of foreclosure or of the severity of loss for subprime mortgage pools on a forward-looking basis. Anyone estimating future losses sensibly should have arrived at a much higher expected loss number than the 4.5%-6% numbers used during the period 2003-2006.

Another reason that the expected losses were unrealistically low relates to the changing composition of loans. Even if 6% had been reasonable as a forward-looking assumption for the performance of the pre-2005 cohorts of subprime borrowers, the growth in subprime originations from 2004 to 2007 was meteoric, and was accompanied by a significant deterioration in borrower quality. Was it reasonable to assume that these changes would have no effect on the expected loss of the mortgage pool? The average characteristics of borrowers changed dramatically, resulting in substantial increases in the probability of default, which were clearly visible by 2006 even for the 2005 cohort.

Of course, investors could have balked at these assumptions as unrealistic, precisely because they were based on a brief and unrepresentative period. Why didn't they? Because they were investing someone else's money and earning huge salaries, bonuses, and management fees for being willing to pretend that these were reasonable investments. And furthermore, they knew that other competing asset managers were behaving

similarly and that they would be able to blame the collapse (when it inevitably came) on a surprising shock. The script would be clear, and would give "plausible deniability" to all involved. "Who knew? We all thought that 6% was the right loss assumption! That was what experience suggested and what the rating agencies used." Plausible deniability was a coordinating device for allowing asset managers to participate in the feeding frenzy at little risk of losing customers (precisely because so many participated). Because asset managers can point to market-based data and ratings at the time as confirming the prudence of their actions on a forward-looking basis, they are likely to bear little cost as the result of investor losses.

Official input and managerial incentive problems

Various regulatory policies unwittingly encouraged this "plausible deniability" equilibrium. Regulation contributed in at least four ways.

- Insurance companies, pension funds, mutual funds, and banks all face regulations that limit their ability to hold low-rated debts, and the Basel I and II capital requirements for banks place a great deal of weight on rating agency ratings.

By granting enormous regulatory power to rating agencies, the government encouraged rating agencies to compete in relaxing the cost of regulation (through lax standards). Rating agencies that (in absence of regulatory reliance on ratings) saw their job as providing conservative and consistent opinions for investors changed their behaviour as the result of the regulatory use of ratings, and realised huge profits from the fees that they could earn from underestimating risk (and in the process provided institutional investors with plausible deniability).

- Unbelievably, Congress and the Securities and Exchange Commission (SEC) were sending strong signals to the rating agencies in 2005 and 2006 to encourage greater ratings inflation in subprime-related collateralised debt obligations!

In a little known subplot to the ratings-inflation story, the SEC proposed "anti-notching" regulations to implement Congress's mandate to avoid anti-competitive behaviour in the ratings industry. The proposed prohibitions of notching were directed primarily at the rating of CDOs and reflected lobbying pressure from ratings agencies that catered most to ratings shoppers.

Notching arose when collateralised debt obligation sponsors brought a pool of securities to a rating agency to be rated that included debts not previously rated by that rating agency. For example, suppose that ratings shopping in the first generation of subprime securitisation had resulted in some mortgage-backed securities that were rated by Fitch but not Moody's (i.e., perhaps Fitch had been willing to bless a higher proportion of AAA debt relative to subprime mortgages than Moody's). When asked to rate the CDO that contained those debts issued by that subprime mortgage-backed securities conduit, Moody's would offer either to rate the underlying MBS from scratch, or to notch (adjust by a ratings downgrade) the ratings of those securities that had been given by Fitch.

- Changes in bank capital regulation introduced several years ago relating to securitisation discouraged banks from retaining junior tranches in securitisations that they originated and gave them an excuse for doing so.

This exacerbated agency problems by reducing sponsors' loss exposures. The reforms raised minimum capital requirements for originators retaining junior stakes in securitisations. Sponsors switched from retaining junior stakes to supporting conduits through external credit enhancement (typically lines of credit of less than one year), which implied much lower capital requirements. Sponsors that used to retain large junior positions (which helped to align origination incentives) no longer had to worry about losses from following the earlier practice of retaining junior stakes. Indeed, one can imagine sponsors explaining to potential buyers of those junior claims that the desire to sell them was driven not by any change in credit standards or higher prospective losses, but rather by a change in regulatory practice – a change that offered sponsors a plausible explanation for reducing their pool exposures.[77]

- The regulation of compensation practices in asset management likely played an important role in the willingness of institutional investors to invest their clients' money so imprudently in subprime mortgage-related securities.

Casual empiricism suggests that hedge funds (where bonus compensation helps to align incentives and mitigate agency) have fared relatively well during the turmoil, compared to other institutional investors, and this likely reflects differences in incentives of hedge fund managers, whose incentives are much more closely aligned with their clients.

The standard hedge fund fee arrangement balances two considerations: the importance of incentive alignment (which encourages profit sharing by managers), and the risk aversion of asset managers (which encourages limiting the downside risk exposure for managers). The result is that hedge fund managers share the upside of long-term portfolio gains but have limited losses on the downside. Because hedge fund compensation structure is not regulated, and because both investors and managers are typically highly sophisticated people, it is reasonable to expect that the hedge fund financing structure has evolved as an "efficient" financial contract, which may explain the superior performance of hedge funds.

The typical hedge fund compensation structure is not permissible for other, regulated asset managers. Other asset managers must share symmetrically in portfolio gains and losses; if they were to keep 20% of the upside, they would have to also absorb 20% of the downside. Since risk-averse fund managers would not be willing to expose themselves to such loss, regulated institutional investors typically charge fees as a proportion of assets managed and do not share in profits. This is a direct consequence of the regulation of compensation, and arguably has been a source of great harm to investors, since it encourages asset managers to maximise the size of the funds that they manage, rather than the value of those funds. Managers who gain from the size of their portfolios rather than the profitability of their investments will face strong incentives not to inform investors of deteriorating opportunities in the marketplace and not to return funds to investors when the return relative to risk of their asset class deteriorates.

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[77] Of course, either through external enhancement or voluntary provision of support to their conduits, sponsors may still be taking an effectively junior position, and of course, many did so by absorbing losses that otherwise would have been born by other investors.

Propagation of the turmoil

When it comes to the shock's spread, much is familiar. As usual, the central role of asymmetric information is apparent in adverse selection premia that have affected credit spreads and in the quantity rationing of money market instruments. But there is an important and favourable novelty – the ability and willingness of banks to raise new capital. As of mid-June 2008, financial institutions had raised over $300 billion in new capital to mitigate the consequences of subprime losses.

This novelty is especially interesting in light of the fact that the subprime shock (in comparison to previous financial shocks) is both large in magnitude and uncertain in both magnitude and incidence. In the past, shocks of this kind have not been mitigated by the raising of capital by financial institutions in the wake of losses. This unique response of the financial system reflects improvements in the US financial system's diversification that resulted from deregulation, consolidation, and globalisation.

Another unique element of the response to the shock has been the activist role of the Fed and the Treasury, via discount window operations and other assistance programmes that have targeted assistance to particular financial institutions. Although there is room for improving the methods through which some of that assistance was delivered, the use of directly targeted assistance is appropriate and allows monetary policy to be "surgical" and more flexible (that is, to retain its focus on maintaining price stability, even while responding to a large financial shock). Unfortunately, in the event, the Fed threw caution to the wind in its Fed funds rate cuts, driving long-term inflation expectations significantly higher over the past year. The Fed could have, and should have, maintained financial stability through surgical interventions and provided less inflationary monetary stimulus than it did in the form of rate cuts.

Near-term implications: monetary policy, regulation, and restructuring

Dire forecasts of the near-term outlook for house prices and attendant macroeconomic consequences of subprime foreclosures for bank net worth and consumption reflect an exaggerated view of downside risk. Inflation and long-term inflation expectations have risen substantially and pose an immediate threat. Monetary policy should focus on maintaining a credible commitment to price stability, which would ensure the continuing stability of the dollar, encourage stock market recovery, and therefore assist the process of financial institution recapitalisation.

Regulatory policy changes that should result from the subprime turmoil are numerous, and they include reforms of prudential regulation for banks, an end to the longstanding abuse of taxpayer resources by Fannie Mae and Freddie Mac, the reform of the regulatory use of rating agencies' opinions, and the reform of the regulation of asset managers' fee structures to improve managers' incentives. It would also be desirable to restructure government programmes to encourage homeownership in a more systemically stable way, in the form of down payment matching assistance for new homeowners, rather than the myriad policies that subsidise housing by encouraging high mortgage leverage.

What long-term structural changes in financial intermediation will result from the subprime turmoil? One likely outcome is the conversion of some or all standalone investment banks to become commercial (depository) banks under Gramm-Leach-Bliley.

The perceived advantages of remaining as a standalone investment bank – the avoidance of safety net regulation and access to a ready substitute for deposit funding in the form of repos – have diminished as the result of the turmoil. The long-term consequences for securitisation will likely be mixed. In some product areas with long histories of favourable experiences – like credit cards – securitisation is likely to persist and may even thrive from the demise of subprime securitisation, which is a competing consumer finance mechanism. In less-time tested areas, particularly those related to real estate, simpler structures, including on-balance sheet funding through covered bonds, will substitute for discredited securitisation in the near term and perhaps for many years to come.

Rancière An international perspective on the US bailout

20 October 2008

The current credit crisis has prompted many calls for regulation to prevent such an event from ever happening again. This column defends a financial system that engenders systemic risk. Economies that risk occasional credit crises enjoy higher long-run growth, and the cost of the US bailout is well within historical norms.

As the US economy is hit by the financial crisis and associated bailout costs, it is useful to take an international perspective on current events. In the last three decades, many developing countries have also experienced financial crises and large bailouts. Yet, the growth gains brought by financial liberalisation and deregulation have, in most cases, far more than offset the output and bailout costs of crises. Importantly, financial liberalisation by itself did not generate crises – government meddling and implicit bailout guarantees were often involved. In many ways, the US story is not so different.

In the current debate, pundits are railing against the enormity and unfairness of the US bailout, not to mention the bad precedent it will set. Many also point to financial deregulation as a key cause of the crisis. But the facts suggest otherwise.

- First, the size of the bailout is within historical and international norms.
- Second, financial liberalisation and deregulation policies along with financial innovation have largely contributed to the impressive growth performance of the US economy relatively to EU countries. The development of new financial instruments has helped finance the IT revolution and the large-scale increase in home ownership. Both factors have been powerful engines of US growth.
- Third, policy interventions, such as the effort by some in the administration and Congress to induce Fannie Mae and Freddie Mac to move into the subprime mortgage market, have largely paved the road to the financial crisis the US faces today.

How big is the bailout compared to others?

How big is the current US bailout? The $700 billion bailout bill is equivalent to 5% of GDP. Adding to it the cost of other rescues – Bear Stearns, Freddie Mac and Fannie Mae,

AIG – the total bailout costs could go up to $1,400 billion, which is around 10% of GDP. In contrast,

- Mexico incurred bailout costs of 18% of GDP following the 1994 Tequila crisis.
- In the aftermath of the 1997-98 Asian crisis, the bailout price tag was 18% of GDP in Thailand and a whopping 27% in South Korea.
- Somewhat lower costs, although of the same order of magnitude, were incurred by Scandinavian countries in the banking crises of the late 1980s. 11% in Finland (1991), 8% in Norway (1987), and 4% in Sweden (1990).
- Lastly, the 1980s savings and loans debacle in the US had a cumulative fiscal cost for the taxpayer of 2.6% of GDP.

The bailout costs that the taxpayers are facing today can be seen as an *ex post* payback for years of easy access to finance in the US economy. The implicit bailout guarantees against systemic crises have supported a high growth path for the economy – albeit a risky one. In effect, the guarantees act as an investment subsidy that leads investors to (1) lend more and (2) at cheaper interest rates. This results in greater investment and growth in financially constrained sectors – such as housing, small businesses, internet infrastructure, and so on. Investors are willing to do so because they know that if a systemic crisis were to take place, the government will make sure they get repaid (at least partially).

No innocent souls

Importantly, there must be systemic insolvency risk for the bailout scheme to have these effects. This is because a bailout is not granted if an isolated default occurs, but only if a systemic crisis hits, since only under the threat of generalised bankruptcies and a financial meltdown would Congress agree on a bailout. Thus, an investor will be willing to take on insolvency risk only if many others do the same. When a majority of investors load on insolvency risk, they feel safe (because of the bailout guarantee). No wonder many financial firms end up with huge leverage and loaded with risky assets. In the Tequila and Asian crises the risky bet was the so-called currency mismatch, in which banks funded themselves in dollars and lent in domestic currency. In the US, it took the form of toxic mortgage-related assets. There are no innocent souls here. Borrowers, intermediaries, investors and regulators understood the bargain. At the end, the bailout guarantee scheme has succeeded in inducing more investment by financially constrained agents in real estate and small businesses.

The positive side of risk-taking in the long run

Perhaps the financial sector lent excessively, leading to overinvestment in the housing sector today and the IT sector in the late 1990s. But the bottom line remains that risk-taking has positive consequences in the long run even if it implies that crises will happen from time to time. Over history, the countries that have experienced (rare) crises are the

ones that have grown the fastest.[78] In those countries, investors and businesses take on more risks and as a result have greater investment and growth. Compare Thailand's high-but-jumpy growth path with India's slow-but-steady growth path before it implemented liberalisation a few years ago. Over the last 25 years, Thailand grew 32% more than India in terms of per-capita income despite a major financial crisis. Similarly, easier access to finance and risk-taking explains, in part, why the US economy has strongly outperformed those of France and Germany in the last decades.

Some argue for the rolling back of financial liberalisation and for a return of the good old days of strict regulation. Not so fast!

Conclusion

Today's bailout price seems high. But is it that much relative to the higher growth the US has enjoyed in specific sectors and overall? Let's wait for the final price tag. Other countries' experiences tell us that financial liberalisation – and some of its consequences – is not such a bad idea after all. They also teach us the importance of quickly jump-starting the lending engine so as to avoid a growth collapse and for the regulatory agencies to refrain from killing the natural risk-taking process that accompanies the resumption of credit growth.

Berglöf and Rosenthal: Not the end of capitalism

2 October 2008

European politicians have been quick to proclaim the bankruptcy of the US model of capitalism "as we know it". But, this column explains, all this hyperbole is premature. In fact, the US system of today is the outcome of numerous similar interventions and offers further pause for Europe.

"In the Bolshevik Revolution, the slogan was 'Peace, land, and bread'. Today, you are being asked to choose between bread and freedom." These were the words of Rep. Thaddeus McCotter (R-Mich.) in the congressional debate of the Paulson bailout plan. European politicians have been quick to proclaim the bankruptcy of the US model of capitalism "as we know it". But all this hyperbole is premature. In fact the US system of today is the outcome of numerous similar interventions since the foundation of the republic.

If we leave aside the more limited savings and loans crisis of the 1980s and 1990s, the most recent economy-wide bailout in the United States was when the Roosevelt administration reduced industrial debt in 1933 by cancelling the gold clauses in industrial bond contracts. Then, as now, a core of Republicans strongly opposed the policy. In the

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[78] See Romain Rancière, Aaron Tornell and Frank Westermann, 2008. "Systemic Crises and Growth," *The Quarterly Journal of Economics*, MIT Press, vol. 123(1), pages 359-406.

House they voted 64-14 for a motion that would have eviscerated the policy by making it non-applicable to previously concluded contracts and they voted 48-28 against passage. In the Senate, Republican opposition was even stronger.

Depression-era governments also massively intervened in mortgage markets. The economic historian Lee Alston has documented that about half the states legislated moratoria on farm mortgages. At the federal level, the Roosevelt administration intervened in the residential mortgage market, creating public sector institutions. The privatisation of some of these institutions in the 1960s is arguably a basic element of the current crisis.

The interventions in the Depression era were very controversial at the time. Both the cancellation of the gold clauses and the farm mortgage moratoria would appear to violate the contracts clause of the Constitution. The Supreme Court upheld both policies – but by narrow 5-4 majorities.

What was done at the time was not novel for the United States. After the panics of 1797, 1819 and 1840, each arguably more severe than the Great Depression, Congress enacted bankruptcy laws that proved to be temporary and served to allow for massive write-offs of debt. In 1819, many states also passed "stay laws" that prevented creditors from foreclosing on debtors. In the early 1820s, Congress voted to allow debtors to delay or greatly reduce payments on land that had been purchased from the federal government.

The evidence, at least on the gold clause, suggests that these interventions were necessary and in the end strongly beneficial for the economy, even if credit markets anticipated intervention *ex ante*. The key to avoiding the moral hazard problem is to restrict intervention to truly exceptional circumstances. Actions in the Depression did not result in the permanent collapse of credit markets. Nor will intervention today.

It is unlikely to change US-style capitalism "as we know it". The US system is the result of a long evolutionary process. For example, it took the entire 19th century to establish key institutions like the Federal Reserve. Seven attempts to establish a federal bankruptcy law, all undertaken at the bottom of severe downturns, either failed or later repealed. It was not until 1898 that the United States had a uniform bankruptcy law valid in all states.

What made these institutions politically possible in the US was the massive realignment after the Civil War, which weakened a reluctant South – and, ironically, a Republican-controlled Congress and Presidency in 1898. But most of all it was the dramatically increasing financial integration of the US. This integration has only increased since and accelerated with the deregulation in the wake of the savings and loans crisis and the globalisation of banking. Massive integration exacerbates the "too big to fail" problems. Fannie Mae and Freddie Mac were the epitome of integration.

The US experience offers further pause for Europe today. The continent is more financially integrated than ever but its institutional structures are lagging and responses by individual governments may not be sufficient. Perhaps the most extreme expression of integration can be found in the financial systems of Central and Eastern Europe, which are 60% and 80% controlled by Western European banks, respectively. For these countries, and for the rest of us, the question of what Europe could eventually deliver is urgent.

Corsetti and Müller: The effectiveness of fiscal policy depends on the financing and monetary policy mix

12 November 2008

Governments are crafting fiscal stimulus packages to counter the crisis. This column highlights factors that are crucial in determining the effectiveness of such measures: the financing mix (taxes vs future spending cuts), and accompanying monetary policy. To illustrate the importance of these considerations, simulation results are presented for several stimulus packages.

Policymakers around the world realise that they need a broad range of policies to contain the ongoing financial crisis. Fiscal policy is clearly in the minds of all, as stressed by the essays by Alesina and Tabellini and others in the recent VoxEU.org book.

The main feature of this recession, namely, the emergence of widespread credit constraints, is a strong argument in favour of fiscal policy. The reason is that the monetary policy transmission becomes weaker and more uncertain when credit markets are dysfunctional. Moreover, as our economies have become more open, international coordination of fiscal expansions is increasingly necessary to achieve the maximum impact without worsening trade balances.

Both issues are discussed in a previous Vox column by one of us. Here we want to highlight two additional aspects that are crucial for the effectiveness of fiscal policy interventions:

12. The financing mix of a fiscal expansion, and;
13. The stance of monetary policy.

Even though they are fundamental, these points are not receiving sufficient attention in the debate.

Fiscal stimulus: How it's financed matters

First, the effect of a fiscal expansion depends on how the expansion is financed. This applies not only to the short-term debt-tax mix used to finance a current increase in government expenditure, but also – and perhaps even more importantly – to the long-term financing source, i.e., taxes versus spending cuts in the future.

The impact of higher current expenditure is strengthened when complemented with a credible plan that ensures it is financed at least in part by future spending cuts. How?

1. Future spending cuts tend to raise current private consumption and investment via their effects on the long-term interest rate.

This channel is emphasized by both Keynesian and neoclassical models.

- Lower future spending commitments mean that future taxes won't have to rise as much.

In other words, such a financing plan, if credible, will help sustaining the spending plans by firms and households who are currently not credit-constrained, and who therefore immediately respond to long-term fiscal prospects.

Admittedly, a commitment to reduce spending in the future may lack credibility, especially in a situation like today, when the uncertainty about the length and the overall fiscal implications of the crisis is enormous. Even in countries with explicit fiscal rules (like the UK), one may doubt if these provide sufficient commitment devices.

It may nonetheless pay to identify measures which are inherently temporary, i.e., matched by future cuts in spending. An obvious example consists of measures that bring forward in time investment projects that are already planned, thereby raising current spending while simultaneously reducing future spending. This is not a perfect solution to the commitment problem, but it may help.

Monetary and fiscal policy should work together

Second, fiscal policy is more effective if monetary policy is accommodative. For fiscal stimulus to work, central banks should not adhere too narrow-mindedly to their mandate of price stability – a criticism often raised against the Bank of Japan in the 'lost decade.' This risk is hopefully small today.

Yet, one could envision a situation in which, even if policy interest rates were brought close to zero, it would still be possible that the overall monetary stance of the economy remain too tight. In this situation, the lower bound of zero for nominal interest rates – while providing a rationale for a fiscal expansion – may at the same time limit the effectiveness of any given fiscal intervention.

Evidence from model simulations

Now we back our arguments using a standard new-Keynesian model to track the macroeconomic consequences of an unexpected increase in government spending in an economy which is otherwise undisturbed (Corsetti, Meier and Müller 2008a). Although the model and simulations fail to capture all elements of today's reality (as always), the exercise shows the extent to which the impact fiscal policy depends on the financing mix and monetary policy.

To illustrate the mechanism, we model an open economy, and, for simplicity, assume it is small; this allows us to abstract from macro interdependence. We also assume away all kinds of credit-constrained agents, whose presence would increase the consumption multiplier above what we report. The results from this exercise are shown in the graphs we attach to this text.

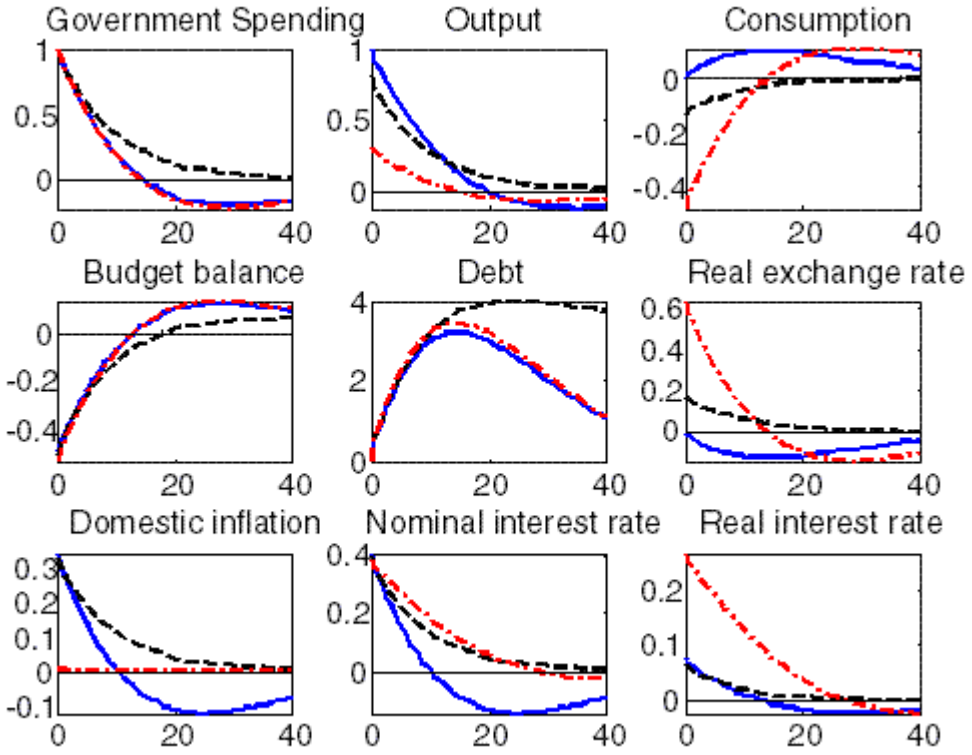
The graphs show the evolution of government consumption, private consumption, output, the government budget balance and debt, the real exchange rate, inflation and interest rates, over 40 quarters in response to an increase in government spending by one percent of (quarterly) GDP.

(All variables are expressed relative to their trend values (note that a negative value for the nominal interest rate means a fall relative to the initial level). Quantity variables are

expressed in percent of quarterly GDP, the real exchange rate is measured in percentage deviation relative to its pre-intervention value, interest rates and inflation are measured in annualized percentage points. Each graph includes three lines.)

In the diagram:

- The dashed black line refers to a spending shock which is entirely financed by taxes.
- The solid blue and the dash-dotted red lines refer to a spending shock which is partly financed by cuts in spending in the future. (You can see this in the upper left panel since government spending falling below trend about 3-4 years after the initial measures were taken.)
- The dash-dotted lines refer to the case of no monetary accommodation as the central bank pursues complete price stability.
- The solid blue line to the case of accommodative monetary policy – in the sense that central banks adopt a Taylor rule with a relatively low coefficient on inflation (1.2 in this example, with prices remaining fixed for 5 quarters on average).



Results

The message from our diagram is unequivocal. The response of consumption is positive for the 'right mix' of accommodative monetary policy and financing by spending cuts in the future, but negative either when spending is entirely financed through higher taxes (the dashed lines), or when the monetary reaction is non-accommodating (the dash-dotted

lines). Comparing the difference in the response of consumption and output across monetary stances (accommodating, not accommodating), one can observe a gap of about half a percentage point of GDP through many quarters.

Monetary accommodation is measured by the difference in the response of real interest rates depicted by the solid and the dash-dotted lines in the lower right panel (ex ante real rates): under the accommodating stance (solid lines) real rates are lower by about a quarter of a percentage point (annualized) relative to the tight monetary stance (dashed-dotted line). Importantly, under the 'right' policy mix the path of real short term interest rates implies a fall in the long-term real interest rate, because future short rates fall below their long term average value.

We may note that the response of interest rates is by and large consistent with empirical findings on the effects of fiscal expansions identified in historical time series. Moreover, with the 'right' financing and policy mix, the model also predicts a positive consumption multiplier together with exchange rate depreciation, a stylized fact which has been established by several recent studies (e.g. Monacelli and Perotti 2006, Ravn et al. 2007). While apparently difficult to reconcile with conventional wisdom, this stylized fact has motivated quite a bit of recent theoretical work, generating the widespread impression that the standard model needs to be adapted in a significant way to fit the fact. The message from our study is different: the standard model works. However, sufficient attention must be given to the financing of fiscal expansions and the fiscal-monetary policy mix – a message that is strongly related to the argument by Dornbusch (1980).

These exchange rate-related considerations bring us to a final point, which is particularly relevant in the current situation, in which governments are contemplating cooperative action. Looking at our results, depreciation may be interpreted as an unwelcome beggar-thy-neighbour effect of domestic policies – domestic economic activity is sustained by 'stealing' foreign demand.

We would like to stress here that exchange rate depreciation is not crucial for the size of fiscal multipliers (our results also go through in a closed economy model). Most important, depreciation will be contained, or eliminated altogether, when fiscal expansion is coordinated across borders.

Actually, our analysis provides support to the idea of including a specific item in an agenda for international policy cooperation, that is, the opportunity of pursuing fiscal plans where current expansions are matched in part by offsetting correction of spending down the line.

Notes of caution

Some notes of caution are in order as concluding remarks. It is hard to believe that the impact of fiscal expansions will be independent of the initial budgetary conditions of a country. Indeed, in related empirical work based on a sample of OECD countries, we find that consumption multipliers are much lower and even negative in economies with high debt and deficits (Corsetti, Meier and Müller 2008b). In a sense, however, we could argue that for these economies our point applies with unusual force: when initial budget conditions are weak, rigorous financing plans may be a precondition for fiscal policy to work at all.

Conclusion

The case for fiscal stimulus may be strongest when there is a presumption of a coordination failure in the economy, as is apparently the case in the running dry of credit markets. Yet in many countries the current juncture also shares characteristics of an inevitable hangover after some excessive binge. While fiscal policy can soften the blow and it is wise to use it, the truth remains that American consumers, for instance, have to repair their balance sheet, rather than resume old spendthrift ways. The way stimulus programs are designed matters here. We should not lose sight of this plain observation.

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Gros: Fiscal policy and the credit crunch: What will work?

21 December 2008

Most countries need a fiscal stimulus, but how should it be implemented? This column assesses fiscal policy's potential to increase demand and argues that any meaningful boost must come from transfers to the private sector, not infrastructure investments. Tax cuts will be most effective in countries where households are net borrowers.

As the real economy sinks quickly into a deep recession, governments are groping for measures to limit the downturn. And as interest rates are quickly bumping against the zero bound, an aggressive use of fiscal policy seems to be the only way to sustain demand. Fiscal policy seems particularly appropriate since our macroeconomic models tell us that fiscal policy multipliers increase when more economic agents become liquidity constrained because they are then likely to spend any additional income they receive.

Unfortunately the discussions about the appropriate use of fiscal policy have degenerated into a shouting much with accusations of 'crass Keynesianism' and 'stupid fiscal orthodoxy'. Instead of engaging in such polemics, one should look calmly at what fiscal policy can actually achieve under the present extraordinary circumstances.

The key question: Can fiscal policy increase demand effectively?

The most direct way for governments to increase demand is to buy goods and services from the market. However, most European governments spend very little this way. Public sector investment represents only 2–2.5% of GDP and is difficult to increase quickly since the large projects, which make up the bulk of the expenditure, take often a decade or more to realize. Even if governments were able to increase public investment by 20% in one year, this would result in a fiscal impulse of only less than 0.5% of GDP. Even in the US, this instrument will only have limited importance, as public infrastructure spending is projected to increase from around 2.6% (in 2007) to 3.6% of GDP (in 2009), thus constituting only a small fraction of the overall deficit, which is now projected to climb to around 8%–9% of GDP.

Any large-scale fiscal policy impulse must therefore, to be effective quickly, work through transfers to the private sector, either via lower taxes or via higher transfer to households. The key problem here is that under the present circumstances of extreme uncertainty households might just save any increase in their disposable income. How likely is this to happen? A key factor will be the financial position of households themselves.

Households that depend on credit to finance their consumption will be most affected by the credit crunch and are thus most likely to react to a tax cut by maintaining their consumption. For this type of household, a tax cut (or an increase in expenditure) will be an effective tool to prevent an even sharper drop in consumption.

However, for households that do not depend on credit, the situation is quite different. Households that are saving anyway will probably at present just increase their savings in response to an increase in their disposable income that they know to be temporary.

This implies that the effectiveness of fiscal policy will vary greatly across the EU. Table 1 shows that households are on average net borrowers in only two of the larger member countries – Spain and the UK, unsurprisingly. In these two countries (with the largest housing bubbles) fiscal policy should thus be effective. However, in the three other large member countries, households are on average net savers. In these countries, and in particular in Germany where households are net lenders to the tune of about 10% of their disposable incomes, fiscal policy will not be effective – households can just increase their lending in response to a tax cut. The experiences of the US and Japan point in a similar direction. In Japan, the government has been running very large deficits for over a decade, but an increase in private savings has offset this, leaving domestic demand flat. Even in the US, where the private savings rate has been close to zero, households still chose to save more than half of the tax rebate decided earlier in 2008.

Table 1. Household lending across the EU

	Net lending of households		Net lending of corporations
	Billion euro	Percentage of income	Billion euro
Germany	+144	9.5%	+46
Spain	-27	-4.4%	-75
France	+66	5.4%	-0

Italy	+63	6.4%	-58
UK	-97	-8.2%	+98

Source: Ameco

The fact that the marginal propensity to save is likely to be much higher in countries with solvent households (Germany and most of rest of continental Europe) also implies that the multiplier effect of spending on public infrastructure will also be lower than in the Anglo-Saxon countries where households are close to bankruptcy. This is another reason why the German government should be more hesitant than others to engage in a big fiscal stimulus.

A similar reasoning applies to the corporate sector – in a credit crunch investment will be strongly affected by the liquidity situation of enterprises. This implies that in countries where the corporate sector is a heavy borrower (Spain, France and Italy) it would be important to improve the liquidity situation of enterprises. One simple way to do this would be to allow all corporations to postpone payment of corporate income taxes for 1-2 years. This would not result in higher deficits as usually measured, but the cash deficit would increase as governments would effectively extend a credit to the corporate sector. Such a measure would thus be very different from a tax cut because it would not lead to larger debt levels and thus should not lead to sustainability problems later on. Postponing the payment of corporate income tax would of course help only enterprises that make a profit, but this should be considered an advantage because it would mitigate the impact of the credit crunch for sound enterprises, i.e. those that deserve to be saved. Companies that did not pay corporate income tax because they were not able to turn a profit even during the boom would not benefit, but they are also the most likely ones to be insolvent anyway.

Castanheira: Episode V: Expectations strike back

14 October 2008

Fears that the present crisis might reach 1930s proportions risk becoming a self-fulfilling prophecy. To quell them, we must anchor expectations in the right direction. This column advocates a temporary but aggressive expansionary fiscal policy to rebuild confidence. We need to exploit the stability pact in a different way: for the next two years, the pact should constrain national governments to significantly increase all deficits, beyond 3% if needed.

Do you remember Luke Skywalker's challenge to become a Jedi in *The Empire Strikes Back*? Luke had to enter a dark,foggy cave and fight evil foes. What Luke did not know is that these foes would be materialisations of his own apprehensions. Empowered by the Force, Luke killed the materialisation of his arch-enemy. But that was not the purpose of the challenge. The real purpose was to teach Luke that the Force lies less in the sword than in the mind. Luke should have turned off his lightsabre and focused his mind. By

quelling his own fears, monsters and enemies would have receded. That victory, Luke had to achieve.

These fictional events are the epitome of a self-fulfilling prophecy. It is only because Luke imagines an enemy that the enemy materialises. Bank runs are their very non-fictional equivalent – if every other depositor leaves his cash with the bank, my deposits are safe. But, let me conceive of another equilibrium in which other depositors run to the bank and withdraw their deposits... this would mean that the bank would no longer be safe. Then, I should also run to withdraw my deposits. If the whole herd does the same, the bank goes bust, thereby confirming my expectations. Like Luke with his lightsabre, governments have until now mobilised enormous amounts of energy (and cash) to fight each of these madmen-made foes. These fights have been epic but not sufficient – they only combat the enemies who have already materialised.

So far, the current crisis has proved elusive and unstoppable because it is a test of each chapter of a good economics textbook. All economists have studied multiple equilibria and self-fulfilling prophecies. All of us – and I include here central bankers, as well as stock brokers and traders – studied the weaknesses of the banking system. All of us learnt about the 1929 crisis, the savings and loan crisis, and the Japanese crisis. All of us have the same fears and wonder which will be the victor: the heroic-but-clumsy governments or the traders' and brokers' panic? Like in Keynes' beauty contest, each player tries to outguess the other. But we have the same textbooks, and thus the same fears at the same time. Today's fear is whether this crisis could prove worse and more protracted than in the 1930s. This is not a prediction! Just a fear...

Why could such a fear come true in Europe? After the crisis of the 1970s and 1980s, we developed institutions meant to anchor expectations towards a conservative and sound long-term policy of stability – a safe-and-sound European Central Bank with a heralded conservative policy. The stability pact prevents a re-run of the counter-productive deficit policies of the 1980s. But these institutions are totally inappropriate to stave off present fears. They actually reinforce the expectation that Europe will be unable to adapt its macroeconomic policy. Textbooks say that in 1930 Herbert Hoover increased taxes to prevent a deficit increase, which actually worsened the crisis (see Barry Eichengreen's recent column). Textbooks say that Japan, unable to react quickly, is still suffering from its 1990s crisis. Today, the Belgian government is designing its 2009 budget and yearns for it to be balanced. If we do not coordinate policies away from such misplaced orthodoxy, we may well anchor current expectations towards a worse-than-in-the-thirties crisis.

Today, we thus need to exploit the stability pact in a different way if it is to play its stabilising role. For the next two years, the pact should constrain national governments to significantly increase all deficits, beyond 3% if needed. Textbooks tell us that such a Keynesian policy cannot work for a prolonged period nor when countries face an adverse supply shock. But it might be badly needed to combat the likely contraction in demand that we now expect to take place in 2009. A temporary but aggressive budgetary policy has the potential to rebuild confidence – to anchor expectations towards a moderate and short-lived drop in aggregate demand.

Europe has delayed many important policies because they are costly: energy saving investments to meet CO2 targets, research and development investments to meet the Lisbon agenda, and many efficiency-enhancing but deficit-generating tax reforms. These are genuine investments, which are costly in the short-run but beneficial in the medium or long run. Now is the time to accelerate them and let all deficits increase significantly, to cash in the rewards when growth returns. The purpose is certainly not to abandon the sound policies that have worked in recent years. Yet, to quell present fears, we must anticipate the next textbook chapter and anchor expectations in the right direction – no Luke, such a crisis there will not be!

Boltho and Carlin: Germany needs high wage settlements and a serious fiscal stimulus

26 November 2008

Germany is in better shape than many to weather the financial crisis. But, this column argues, it needs to raise private consumption with a substantial fiscal stimulus and higher real wages, lest it run the risk of slipping into combined stagnation and deflation.

The German economy is in better shape than many to weather the financial crisis. Germany has no over-indebted households and no house price bubble. Private and government consumption have been flat for years. Growth has been led by net exports thanks to successful company restructuring, and the non-financial corporate sector is in good shape. While earlier euro appreciation and recent financial turmoil may lead to recession, Germany could ride out the crisis by establishing more balanced growth via real wage increases to encourage long-suppressed private consumption and a significant fiscal policy stimulus.

German strengths and weaknesses

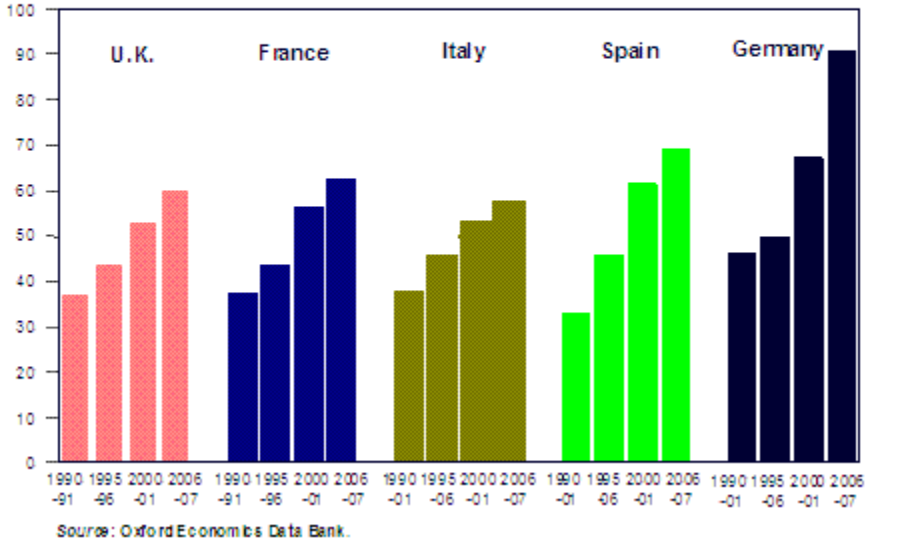
Germany's recent performance has been impressive – 2006-07 saw nearly 3% growth despite a sharp increase in VAT. This revival was clearly not due to government reforms, as was the case in the UK under Mrs Thatcher, whose sweeping deregulation contributed, if with a long lag, to the remarkable economic performance of the last decade. The limited reforms undertaken by Schroeder in 2004-05 may have had some positive effects, but they were far too recent and small to explain a more than doubling of the growth rate. Nor did Germany experience the alternative model of successful reforms, pioneered by the Netherlands or Ireland, based on a consensus between the social partners, an incomes policy and fiscal restraint.

Yet, far-going reforms lie behind recent German successes. These came neither from above (as in the UK), nor from cooperation between industry, labour, and the government (as in the Dutch and Irish cases). They were the result of corporate action, usually in cooperation with works councils and unions. Over the last decade, German firms have profoundly changed work practices and compensation levels and this, in turn, has greatly boosted exports and growth.

Through the early 1990s, German competitiveness plummeted as labour costs (in dollars) skyrocketed. To redress this, German companies aggressively embraced both globalisation and outsourcing. The first choice is illustrated in Chart 1. While Germany's foreign trade/GDP share was broadly similar to that of the other major European economies in the early 1990s, it rose much more sharply than elsewhere over the last decade. And a large element of that increase came from trade with Eastern Europe, which provided Germany not only with a buoyant market but also with a source of cheap, well-trained labour. As German companies outsourced or threatened to outsource a large fraction of their manufacturing activities, the domestic labour force made significant concessions in terms of both wages and work practices in order to safeguard jobs. Recent research (Becker and Muendler, 2008) shows that German companies that increased employment in foreign subsidiaries retained more workers at home than similar firms that did not expand abroad.

CHART 1. FOREIGN TRADE/GDP SHARE

(exports and imports of goods and services/GDP; constant prices)



Source: Oxford Economics Data Bank.

Interestingly, this was achieved in the absence of virtually any strike activity, thanks, in large part, to the *Mitbestimmung* or codetermination practices (Carlin and Soskice, 2008). These have been fiercely criticised in much of the Anglo-American literature, as an intolerable intrusion in the freedom which managers should have to cut wages, fire workers (and pay themselves inordinate amounts). Yet, by involving organised labour in strategic decisions, codetermination facilitated an adjustment that would elsewhere almost certainly have been accompanied by a good deal more social strife and redundancies.

The resulting moderation in wages and improvements in productivity have been startling, especially in a comparative European context (Chart 2). As a result, Germany's competitiveness improved sharply, as shown by Commission estimates of developments in real intra-Eurozone exchange rates (Chart 3). Improved competitiveness is, of course, not the only explanation for the sudden acceleration in German growth, but it is almost

certainly the most important one. The reverse side of this coin is, however, the weakness of private consumption. For seven years now, consumer spending has hardly risen, in sharp contrast to developments elsewhere in Europe (Chart 4). A strategy that privileges wage restraint and productivity growth has strengthened profits and, with a lag, investment, but it has so far done very little to boost household income.

CHART 2

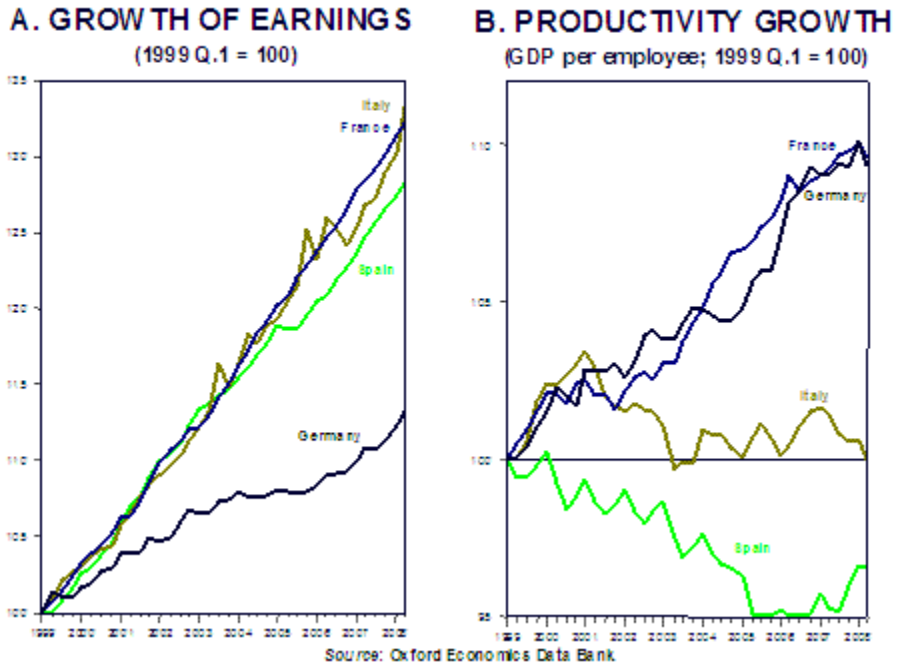


CHART 3. INTRA EUROZONE REAL EXCHANGE RATES

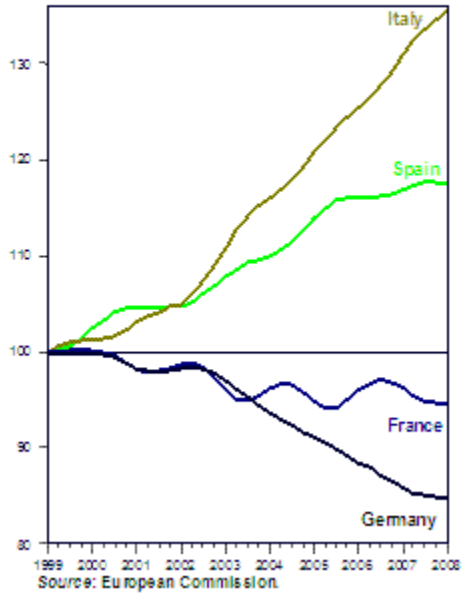
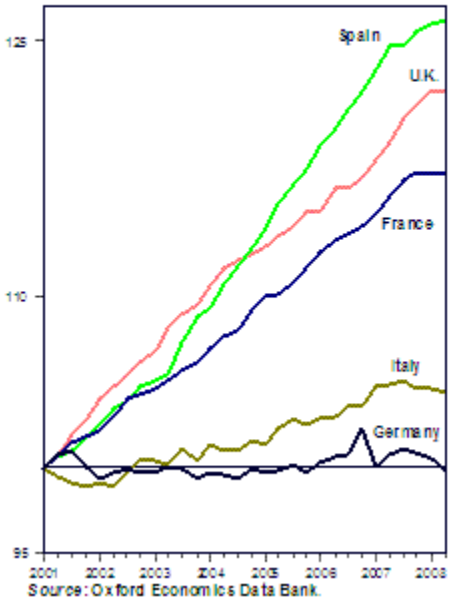


CHART 4. GROWTH OF PRIVATE CONSUMPTION



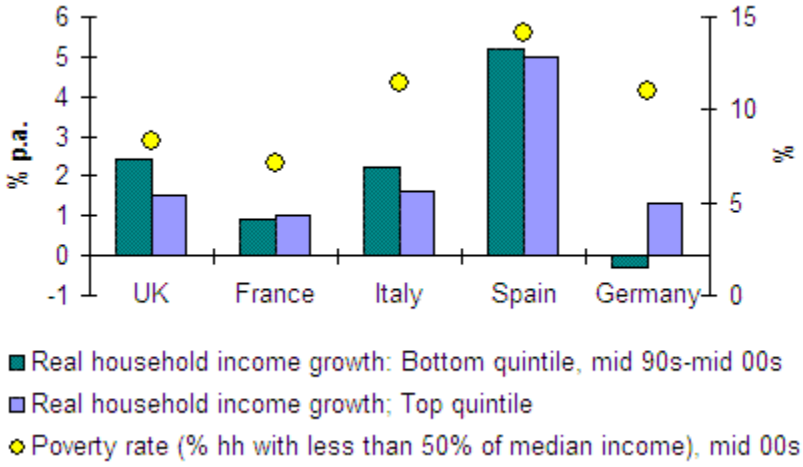
Stimulating German consumption

The financial turmoil now threatens to plunge the country into a lengthy recession. The lop-sided nature of recent growth makes Germany vulnerable to a slump in capital goods exports, as global investment falters in response to the dramatic rise in uncertainty (see Nick Bloom's Vox column). Rapid and decisive policy intervention is needed to raise private consumption. In the US, the UK, and several other OECD countries, such efforts face the headwind of falling house prices and high household debt. This is not the case in Germany: house prices have fallen since 1990, household debt has remained stable, and the saving ratio is high and rising.

How can consumption be encouraged? There are two mechanisms. The first is via stronger growth of real wages. In April, EU finance ministers and ECB president Jean-Claude Trichet approved of the 8% public sector wage deal (spread over two years), arguing that unlike other countries, German real wages required an upward correction (*Financial Times*, 4 April 2008). For the engineering industry (whose negotiations have just ended), a settlement above inflation would have been welcome. The very moderate agreement reached will make little additional contribution to the growth of consumption.

Second, consumption must be supported by a substantial fiscal stimulus. The design of such a stimulus should reflect longer-term principles via measures that boost demand (especially consumption) in the short run but also contribute to improving the supply side in the longer run. The stimulus should also be directed toward reversing the significant rise in income inequality and poverty in Germany from the mid-1990s. Chart 5 compares the growth of household incomes at the bottom and top of the distribution and poverty rates in Germany and the other large European economies.

Chart 5 Income distribution and poverty



Source: OECD (2008)

The opportunity should be taken to introduce expenditure programmes that will not have to be reversed (either because they improve long-run economic efficiency or because they are self-liquidating) and to introduce changes to the tax system consistent with longer-term objectives. Measures such as temporary tax rebates ('cheques through the post') or reductions in VAT rates do not fall under this umbrella. They may well be necessary but, in a climate of great uncertainty, direct tax cuts might be saved, while indirect ones could

contribute to price deflation. Hence the need to direct tax cuts or benefit increases to poorer households since these are likely to have the greatest short-run impact on consumption. Time-limited cheques for use on specific items related to other government objectives such as the reduction of CO2 emissions would also fit the criteria.

A number of other specific policies on the expenditure and tax side would more reliably boost demand and contribute to longer-run objectives. Examples include:

Policies to improve incentives for women to participate more fully in the labour market

These will create jobs, raise incomes and boost consumption. Such policies include:

- bringing forward the planned increased provision of pre-school child care (this is much lower in Germany than elsewhere in Europe);
- speeding up the introduction of full-day school (half-day school is still prevalent in much of Germany and restricts women's hours of work);
- reform the tax treatment of married women to remove the disincentive for second earners to work longer hours.

In the short run, policies to improve the availability of childcare and to provide full-day school will directly raise employment. In the longer run, they will boost women's labour force participation and working hours, creating a larger tax base. Higher levels of labour market participation by married women will improve the possibilities for self-insurance within the household and reduce the need for increased precautionary savings that have accompanied the labour market reforms introduced in the past few years (Carlin and Soskice, 2008).

Policies to improve training and education

These involve front-loaded additional government expenditure in the short run (thus generating jobs for example, for young university graduates), but do not represent spending programmes that the government would want to reverse. Such policies include:

- targeting German language training and other remedial education for immigrant children, who have been highlighted as a major problem area in the PISA studies.
- targeting additional teaching resources on children from low-education and jobless households.
- increased provision of training for older workers (Germany's highly successful apprenticeship model should be supplemented with effective retraining for adults).

Policies to bring forward expenditure on self-liquidating investment projects

These, in particular, are projects contributing to longer term environmental goals, from those on a household scale to major infrastructure investments.

There was a structural improvement in Germany's fiscal position over recent years (producing a cyclically adjusted budget balance in 2007). Consolidation was predominantly expenditure rather than tax-based. Years of spending restraint provide the basis for the implementation of a structurally oriented fiscal stimulus package now. If this is delayed or is too timid, Germany runs the risk of slipping into combined stagnation and

deflation. Japan's lost decade stands as a stark reminder of the dangers of an inadequate response to a potentially severe recession.

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Zingales: Plan B

11 October 2008

Paulson's plan won't work. Leaders agreed to inject equity into the banking system, but too little, too late. Nothing short of a 5% increase in banks' equity capital (about $600 billion) will restore confidence. This column explains that even then, there are three additional problems. We need a plan that minimizes the bailout money so we'll have some for a stimulus package to restart the economy.

After pointing a gun to the head of Congress, threatening a financial meltdown in case his plan was not approved, Treasury Secretary Hank Paulson has finally arrived at the only logical conclusion: his plan will not work.

Desperate for a Plan B, Paulson is slowly warming to the suggestion of many economists: inject some equity into the banking system. Unfortunately, it is too little and too late. The confidence crisis currently affecting the financial system is so severe that only a massive infusion of equity capital can reassure the market that the major banks will not fail, recreating the confidence for banks to lend to each other. The piecemeal approach of 100 billion today, 100 billion tomorrow used with AIG will not work. It will only eat up the money, without achieving the desired effect—without reassuring the market that the worst is over. Simply stated, nothing short of a 5% increase in the equity capital of the banking system will do the trick. We are talking about 600 billion. Unfortunately, even if the government is willing to spend this kind of money, there are three problems.

First, to restore the necessary confidence, a capital infusion needs to reduce a financial institutions' risk of default to trivial levels. This implies transforming the existing, outstanding debt (roughly two trillion if we just count the long-term bonds) into safe debt. A large fraction of the equity injected will not go to generate new loans, but to provide this insurance to the existing debtholders. How much? We can estimate it by looking at the credit default swaps, which provide us with the cost of insuring the debt

against default. At yesterday's prices, the cost of insuring the two trillion of outstanding long-term bonds outstanding would be more than 300 billion. Consequently, half of the capital the Government will invest in banks will not go to increase new loans, but to bail out Wall Street investors.

Second, a capital infusion does not address the root of the problem, which stems from the housing market. If homeowners continue to default and walk away from their houses, the banking sector will continue to bleed and additional equity infusions will be needed. More importantly, the very bailout plan, and the animosity it generates, will induce more homeowners who are sitting on a house with a negative equity value to walk away. Many of them will think: "Why do I have to play by the rules when Wall Street does not?"

This leads us to the third and most important problem. If we bail out Wall Street, why not bail out Detroit (probably another 150 billion) and Main Street? In fact, Senator McCain has already talked about buying out the defaulted mortgages to keep people in their homes. Even if we limit ourselves only to the subprime mortgages, we are talking about $1.3 trillion. Where do we stop?

We need a different solution: a Plan B. A plan that minimizes the money the Government uses in bailing out Wall Street and Main Street to save our precious dollars for a stimulus package, which will be essential to restarting the economy.

Rescuing Main Street

Suppose that you bought a house in California in 2006. You paid $400,000 with only 5% down. Unfortunately, during the last two years the value of your house dropped by 30%; thus, you now find yourself with a mortgage worth $380,000 and a house worth $280,000. Even if you can afford your monthly payment (and you probably cannot), why should you struggle to pay the mortgage when walking away will save you $100,000, more than most people can save in a lifetime? However, when the homeowner walks away, the mortgage holder does not recover $280,000. The foreclosure process takes some time during which the house is not properly maintained and further deteriorates in value. The recovery rate in standard mortgage foreclosures (which will not take place in the middle of the worst crisis since the Great Depression) is 50 cents per dollar of the mortgage. I am generous in estimating that under the current conditions it might recover 50 cents per dollar of the appraised value of the house; right now, it is only 37 cents per dollar of the mortgage, which given a house appraised at $280,000 equals only $140,000 for the mortgage holder. In other words, foreclosing is costly for both the borrower and the lender. The mortgage holder gains only half of what is lost by the homeowners, due to what we economists call underinvestment: the failure to maintain the house.

In the old days, when the mortgage was granted by your local bank, there was a simple solution to this tremendous inefficiency. The bank forgave part of your mortgage;let's say 30%. This creates a small positive equity value—an incentive—for you to stay. Since you stay and maintain the house, the bank gets its $266,000 dollars of the new debt back, which trumps the $140,000 that it was getting through foreclosure.

Unfortunately, this win-win solution is not possible today. Your mortgage has been sold and repackaged in an asset-backed security pool and sold in tranches with different priorities. There is disagreement on who has the right to renegotiate and renegotiation

might require the agreement of at least 60% of the debt holders, who are spread throughout the globe. This is not going to happen. Furthermore, unlike your local bank, distant debt holders cannot tell whether you are a good borrower who has been unlucky or somebody just trying to take advantage of the lender. In doubt, they do not want to cut the debt for fear that even the homeowners who can easily afford their mortgage will ask for debt forgiveness.

Here is where government intervention can help. Instead of pouring money to either side, the government should provide a standardized way to re-negotiate; one that is both fast and fair. Here is my proposal.

Congress should pass a law that makes a re-contracting option available to all homeowners living in a zip code where house prices dropped by more than 20% since the time they bought their property. Why? Because there is no reason to give a break to inhabitants of Charlotte, North Carolina, where house prices have risen 4% in the last two years.

How do we implement this? Thanks to two brilliant economists, Chip Case and Robert Shiller, we have reliable measures of house price changes at the zip code level. Thus, by using this real estate index, the re-contracting option will reduce the face value of the mortgage (and the corresponding interest payments) by the same percentage by which house prices have declined since the homeowner bought (or refinanced) his property. Exactly like in my hypothetical example above.

In exchange, however, the mortgage holder will receive some of the equity value of the house at the time it is sold. Until then, the homeowners will behave as if they own 100% of it. It is only at the time of sale that 50% of the difference between the selling price and the new value of the mortgage will be paid back to the mortgage holder. It seems a strange contract, but Stanford University successfully implemented a similar arrangement for its faculty: the university financed part of the house purchase in exchange for a fraction of the appreciation value at the time of exit.

The reason for this sharing of the benefits is twofold. On the one hand, it makes the renegotiation less appealing to the homeowners, making it unattractive to those not in need of it. For example, homeowners with a very large equity in their house (who do not need any restructuring because they are not at risk of default) will find it very costly to use this option because they will have to give up 50% of the value of their equity. Second, it reduces the cost of renegotiation for the lending institutions, which minimizes the problems in the financial system.

Since the option to renegotiate (offered by the American Housing Rescue & Foreclosure Prevention Act) does not seem to have been stimulus enough, this recontracting will be forced on lenders, but it will be given as an option to homeowners, who will have to announce their intention in a relatively brief period of time.

The great benefit of this program is that provides relief to distressed homeowners at no cost to the Federal government and at the minimum possible cost for the mortgage holders. The other great benefit is that it will stop defaults on mortgages, eliminating the flood of houses on the market and thus reducing the downside pressure on real estate prices. By stabilizing the real estate market, this plan can help prevent further

deterioration of financial institutions' balance sheets. But it will not resolve the problem of severe undercapitalization that these institutions are currently facing. For this we need the second part of the plan.

Rescuing Wall Street

The plan for Wall Street follows the same main idea: facilitating an efficient renegotiation. The key difference between the Main Street and Wall Street plans is in the ease of assessing the current value of the troubled assets. It is relatively easy to estimate the current value of a house by looking at the purchase price and at the intervening drop in value (per the Case and Shiller index). In banks, however, the lack of transparency makes this estimation very difficult. To avoid having to come up with this estimate, which would be a difficult process and one fraught with potential conflict of interests, we are going to use a clever mechanism invented twenty years ago by a lawyer economist, Lucian Bebchuk.

> The core idea is to have Congress pass a law that sets up a new form of prepackaged bankruptcy that would allow banks to restructure their debt and restart lending. Prepackaged means that all the terms are pre-specified and banks could come out of it overnight. All that would be required is a signature from a federal judge. In the private sector the terms are generally agreed among the parties involved, the innovation here would be to have all the terms pre-set by the government, thereby speeding up the process. Firms who enter into this special bankruptcy would have their old equityhodlers wiped out and their existing debt (commercial paper and bonds) transformed into equity. This would immediately make banks solid, by providing a large equity buffer. As it stands now, banks have lost so much in junk mortgages that the value of their equity has tumbled nearly to zero. In other words, they are close to being insolvent. By transforming all banks' debt into equity this special Chapter 11 would make banks solvent and ready to lend again to their customers.

Certainly, some current shareholders might disagree that their bank is insolvent and would feel expropriated by a proceeding that wipes them out. This is where the Bebchuk mechanism comes in handy. After the filing of the special bankruptcy, we give these shareholders one week to buy out the old debtholders by paying them the face value of the debt. Each shareholder can decide individually. If he thinks that the company is solvent, he pays his share of debt and regains his share of equity. Otherwise, he lets it go.

My plan would exempt individual depositors, which are federally ensured. I would also exempt credit default swaps and repo contracts to avoid potential ripple effect through the system (what happened by not directing Lehman Brothers through a similar procedure). It would suffice to write in this special bankruptcy code that banks who enter it would not be considered in default as far as their contracts are concerned.

How would the government induce insolvent banks (and only those) to voluntarily initiate these special bankruptcy proceedings? One way is to harness the power of short-term debt. By involving the short-term debt in the restructuring, this special bankruptcy will engender fear in short-term creditors. If they think the institution might be insolvent, they will pull their money out as soon as they can for fear of being involved in this

restructuring. In so doing, they will generate a liquidity crisis that will force these institutions into this special bankruptcy.

An alternative mechanism is to have the Fed limit access to liquidity. Both banks and investment banks currently can go to the Federal Reserve's discount window, meaning that they can, by posting collateral, receive cash at a reasonable rate of interest. Under my plan, for the next two years only banks that underwent this special form of bankruptcy would get access to the discount window. In this way, solid financial institutions that do not need liquidity are not forced to undergo through this restructuring, while insolvent ones would rush into it to avoid a government takeover.

Another problem could be that the institutions owning the debt, which will end up owning the equity after the restructuring, might be restricted by regulation or contract to holding equity. To prevent a dumping of shares that would have a negative effect on market prices, it is enough to include a norm that allows these institutions two years to comply with the norm. This was the standard practice in the old days when banks, who could not own equity, were forced to take some in a restructuring.

The beauty of this approach is threefold. First, it recapitalizes the banking sector at no cost to taxpayers. Second, it keeps the government out of the difficult business of establishing the price of distressed assets. If debt is converted into equity, its total value would not change, only the legal nature of the claim would. Third, this plan removes the possibility of the government playing God, deciding which banks are allowed to live and which should die; the market will make those decisions.

Tomorrow is too late

The United States (and possibly the world) is facing the biggest financial crisis since the Great Depression. There is a strong quest for the government to intervene to rescue us, but how? Thus far, the Treasury seems to have been following the advice of Wall Street, which consists in throwing public money at the problems. However, the cost is quickly escalating. If we do not stop, we will leave an unbearable burden of debt to our children.

Time has come for the Treasury secretary to listen to some economists. By understanding the causes of the current crisis, we can help solve it without relying on public money. Thus, I feel it is my duty as an economist to provide an alternative: a market-based solution, which does not waste public money and uses the force of the government only to speed up the restructuring. It may not be perfect, but it is a viable avenue that should be explored before acquiescing to the perceived inevitability of Paulson's proposals.

Wyplosz: Why Paulson is (maybe) right

22 September 2008

The world's bankers created a reckless mix of lending and securitisation that exploded in their faces last year; they've stonewalled since. It would be criminal to bail them out, but spilling blood for its own sake is foolish. Here one of the world's leading macroeconomists explains how the 'Paulson Package', history's largest bet, might work

and might not cost taxpayers too much. It's too early to know which label to apply: "bailout" or "shrewd cleansing operation".

First of all, let me state clearly my position. Banks have made huge mistakes.

Even though many serious economists (the likes of Robert Shiller and Nouriel Roubini) had warned for years – not months – that the credit boom and the housing price bubble would end up in tears, bankers superbly closed their ears and soldiered on, driven by greed and short-term analyses. When the mix of reckless lending and securitisation exploded in their faces, more than one year ago, they stonewalled and drove the economy down in the hope of being bailed out. It would be criminal to bail them out. It would guarantee even worse crises in the future. Conclusion, there must be blood.

This being said, spilling blood for the sake of it is a bit silly. Banks are not oil companies. When an oil company goes bust, by definition, it is because its liabilities exceed its assets. After bankruptcy, its assets remain as valuable as before. Oil is safely tucked away under ground, refineries and gas stations stay put above ground.

A bank goes bust when its assets have collapsed. Bankruptcy means that its liabilities collapse too and these are assets of other banks and of millions of hapless citizens. This is why contagion and bank runs occur more frequently than oil runs. Sure, with patience, both assets and liabilities can regain value, but in the meantime the financial system is impaired and the resulting credit crunch provokes an economic crisis that spares no one. This is why large, systemic financial institutions cannot be summarily dispatched to receivership. Avoiding a credit crunch ought to be every one's priority.

Bleeding the culprits cannot be done with a truncheon, it requires a surgical intervention.

Secretary Paulson has obviously been testing many scalpels:

- He half bailed out Bears Stearns.
- As he butchered Lehman Brothers, he so frightened Merrill Lynch that this last problem was not solved at taxpayer's cost.
- On the next day, though, the Fed and many other central banks were lending huge amounts of money – presumably to Lehman's creditors and to horrified financial institutions that realised that bailouts are not part of the plan anymore.
- The following day, he effectively nationalised AIG.
  This is not a bailout. AIG shares have been so diluted that shareholders lost most of their money. The Treasury will keep this too-big-to-fail company functioning but over time it will dispose of its assets. For all practical purposes the old AIG is gone.
- Then, on the final day of the creation of the new financial order, Paulson did a mega-AIG – he offered to buy all the toxic assets that financial institutions will care to sell.

The details of the plan are not known yet, so it is too early to determine whether it is a bailout or more blood. All will depend on two things. The price at which the assets will be acquired by the yet unnamed RTC, and the price at which the RTC will dispose of these assets.

Indications are that these assets will be bought at auctions. These will have to be reverse auctions, probably of the Dutch variety. If the sellers are confident in their financial health, or just smart enough to collectively bluff Paulson, the price will be close to the purchase price and it will be a bailout. If the sellers are scared and unable to organise themselves, the price will be a deep discount. Willem Buiter argues that the auctions are likely to force the sellers to reveal their true reservation price and I tend to agree.

Let us assume that, indeed, the toxic assets will be acquired at a deep discount. What happens next?

- First, the selling financial institutions will have to acknowledge their losses, a step that they did their utmost to resist for more than a year.
  They argued all along that there was no market for these assets – indeed they refused to sell them – so no price to mark them and therefore no objective way of entering the losses in their books. The auctions will provide a market price, at long last. Whether they sell or not, being forced to mark their assets to market, all financial institutions will have no choice but to formally acknowledge their losses. Either they recapitalise quickly, which dilute existing shares, or they will file for bankruptcy, which is even worse for the shareholders.

That does not look like a bailout, but it still could be one. Before we reach any conclusion, we must consider the second stage of the story.

- Second, the RTC will hold a huge portfolio of toxic assets, but it will be in no rush to sell them.

Like the previous RTC, thanks to taxpayers' money, it can take years to do so. If the toxic assets gain some value, the RTC and the taxpayers will make a profit and the financial institutions that sold them will definitely not have been bailed out. We will be able to call the operation a bailout only if toxic-asset prices go on falling, since it will then be established that the financial institutions managed to sell these assets above market price and at taxpayer's expense.

It is therefore much too early to call the operation a bailout or a shrewd cleansing operation. Judgment will have to wait until the yet-to-be-created RTC is folded, several years from now. Meanwhile, for the first time since mid-2007, we can foresee the beginning of the end of the crisis since the financial institutions will have either to promptly recapitalise or fold. This, in my view, justifies Paulson's bet, probably history's biggest ever.

Spaventa: A (mild) defence of TARP

26 September 2008

Bernanke and Paulson's Troubled Assets Relief Program (TARP) is not perfect, but it is a good start. Both aspects of the problem – assets' illiquidity and shortage of capital – should be addressed in sequence. By removing troubled assets from the banks' books,

TARP would remove uncertainty. This will encourage private injections of capital and provide better information for public intervention if they prove necessary.

The Paulson-Bernanke Troubled Assets Relief Program (TARP), whereby the US Treasury would be endowed with $ 700 billion for the purchase of "troubled" financial instruments (and in particular mortgage-backed securities) to be sold at a later dater or held to maturity, has elicited widespread (and at time indignant) negative reactions from the best and brightest of the economists' profession (though with notable exceptions, like Willem Buiter[79] and Charles Wyplosz[80]). In the critics' view the scheme, though inspired or shared by a trio of eminent former officials[81], is ill-conceived and will likely end up by transferring taxpayers' money to undeserving financial institutions: if urgent public intervention is required, there are fairer and more effective remedies.

Two preliminary remarks on the timing of the TARP initiative (or, for that matter, of any other proposal as bold and sizeable as TARP). First, its effectiveness is impaired by coming too late, as a hastily defined measure of last resort after the crisis has become acute. An earlier pre-emptive move (a solution similar to TARP was proposed in the *Financial Times* in April and in Vox and in CEPR *Policy Insights* in May) may have prevented the acceleration of the vicious feedback between the falling value of the assets of financial institutions and their capital and funding requirements. Second, however, once the Treasury and the Fed have jointly announced their emergency program, with the stark motivation that it is the only way to avoid an imminent meltdown, doing nothing or unduly delaying its implementation would increase uncertainty and plunge the markets into chaos.

There are two related aspects to the crisis besetting financial institutions which are now shrinking their balance sheets by cutting credit to the economy: (1) the illiquidity and falling value of some of their assets, and (2) a shortage of capital, as only 70% of the recognised losses have so far been matched by new capital. TARP attempts to address the first aspect, while its critics argue that public intervention should solely aim at the second.

The most relevant objection to TARP concerns the price at which the Treasury would buy the troubled assets, most of which have no market and are otherwise difficult to price because of their opaqueness and complexity. The unavoidable discretion in price setting can, according to critics, only lead to two outcomes: a mark-to-market price, which however would provide no relief as it would merely crystallise existing losses or even unveil new ones; or a higher price (the most likely outcome) which, while providing relief, would transfer the losses from the sellers to the taxpayer, helping moreover those financial institutions that made the worst investment decisions. The proposed alternatives are all variations on the theme of shoring up the banks' capital: either by the government

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[79] "A TAD (toxic Asset Dump) for USSA", FT.com/Mavercom, September 20, 2008 and the comments to Calomiris and Rajan , FT.com.

[80] "Why Paulson is (maybe) right", Vox, 22 Septemer, 2008

[81] Nicholas F. Brady, Eugene A. Ludwig, Paul Volcker "Resurrect the Resolution Trust Corp.", *The Wall Street Journal*, September 17, 2008.

acquiring banks' preferred stock (Krugman[82]), possibly through a well-designed but rather complex scheme of matching the preferred stock assistance with a common stock issue (Calomiris[83]); or by forcing the financial companies to raise capital making rights offerings (Rajan[84]), or by mandating debt-equity swaps (Zingales, Wolf[85]).

In general, the view that, for at least some of the troubled securities, there does not exist a price which would relieve the position of financial firms without imposing a cost to the taxpayers is not robust. Available data and even pessimistic projections on default rates show that "market" prices reflect a negative bubble rather than "fair" values: a thorough analysis led the Bank of England to conclude "that using a mark-to-market approach to value illiquid securities could significantly exaggerate the scale of losses that financial institutions might ultimately incur".[86] For a large class of securities, therefore, the alternative is not as stark as the critics maintain. As Chairman Bernanke believes, there does exist an intermediate price, high enough to provide relief, but low enough as not to inflict budgetary losses. The real problem lies in how that price can be discovered. The method of a reverse auction does not by itself prevent sellers' opportunistic behaviour based on asymmetric information. As detailed in an important statement of the Director of the Congressional Budget Office[87], the conditions to avoid this outcome are that the auction should be for shares in the *same* asset rather that in different assets (hence not different complex products but homogeneous tranches) and that those shares be widely distributed among many potential sellers. If the auction is well-designed, on the other hand, the prices it establishes may provide the floor necessary to revive the markets, thereby re-creating liquidity. (What puzzles me about TARP is why cash is offered to purchase the troubled assets instead of guaranteed liquid bonds.)

The many alternatives based on public *cum* private capital injections are themselves not without problems. First and foremost, they leave the assets' liquidity problem unsolved: if the fall of prices continues, injections of capital may prove inadequate after a short time (as has already happened). Second there are elements of discretion, and hence

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[82] "Cash for Trash", *The New York Times*, September 21, 2008

[83] "A matched preferred stock plan for government assistance", in Vox, 22 September 2008.

[84] "Desperate times need the right measures", FT.com, 19 September, 2008.

[85] "Why Paulson is wrong", Vox 21 September, 2008; "Paulson's plan was not a true solution to the crisis", *Financial Times*, 23 September, 2008.

[86] *Financial Stability Report* April 2008, p. 20. This is especially true for the triple-A securities, for which losses estimated at market prices are almost 80% higher than those based on model-implied prices. See also the letter to the *Financial Times*, 25 September, 2008, by Dan McLaughlin of Bank of Ireland Global Markets.

[87] "Federal Responses to Market Turmoil", Statement of Peter. R. Orszag, Septemer 24, 2008, which provides a balanced and insightful assessment of the alternatives. For another review of benefits and costs, see Douglas M. Elmendorf, "Concerns about the Treasury Rescue Plan", Brookings, September 25, 2008.

arbitrariness, in the alternative schemes as well. While a mandatory solution for all would be too invasive, targeting and deciding eligibility would imply a discretionary choice.

Ideally, both aspects of the problem – assets' illiquidity and shortage of capital – should be addressed in sequence.[88] Taking the troubled assets off the banks' books first would stabilise the losses incurred by the banks because prices would find a floor (or in the case of undeserving asset have openly sunk to the bottom). By removing uncertainty, this would at the same time encourage private injections of capital in some cases and provide more accurate information on the need for public intervention otherwise. Religious wars do not help in the search for pragmatic and constructive solutions.

Persaud: The right alternative to Paulson's plan

27 September 2008

This column suggests that TARP is the wrong solution, but it might buy time to develop a better plan. Such a plan could involve a private debt-for-equity swap with the government co-investing in the equity. This would put tax payers in hock for something like $70bn rather than $700bn. Managers and shareholders would take the biggest hit, but bond holders would share the pain.

It is hard to come up with the right solution if you are addressing the wrong problem. Which is why Hank Paulson's US$700bn, Troubled Asset Recovery Plan (TARP) is the wrong solution for US credit woes. The best thing that could be said about it is that in these febrile markets agreeing to any plan may help to restore confidence and buy policy-makers enough time to find a better solution that would cost tax payers less and be more likely to succeed.

What is the problem we are trying to solve it and what is the better solution?

After an eighteen month cycle of write downs of assets, forced sales and further write downs, banks have travelled from illiquidity to the borders of insolvency. Banks asset values can no longer support bank liabilities. Capital is insufficient. Swapping troubled assets for cash - the essence of the TARP - may strengthen asset quality, but by crystallising the current distressed price of assets, it does nothing to address the problem of asset levels being too low relative to the level of liabilities. This was the right course 18 months ago, but not now. It is fighting the battle of illiquidity not insolvency.

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[88] As suggested by Lucien A. Bebchuk, "A plan for addressing the financial crisis", Harvard, Johnson M. Olin Center for Law, Economics and Business, Discussion Paper No. 628, September 2008, the *Financial Times* editorial of September 19, 2008, Simon Johnson and James Kak, "The price of salvation", FR.com, Economists' forum, September 25, 2008.

The TARP prayer is that by strengthening asset quality, banks would be able to raise fresh capital, but there is no guarantee of this. Investors will be mindful that even if the quality of the existing assets improves, banks are on the edge of insolvency, their current business models of securitisation, mortgage lending, equity short-selling and prime brokerage need to be rethought and other investors with as deep pockets as the sovereign wealth funds are nursing large losses for stepping in early. Tax payers may easily find themselves on the hook for another round of cash. Recall that Lehman Brothers, one of the smaller investment banks, went bankrupt with US$639bn of assets.

TARP also manages to save the blushes of bank creditors by putting tax payers at risk. This is not the time for moral outrage to cloud clear thinking, and it should not be forgotten that policy-makers share much blame in this crisis, but it does seem a little perverse to protect those that were paid to take the risk of banks failing, and instead to tax those that were not.

The appropriate analogy is a Chapter 11-type debt restructuring of a bankrupt country or company. By swapping a bank's debt for equity, and hence reducing bank liabilities to match the lower level of assets, a bank can stay in business without State control or money. It is done all the time for insolvent companies, though I am not underestimating the difference of today's crisis in terms of the systemic nature of the loss of confidence in the financial sector and the sheer pace of developments. Moreover, corralling creditors to abandon their contractual rights is not easy at the best of times.

Debt for equity swaps: A better plan

When all creditors are desperate for cash, none may be willing to give up a bit to ensure all end up with something. However, as Anne Gelpern of Rutgers University points out, loan agreements are sacred but they are not suicide pacts. In my plan, once a bank declares that its minimum regulatory capital level is in danger of being hit, it can appeal to the government to facilitate a debt re-organisation where debt is swapped for equity so that bank liabilities fall back below back assets with some buffer.

The government can apply a carrot and a stick to support agreement and confidence that the problem will be solved. Where debtors refuse to swap sufficient debt into equity, the central bank's extended liquidity arrangements could be withdrawn for that institution. I am not convinced that it is required, but if it would support confidence in the debt markets, the government could also offer to co-invest in the equity with the creditors, through a parallel purchase of preference shares up to a maximum level that would put tax payers in hock for $70bn, say, rather than $700bn. Under this plan, managers and shareholders take the largest proportional hit. Bond holders share in the pain. The government's principal role is as facilitator of debt re-organisation, not as the guarantor. Losses by creditors will help to re-introduce investment discipline, not reward indiscipline. Those with a capacity to diversify risks through time are not forced to crystallise losses today. In a world that has become capital-short, fresh capital is not required. By closing the asset-liability gap, the Damocles sword of potentially large asset sales now is removed, supporting the market recovery. And creditors and tax payers may even end up gaining from their investment in stability as the equity of these smaller, s recover.

Buiter: The Paulson Plan: A useful first step but nowhere near enough

25 September 2008

The Paulson Plan addresses market illiquidity for toxic assets but the real problem is a lack of bank capital and the risk of widespread insolvency. Fixing this requires a government injection of new bank capital or a forced conversion of bank debt into equity. This column argues against the former as it would further socialise the US financial system. The Package needs some work, but Congress must stop its infantile posturing and act soon.

The Paulson plan addresses market illiquidity....

The Paulson plan for using up to $700 bn of federal government money to buy up illiquid securities – mainly complex financial instruments such as asset-backed-securities, and in particular private label retail mortgage backed securities – represents an incomplete step towards dealing with the simplest part of the financial disaster that is threatening to engulf the US financial sector and, with a short lag, the real economy.

Paulson's TARP (Troubled Assets Relief Program), which I prefer to call TAD (Toxic Asset Dump) is a program designed to deal with market illiquidity. It is the most extreme manifestation of the authorities acting as what Anne Sibert and I have called *market maker of last resort* (MMLR) for systemically significant assets whose markets have become illiquid.

The MMLR supports market prices when either there is no market price or when there is a large gap between the actual market price of the asset, which is a fire-sale price resulting from a systemic lack of cash in the market, and the fair or fundamental value of the asset – the present discounted value of its future expected cash flows, discounted at the discount rate that would be used by a risk-neutral, non-liquidity-constrained economic agent (e.g. the government).

The MMLR can do this either by accepting the illiquid security as collateral for a loan or by purchasing it outright. The central bank can, in principle, act as MMLR when the support actions involve just collateralised lending, at the discount window, in repos or at purpose-designed liquidity facilities like the TAF (the Term Auction Facility), the PDCF (the Primary Dealer Credit Facility and the TSLF (Term Securities Lending Facility), but two conditions must be satisfied. First, *ex-ante*, the terms of the collateralised loan must be such as to give the central bank an adequate risk-adjusted rate of return (in excess of the rate on Treasury bills or bonds of the same maturity). It is not the job of the central bank to subsidise the borrowing bank ex-ante. Second, should the collateralised loan default (that is, both the borrowing bank and the issuer of the collateral default at the same time), the Treasury guarantees to indemnify the central bank automatically and immediately.

Outright purchases of illiquid private securities would expose the central bank to the full default risk on the security it purchases. That means, in my view, that this is no job for the central bank, except as agent for the government. The central bank can manage the transactions on behalf of the Treasury, but it is the Treasury, and behind it the tax payer, that carries the credit risk.

It is possible for the Treasury, through the outright purchase of illiquid toxic private assets both to help the banks selling the toxic securities and the tax payer. This would be the case if it prices the securities it purchases above their fire-sale market prices but below their fundamental values. It is of course difficult to determine, when markets are illiquid, what the present discounted value of the future cash flows of a security is, even if the purchaser can always choose to hold the security till maturity, as the Treasury can. Even if the fundamental value could be determined somehow, I doubt whether the bulk of the US banking system could survive even with their illiquid assets priced at their fundamental value.

But the real problem now is lack of capital and the threat of widespread insolvency in the banking sector

As the full horror story of the bad investments and bad loans made by so many American banks has gradually been revealed, it is clear that the US banking sector faces an insolvency crisis and not just an illiquidity crisis. The number of impaired mortgages is exploding, and not just in the subprime and Alt-A categories, but across the whole residential mortgage spectrum. Impaired commercial and industrial mortgages are rising fast. Bad loans to the construction industry and to developers are mushrooming. ABS backed by automobile loans, by credit card receivables are tottering in growing numbers as are many other unsecured household loans. With the economy slowing down and probably entering recession soon, even exposures to the non-financial corporate sector will become more vulnerable.

In a nutshell, the US banking sector needs recapitalisation. "Banking sector" here includes the entire 'shadow banking sector', including such entities as the financial instruments division of AIG, that leveraged itself to the eyeballs and engaged in massive maturity and liquidity transformation. It needs to shrink overall (as regards employment, value added and especially as regards the number of banks and their leverage), but the much reduced number of banks that ought to survive this crisis badly need additional capital.

Where can American banks get additional capital today? A very few – really only the best-of-breed like Goldman Sachs, which raised $5 billion each from Warren Buffett (through his company Berkshire Hathaway) and from the issuance of new shares to American institutional investors – can get the capital they need at home, in the US; and even then it is expensive (I must declare an interest here – I am a part-time Adviser to Goldman Sachs International). Another possible source of new capital are the nouveaux riches of the Middle East and the Far East – the Sovereign Wealth Funds and large state-owned banks of China, Singapore, Korea and the Gulf States. The supply of capital from these sources is restricted by the rather disastrous (on a marked-to-market basis) first attempts late in 2007 and early in 2008 at diversifying out of Treasuries by these new deep pockets of the future. No doubt they will be back – these institutions take a long-term perspective and are unlikely to become the hapless captives of mark-to-market valuation, but the speed with which they gird their loins is unlikely to match the speed with which the current crisis moves.

That leaves just two sources of capital. The first is the US federal government. It could inject capital into US banks, say by purchasing preference shares. I would uncouple such

a capital injection from Paulson's toxic asset purchase plan. The market illiquidity problem is related to but not the same as the banks' capital deficiency problem. The government could implement a system-wide capital injection by specifying maximum leverage ratios (or minimum capital ratios) for various categories of financial institutions. It could then inject capital in return for preference shares to bring all these leverage ratios down to the maximum levels (all the capital ratios up to the minimum levels).

My main concern about this way of injecting additional capital is that it would take the socialisation of the US financial system yet a step further. Governments may be able to run the deposit-raising side of an ordinary commercial bank. For the government to decide on other funding strategies, let alone on desirable lending and investment strategies is a bridge I hope not to cross.

Preferred solution: mandatory debt for equity conversions

Finally, there is my preferred solution to the capital deficiency problem: the compulsory conversion of some of the banks' debt into equity. Again, this could be done by the government specifying maximum leverage ratios (or minimum capital ratios) for various categories of financial institutions. Different kinds of debt then would be mandatorily converted into equity (preference shares or ordinary shares) with the proportion of each category of debt to be converted into stock inversely related to the seniority of the debt. These proportions would have to satisfy the requirement that all leverage ratios be brought down to the maximum levels (all capital ratios up to the minimum levels). There are infinitely many ways of skinning this cat, but it will not be difficult to produce a simple and fair solution.

In the mean time, the Congress fiddles while the financial sector burns...

Given the extreme urgency of the situation, the response of the US Congress has been truly astonishing.

The House and the Senate are acting as if this is politics as usual. Some grandstanding here. The threat of delays or even a filibuster. Amendments and modifications that range from the revoltingly populist to the terminally stupid with the disgustingly opportunistic and self-serving in between.

Admittedly, Secretary Paulson laid an egg by including the following phrase in his proposal: *"Decisions by the Secretary pursuant to the authority of this Act are non-reviewable and committed to agency discretion, and may not be reviewed by any court of law of any administrative agency"*. This reads as though it was personally written by Dick Cheney, the prince of absolute executive authority, no checks and balances, no accountability, no recourse. No administration that brought us WMD in Iraq and the torture camps of Guantanamo Bay and Abu Ghraib should expect anything but hysterical giggles in response to such a request. Not smart.

So, let's put in accountability and oversight and make sure than Paulson cannot donate $700bn to Nature Conservancy. But then let's pass the plan.

Ornaments to hang on the Paulson "Christmas tree"

Instead consider some of the ornaments Congress wants to hang on the Christmas tree:

- Caps on the executive remuneration for executives of companies making use of the facility created under the plan. A figure of $400,000 has been bandied about. From the perspective of fairness, 25 cents would probably too much for some CEOs. Indeed, tarring, feathering and running out of town may well be justified in certain cases. But it would stop the banks from making use of the facility for the very reasons that make the Congress want to punish the CEOs of the banks. If it is true, as many in Congress argue, that greedy and irresponsible CEOs have risked their banks, and imperilled the wellbeing of their communities and the stability of the US economy as a whole, in the pursuit of private gain, then these same CEOs would surely once again risk their banks, imperil the wellbeing of their communities and the stability of the US economy as a whole to avoid the $400,000 cap. "Duh", as my two teenage kids would say. I know there are too many lawyers in Congress, but surely there must be someone with half a brain?
- Amendments to (personal) bankruptcy laws making it easier for homeowners who cannot service their existing mortgages to remain in their homes rather than face repossession. This would be both inequitable (why should tax payers who stuck to mortgages they can afford be asked to subsidise the mortgages of those whose eyes were larger than their stomachs?) and inefficient (it would discourage future mortgage lending). Individual homeowners are also not important for systemic stability.
- Other cookies and goodies for those with mortgages they cannot afford to service (see the previous bullet point).
- Equity stakes for the government in the banks it purchases toxic assets from. This also would discourage banks from accessing the facility, if the acquisition of equity by the government represents a transfer from the bank rather than the quid-pro-quo for a capital injection by the government.
- Warrants for the government (options to acquire equity in the banks during some period at a set price). See the previous bullet point.

Conclusion

Since the invention of the telegraph, panics and crises spread at the speed of light. Congress doesn't have weeks. It doesn't have too many days, as I see it. Unless it acts now, the freeze of the financial wholesale markets will intensify and the attacks on financial institutions will resume, first in the US, then in the UK, then in the rest of Europe and soon after everywhere in the financially connected world. Short selling restrictions/bans won't help.

If Congress continues its infantile posturing, the crisis of the financial system will mutate into a financial crisis paralysing lending by banks to households and non-financial corporations. Instead of a mere recession, there will be a long and deep depression.

At this stage of the game, liquidity concerns, while still omnipresent, have become the epiphenomena of underlying solvency problems in the financial sector. The US banking sector is seriously undercapitalised. The UK banking sector too is undercapitalised and so, albeit to a lesser-known degree (because of much impaired transparency) are the banking systems of the other European nations. Central banks therefore no longer play

the lead part. The national treasuries (ministries of finance) backed by the tax payers and the beneficiaries of other public spending programs are taking centre stage. Unless plans to recapitalise systemically important institutions and to support systemically important financial markets are backed with the full faith and credit of the US Federal Government and the other governments in the North Atlantic Region, the coming year will be one to forget.

Acharya: From recapitalisation to restructuring and reforms

12 October 2008

Recapitalise the banks, yes. But how? One option is to sell troubled institutions to healthier ones with government help; the other is to restructure them piecemeal. Government-assisted bank sales overall present a better form of public-private partnership, but both may be necessary. A series of additional restructuring efforts and reforms are needed.

The G7 meeting has raised hopes that coordinated action at the global level will not only recapitalize several banking sectors expediently, but also provide further liquidity to markets, deposit guarantees and a backstop to money markets to restore funding for banks.

In light of this much-needed response to the global financial crisis, it is important to keep in mind that we must also deal with the lemons (in some cases institutions, and in other cases assets). This is necessary in order to provide the financial system with the resilience and the ability to raise private capital in near future. This should , in turn, help kick-start the currently moribund markets for inter-bank lending and commercial paper.

How we got here

The aftermath of Lehman Brothers' bankruptcy is best characterized as a complete collapse of trust between financial institutions and of investor confidence in these institutions (and to some extent in the very governments and Central Banks that regulate and oversee them). Over the past two weeks, a number of proposals have advocated public injection of capital into the troubled banking sector.[89] Such recapitalization is rightly aimed at shoring up equity base of some highly leveraged institutions that have steadily made losses, and of others, less leveraged, whose equity base has suffered as a result of information spillover from adverse news about the highly leveraged ones. Partial or full nationalization is a temporary measure to put the patient on oxygen, but ultimately the arteries must be unclogged. Troubled institutions must be resolved, though not as abruptly as was the case with Lehman.

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[89] Public recapitalisation of the financial sector was the single most common feature in opinions of leading academics in VoxEU's recent publication "Rescuing our jobs and savings: What G7/8 leaders can do to solve the global credit crisis".

Options for restructuring troubled banks

There are at least two, not mutually exclusive, ways to achieve recapitalization.

- The first, which I prefer, is to identify and sell troubled institutions to healthier ones, possibly with government support in the form of loans or first-default-loss protections.[90] The sale of Bear Stearns to JPMorgan in March is a good example of this method.
- The second is to restructure troubled institutions piece-meal, selling their healthier assets to other institutions and collecting the ones for which there is no current private interest into "bad banks", restructuring those assets, and resolving them over time. This is trickier given the complexity of institutions involved.

Two birds with one stone

Government-assisted sales to healthy institutions are an attractive way of deploying public funds since they kill two birds at the same time. They provide capital to the system, and entrust the complex task of orderly management and liquidation of troubled assets to the healthier parts of the private sector. Such sales also have the right properties in terms of not rewarding those institutions and managements that did poorly or refused to raise adequate capital in time.

Whether this mechanism suffices by itself to resolve troubled assets and institutions depends to an extent on the condition and willingness of healthy institutions and to some extent also on moral suasion powers of regulators. On the one hand, healthy banks stand to gain substantially from such sales. On the other hand, they may also try to extract their pound of flesh from governments and Central Banks, delaying acquisitions in order to deploy as little capital as possible. The latter may however still be the preferred outcome given the huge legal and administrative costs of the alternative.

The alternative arrangement of resolving some institutions piece-meal was employed during the US Savings and Loans crisis as well as in the 1997 East Asian crisis. In the current context though, this requires substantial clarity on how creditor recoveries will be distributed, especially given the complex, contingent and international nature of debt. As such, this will call for seamless cross-border coordination.[91]

Even if we ignore this rather important issue, holding on to difficult assets requires having a long-term horizon as they may not be easy to liquidate as and when needed. Currently, there are few private investors with such horizons. The non-banking financial sector might be able to muster some capital swiftly to buy such assets at attractive prices, but in a severe systemic crisis such as the one we are in, this sector is liquidity- and capital-strapped too. Hence, the restructuring vehicles would have to be prepared for a somewhat protracted resolution of these assets.

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[90] Under reasonably general assumptions, government-assisted bank sales can be shown to be as effective – ex-post and ex-ante – as bailouts structured through a recapitalisation. See Viral V Acharya and Tanju Yorulmazer, “Cash-in-the-market pricing and optimal resolution of bank failures”, The Review of Financial Studies, 2008, forthcoming.

[91] This is also the primary difficulty with debt-for-equity swaps which otherwise seem a reasonable alternative.

As a result, having the restructuring option in place might provide enough potential competition to give incentives to healthier players to make acquisitions sooner and at non-extortive terms. Nevertheless, government-assisted bank sales overall present a better form of public-private partnership. I am afraid though that both may ultimately be required and avoiding some messy restructuring may be unavoidable.

Trading of Credit Default Swaps on exchanges

In addition, the efforts underway to move trading of credit default swaps to exchanges where collateral arrangements can mitigate counterparty risk must be bolstered by similar longer-term arrangements for mortgage-backed securities and standardized securitization products. Such infrastructure would be essential if the recapitalized financial system is not to experience paralysis in response to further adverse news, which might deplete the capital pool and necessitate additional asset sales and restructuring. Indeed, creating more transparent platforms for unsecured inter-bank lending in which public funds are initially deployed to provide first-default-loss guarantees, with these guarantees eliminated over time, also present an attractive option.[92] All these measures would eventually reduce the burden on the Central Banks to take on credit risk in their lender-of-last-resort operations and emergency liquidity assistance schemes.

While recapitalization employs public funds to get at the issue of insolvency, these other efforts employ public funds more directly to reestablish liquidity in several markets that are shut down, and build infrastructure to ensure their smooth operation in future. In the first case, preferred stakes may potentially provide the taxpayers a good return. In the second case, this return is provided by eliminating the negative externality of troubled, illiquid assets on healthier parts of the system and creation of public goods.

Conclusion

A joint resolution of the issues of inadequate capital and of troubled assets and dysfunctional markets is required to restore efficient transfers of liquidity between financial institutions and the rest of the system. Until such efficiency is attained, financial institutions will continue to hoard liquidity and ration credit, preventing economies to emerge from the trap of diminishing levels of financing and growth.

Recapitalization of banking systems is just the beginning. A series of restructuring efforts and reforms, some short- and some long-term, aimed at restoring the orderly functioning of markets, must follow with urgency and conviction.

Zingales: Why Paulson is wrong

21 September 2008

This weekend's decisions will shape the type of capitalism we live with for the next fifty years. Here one of the world's leading financial scholars, Chicago Business School

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[92] Some proposals, e.g. in the VoxEU publication cited above, have suggested even complete government guarantees of inter-bank lending in the short run.

Professor Luigi Zingales, argues that bailing out the financial system with taxpayers' money is wrong. He discusses an alternative – forced debt-for-equity swap or debt-forgiveness.

When a profitable company is hit by a very large liability, as was the case in 1985 when Texaco lost a $12 billion court case against Pennzoil, the solution is not to have the government buy its assets at inflated prices – the solution is Chapter 11. In Chapter 11, companies with a solid underlying business generally swap debt for equity. The old equity holders are wiped out and the old debt claims are transformed into equity claims in the new entity which continues operating with a new capital structure. Alternatively, the debt holders can agree to trim the face value of debt in exchange for some warrants.

Even before Chapter 11, these procedures were the solutions adopted to deal with the large railroad bankruptcies at the turn of the twentieth century. So why is this well-established approach not used to solve the financial sectors current problems?

No time for bankruptcy procedures

The obvious answer is that we do not have time.

Chapter 11 procedures are generally long and complex, and the crisis has reached a point where time is of the essence. The negotiations would take months, and we do not have this luxury. However, we are in extraordinary times, and the government has taken and is prepared to take unprecedented measures. As if rescuing AIG and prohibiting all short-selling of financial stocks was not enough, now Treasury Secretary Paulson proposes a sort of Resolution Trust Corporation (RTC) that will buy out (with taxpayers' money) the distressed assets of the financial sector.

But at what price?

If banks and financial institutions find it difficult to recapitalise (i.e., issue new equity), it is because the private sector is uncertain about the value of the assets they have in their portfolio and does not want to overpay.

Would the government be better in valuing those assets? No. In a negotiation between a government official and banker with a bonus at risk, who will have more clout in determining the price?

The Paulson RTC will buy toxic assets at inflated prices thereby creating a charitable institution that provides welfare to the rich – at the taxpayers' expense. If this subsidy is large enough, it will succeed in stopping the crisis.

But, again, at what price?

The answer: billions of dollars in taxpayer money and, even worse, the violation of the fundamental capitalist principle that she who reaps the gains also bears the losses. Remember that in the Savings and Loan crisis, the government *had* to bail out those institutions because the deposits were federally insured. But in this case the government *does not have* do bail out the debtholders of Bear Sterns, AIG, or any of the other financial institutions that will benefit from the Paulson RTC.

An Alternative to Paulson's RTC

Since we do not have time for a Chapter 11 and we do not want to bail out all the creditors, the lesser evil is to do what judges do in contentious and overextended bankruptcy processes. They force a restructuring plan on creditors, where part of the debt is forgiven in exchange for some equity or some warrants. And there is a precedent for such a bold move.

During the Great Depression, many debt contracts were indexed to gold. So when the dollar convertibility into gold was suspended, the value of that debt soared, threatening the survival of many institutions. The Roosevelt Administration declared the clause invalid, *de facto* forcing debt forgiveness. Furthermore, the Supreme Court maintained this decision.

My colleague and current Fed Governor Randall Koszner studied this episode and showed that not only stock prices but bond prices as well soared after the Supreme Court upheld the decision. How is that possible? As corporate finance experts have been saying for the last thirty years, there are real costs from having too much debt and too little equity in the capital structure, and a reduction in the face value of debt can benefit not only the equity holders, but also the debt holders.

If debt forgiveness benefits both equity and debt holders, why do debt holders not voluntarily agree to it?

- First of all, there is a coordination problem.

Even if each individual debtholder benefits from a reduction in the face value of debt, she will benefit even more if everybody else cuts the face value of their debt and she does not. Hence, everybody waits for the other to move first, creating obvious delay.

- Second, from a debt holder point of view, a government bail-out is better.

Thus, any talk of a government bail-out reduces the debt-holders' incentives to act, making the government bail-out more necessary.
As during the Great Depression and in many debt restructurings, it makes sense in the current contingency to mandate a partial debt forgiveness or a debt-for-equity swap in the financial sector. It has the benefit of being a well-tested strategy in the private sector and it leaves the taxpayers out of the picture.

But if it is so simple, why has no expert mentioned it?

Taxing the many to benefits the few

The major players in the financial sector do not like it. It is much more appealing for the financial industry to be bailed out at taxpayers' expense than to bear their share of pain. Forcing a debt-for-equity swap or a debt-forgiveness would be no greater a violation of private property rights than a massive bailout, but it faces much stronger political opposition. The appeal of the Paulson solution is that it taxes the many and benefits the few. Since the many (we, the taxpayers) are dispersed, we cannot put up a good fight in Capitol Hill. The financial industry is well represented at all the levels. It is enough to say that for 6 of the last 13 years, the Secretary of Treasury was a Goldman Sachs alumnus. But, as financial experts, this silence is also our responsibility. Just as it is difficult to find a doctor willing to testify against another doctor in a malpractice suit, no matter how

egregious the case, finance experts in both political parties are too friendly to the industry they study and work in.

Profits are private but losses are socialised?

The decisions that will be made this weekend matter not just to the prospects of the US economy in the year to come. They will shape the type of capitalism we will live in for the next fifty years. Do we want to live in a system where profits are private, but losses are socialised? Where taxpayer money is used to prop up failed firms? Or do we want to live in a system where people are held responsible for their decisions, where imprudent behavior is penalised and prudent behavior rewarded?

For somebody like me who believes strongly in the free market system, the most serious risk of the current situation is that the interest of few financiers will undermine the fundamental workings of the capitalist system. The time has come to save capitalism from the capitalists.

Calomiris: A matched preferred stock plan for government assistance

22 September 2008

This column, posted 19 September on an FT forum, suggests a better way of ending the financial crisis. Instead of buying toxic assets, the US government should buy preferred stock capital in ailing banks that could raise matching private sector equity. This would avoid the intractable problems of how the government should value the toxic assets and directly address the banks' immediate problem – a lack of bank capital.

The US government is considering broad-based assistance to stem the financial crisis. Hank Paulson, Treasury secretary, and Ben Bernanke, Fed chairman, have proposed the establishment of an entity that would purchase subprime-related assets from troubled financial institutions.

A broad-based approach is needed, but this is not the best way of achieving policymakers' objectives. Government injections of preferred stock into banks, advocated by Senator Charles Schumer, inspired by the Reconstruction Finance Corporation's policies in the 1930s, would be a better choice. Pricing subprime instruments for purchase would be very challenging, and fraught with potentially unfair and hard-to-defend judgments. If the price were too low, that could hurt selling institutions; if it were too high, that could harm taxpayers. Who would determine how much should be purchased from whom in order to achieve the desired systemic risk reduction consequences at least cost to taxpayers? How would the purchasing entity dispose of its assets?

Preferred stock assistance would leave asset valuation and liquidation decisions to the private sector, but would provide needed recapitalisation assistance to banks in an incentive-compatible manner to facilitate banks' abilities to maintain and grow assets. If executed properly, it would limit taxpayers' loss exposure, and leave the tough decisions of managing assets, and deciding on how to allocate capital assistance from the taxpayers, to the market.

Preferred stock assistance would work best if it were required to be matched by common stock issues underwritten by the private sector, which would ensure the proper targeting of assistance, and force private parties rather than taxpayers to bear first-tier losses. Banks in need of capital would apply for Matched Preferred Stock (MPS) assistance. Initially, say for three years, there would be no dividend paid to the government on MPS. That subsidy would increase the net worth of the recipient and facilitate raising additional capital via common stock.

Any US-based financial institution could apply for US government-held MPS (foreign-based banks could also apply if foreign governments were willing to provide MPS financing). To ensure that MPS is only supplied as truly needed from a systemic standpoint, and to limit any abuse of the taxpayer-provided subsidy, the private sector would also be required to act collectively to help recapitalise undercapitalised banks, and share the risks associated with recapitalising banks.

Specifically, to qualify for MPS assistance from the government, a bank would have to first obtain approval from "the Syndicate" of private banks (including the major institutions who would benefit from the plan as well as others who would benefit from the reduction in systemic risk) to commit to underwrite common stock of the institution receiving MPS in an amount equal to, say, at least 50 per cent of the amount of MPS it is applying for (at a price agreed between the Syndicate and the bank at the time of its application for MPS). The Syndicate would share the underwriting burden on some pro rata basis. To support that underwriting, the Syndicate would have access to a line of credit from the US government (and from other countries' governments, if non-US banks participate in the MPS system). By making the government's underwriting support senior to the Syndicate, the taxpayer would be protected by the aggregate resources of the private financial system. For banks participating in the MPS plan that are based outside the US, foreign governments would have to provide the MPS investments. Presumably, those foreign governments would also provide the credit line commitment to the syndicate for its underwriting of common stock.

Crucially, matching ensures first-tier loss sharing by the private sector (in a properly diversified way), which in turn ensures that unless the bank is worth assisting for systemic purposes, and viable upon receiving assistance, it will not receive assistance. This arrangement also protects taxpayers (since they only bear second-tier losses – that is, the risk of loss on preferred stock, which is senior to the old and new common stock). First-tier private sector loss sharing alongside government assistance is a time-honored tradition, which incentivises the private sector to limit its requests for government assistance. In 1980, for example, the Bank of England was willing to assist in the bailout of Barings only on condition that the London banks bore the first tier of losses resulting from such assistance. In the US today, the FDICIA legislation of 1991 required that any bailouts of uninsured depositors or bank creditors must be paid for by a special assessment on surviving banks, as a pro rata share of their deposits.

Additional safeguards would also be needed. Any bank receiving MPS must suspend all common stock dividends for the period that the MPS is on its balance sheet (shockingly, the Japanese banks receiving preferred stock injections in 1999 continued to pay common stock dividends). Any bank receiving MPS would also devise a "capital plan" within six months of receiving MPS. The capital plan would be a plan for reducing leverage and

credibly limiting risk taking during the period in which the MPS is outstanding. This capital plan would have to be approved by the Syndicate and the Treasury Department (as the government's representative in this transaction). If a capital plan cannot be agreed within six months of receiving assistance, then the MPS would be payable immediately. Making the MPS callable would also be desirable; by doing so, and by limiting dividends and requiring a capital plan, banks would have an incentive to retire their MPS as soon as possible after the crisis passes.

Frankel: An emerging consensus against the Paulson Plan: Government should force bank capital up, not just socialise the bad loans

23 September 2008

Here one of the world's leading international economists, a former member of Clinton's Council of Economic Advisors, comments on the growing consensus that the Paulson Plan has got the wrong end of the stick.

In times of war, there is a tendency for both political parties to rally around the president – as we saw (all too well) in Iraq after September 11. In times of financial panic, there is often a similar inclination. The two presidential candidates, for example, are being very careful in their statements.

I don't blame them. The issues are too complex to be taken on inside the context of a political campaign. Both candidates realise that the danger of a verbal misstep that the other side can try to blame for worsening the crisis is far greater than the likelihood that either one will come up with a brilliant solution that will gain widespread support or solve the problem, let alone both.

Having said that, opposition to the $700 billion plan proposed by Treasury Secretary Henry Paulson on September 19 has coalesced quickly. And from both ends of the political spectrum. Sebastian Mallaby pursues the Iraq analogy in "A Bad Bank Rescue" in the *Washington Post*:

"…in buying bad loans before banks fail, the Bush administration would be signing up for a financial war of choice. It would spend billions of dollars on the theory that pre-emption will avert the mass destruction of banks."

The explicit lack of oversight or checks and balances in the Treasury proposal is very worrisome – and it worries Congressional Democrats.

But the nature of the bailout, how the money is to be used, is what bothers me most of all. As Mallaby says:

"Within hours of the Treasury announcement on Friday, economists had proposed preferable alternatives. Their core insight is that it is better to boost the banking system by increasing its capital than by reducing its loans."

Examples are not tied to economists from a particular political viewpoint or party. He mentions the proposals of Ragu Rajan (FT.com) and Luigi Zingales that the government could tell banks to cancel all dividend payments. And proposals by Charlie Calomiris and Doug Elmendorf (Brookings) that the government could buy equity stakes in banks themselves, rather than just buying their bad loans.

Similarly, in today's New York Times opinion page we had Paul Krugman on the left side of the page and Bill Kristol on the right side of the page. What Mallaby calls the core insight is also the crux of Krugman's logic ("Cash for Trash"):

"…the financial system needs more capital. And if the government is going to provide capital to financial firms, it should get what people who provide capital are entitled to – a share in ownership, so that all the gains if the rescue plan works don't go to the people who made the mess in the first place."

Sounds right to me. Don't socialise the losses without socialising the gains.

Onado: Banks' losses and capital: The new version of the paradox of Achilles and the tortoise

19 August 2008

Many banks are raising fresh capital but not as fast as they are reporting fresh write-downs. Unless regulators push banks to rebuild their equity bases more quickly, the crisis will be more painful and protracted than necessary. Merrill Lynch is a salutary example.

One of the most important lessons from the subprime crisis is that the growth of banks' capital fell behind the dramatic growth of total credit and overall risks over the last twenty years. Until August 2007, we were not alarmed by this, having been lulled by the comforting hypothesis that the risks were sold outside the banking system and widely spread over many investors. The almost $ 500 billion (and counting) of bank losses incurred prove that this was pure wishful thinking: first, most risks were still on banks' books; second, other risks had to be taken back to avoid further reputational damages, and worst of all, some risks were simply hidden under the carpet in the form of a "shadow banking system", according to the Bank for International Settlements.[93]

Warnings and optimism

In the past few years the main international agencies have repeatedly warned about the risk of a major crisis, but at the same time they kept stressing that the international banking system was robust as never before, thanks to the overall prudential supervision, the capital adequacy rules put in place since the mid-80s, and, most importantly, the imminent significant overhaul of the Basel agreements.

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[93] BIS, *Annual Report 2007-2008*, Basel, June 2008. The expression has been used also by Mario Draghi (who chairs the Global Financial Stability Committee) in the Bank of Italy's Annual Report.

The simple and sad truth is that in the last two decades (and in particular in the last one) we have seen an unprecedented credit boom with the usual component of euphoria and over-optimistic valuations. Bank capital was adequate under in that favourable scenario but not in the face of a consistent shock. As soon as the overall mood changed, the markets priced into interbank rates and credit default swap premia a significant probability of illiquidity and even insolvency for all major banks, notwithstanding the extraordinary interventions of the main central banks as lenders of last resort and the not-less-extraordinary rescue operations put in place for Northern Rock, Bear Stearns, and the like.

The problem for the European banking system is well described by the two following figures taken from research analysis published by Citigroup.[94] They show two significant weaknesses:

- Total assets grew much faster than the risk-weighted assets against which banks must hold capital.
- The tangible component of equity decreased, which means that a part of the capital cushion was largely made of intangible assets deriving from the merger process within the banking system.

Figure 1. Total assets to risk-weighted assets ratio

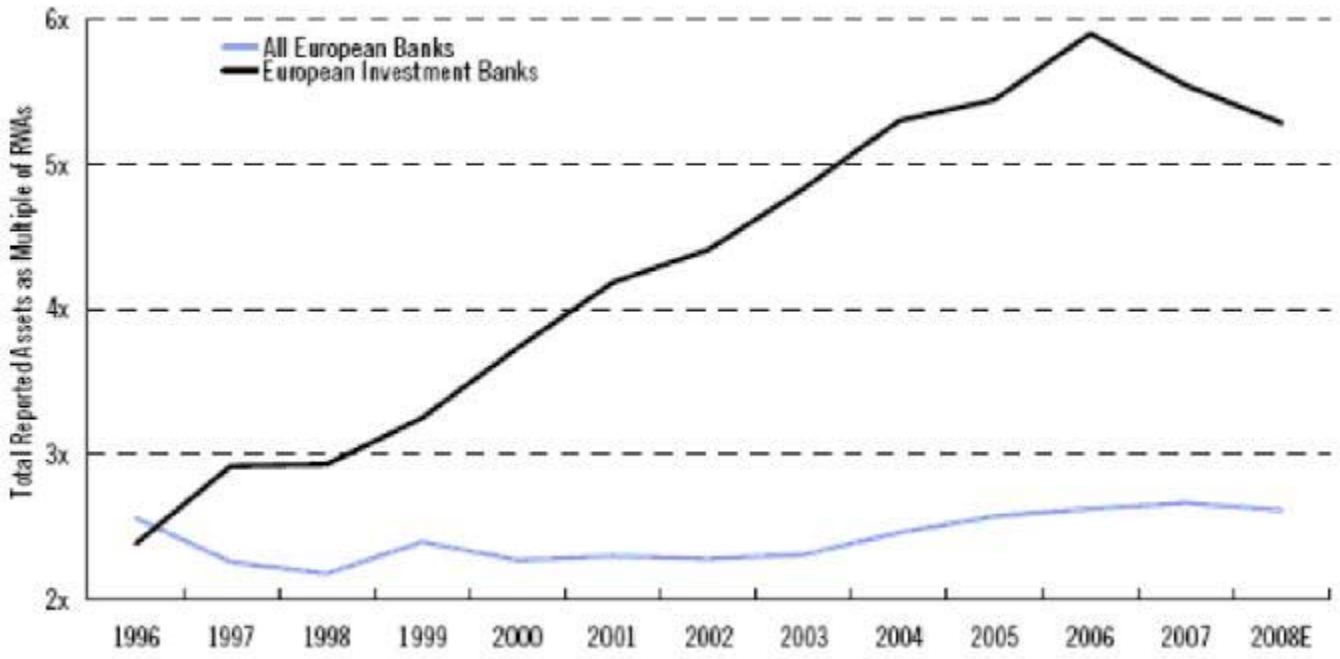
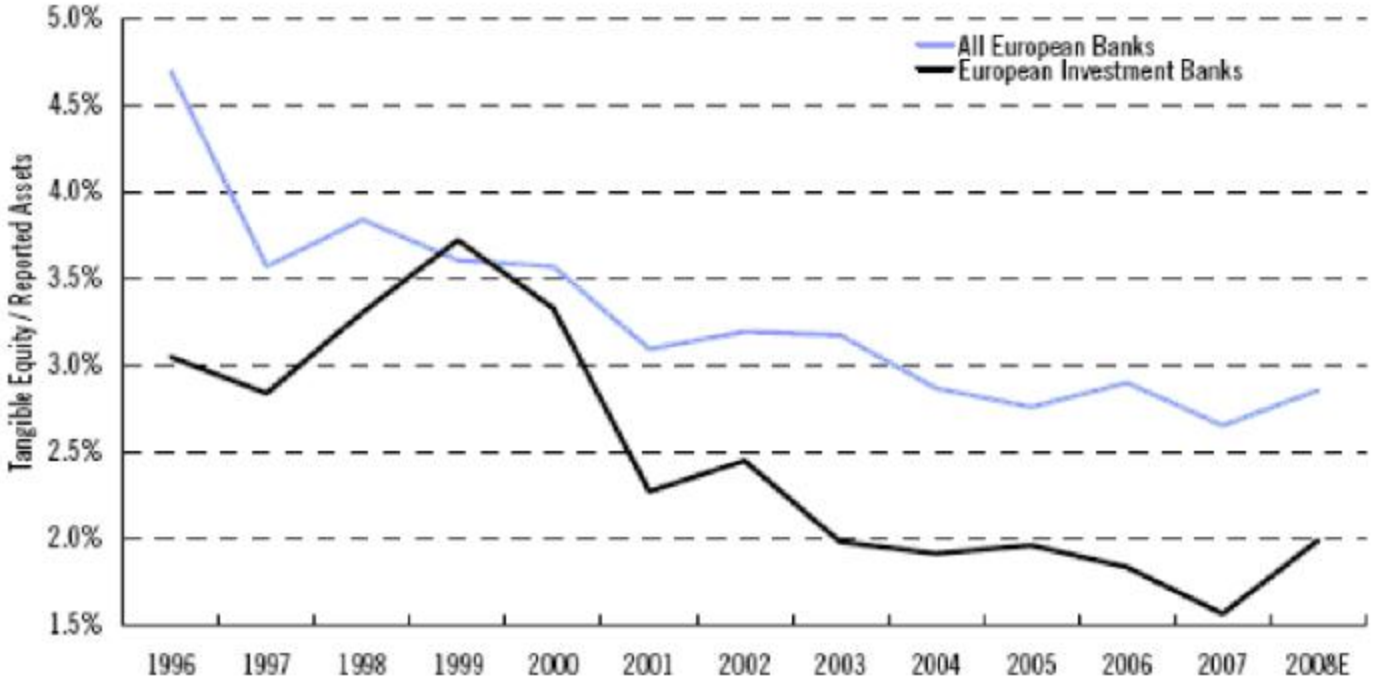


Figure 2. Tangible equity to reported assets ratio

[94] Citigroup, Jeremy Sigee et al, *Time To Delever. Rethinking Capital Needs For European Investment Banks*, 22 April 2008.



An excess of credit is at the same time a shortage of bank capital. The economic research prompted by the crisis has shown that banks' leverage grew at a consistent pace in the past twenty years.[95] It is also inherently pro-cyclical as it is amplified by the decisions of the household sector (determined by house prices) and the decisions of the banking system, based on the desired level of capital. Both these engines of the boom have been abruptly put into reverse.[96] The result is a painful process of deleveraging in the international banking system – a process that risks amplifying the inevitable reduction of credit supply, thus worsening the macroeconomic impact of the crisis.

Crisis abatement: Correcting the credit/capital imbalance

As Greenlaw et al[97] put it, the crisis will abate once one or more of three conditions are met:

- Banks (both commercial and investment banks) contract their balance sheets until their capital cushion is once again large enough to support their balance sheets;

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[95] Tobias Adrian - Hyun Song Shin, *Liquidity, Monetary Policy, and Financial Cycles*, in "Federal Reserve Bank of New York, Current Issues in Economics and Finance", January-February 2008.

[96] Marco Pagano, *The Subprime Lending Crisis: Lessons for Policy and Regulation*, in "Unicredit Group, Finance Monitor", June 2008.

[97] David Greenlaw - Jan Hatzius - Anil K Kashyap - Hyun Song Shin, *Leveraged Losses: Lessons from the Mortgage Market Meltdown*, U.S. Monetary Policy Forum Report No. 2, Rosenberg Institute, Brandeis International Business School and Initiative on Global Markets, University of Chicago Graduate School of Business, 2008, p. 34.

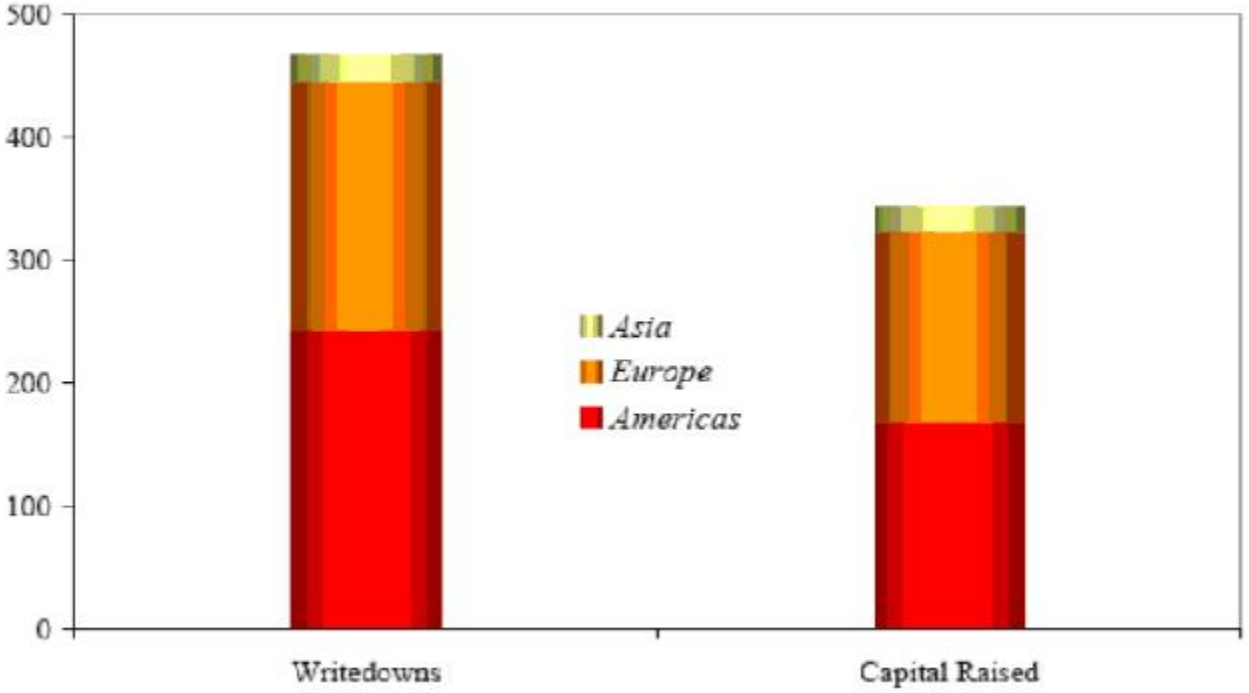
- Banks raise sufficient new equity capital to restore the capital cushion to a size large enough to support their balance sheets;
- The perceptions of risk change to a more benign outlook so that the current level of leverage can once again be supported with existing capital.

The third appears highly unlikely. This means that the choice is between great injections of bank capital or greater credit contraction with its attendant macroeconomic pain. Clearly, the priority now should be to rebuild the capital base of the main banks.

Regulators are using all their powers of moral suasion to push banks towards capital rebuilding, but new equity issues have not even kept up with new capital losses (write downs, etc.). In a few cases, the gap is quite significant.

Figure 3, taken from the last data published by the IMF[98], shows that new capital trails write-downs (i.e. the emergence of unexpected losses) by some $ 100 billion.

Figure 3. Bank write-downs and capital raising (billions of dollar)



In other words, all the regulators' efforts could not bring the banking system back to its position before the start of the crisis. If the market has discovered that banks' capital was not adequate, it cannot tolerate a situation where banks' capital is lower than one year ago, also taking into account that a large part of the intangible component of equity has evaporated.

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[98] International Monetary Fund, *Global Financial Stability Report*, Market Update July 28, 2008.

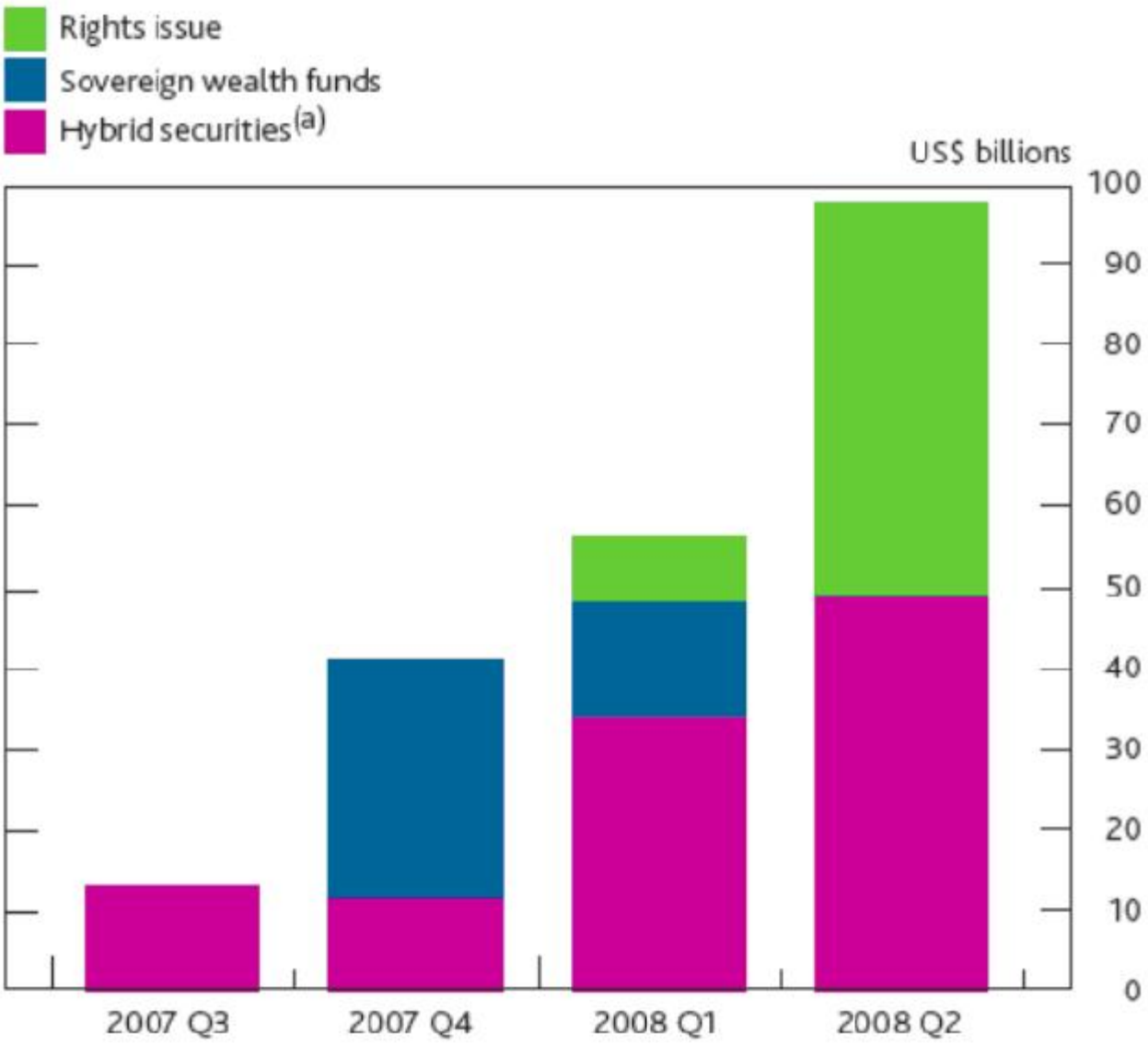
This Achilles-and-the-tortoise-like adjustment process has two negative effects. It maintains a sentiment of distrust even within the banking system, creating a gridlock in the market for liquidity instruments. And, it can worsen the effect of deleveraging and the ensuing credit crunch. Both can make the crisis last longer and have stronger adverse macroeconomic effects.

Recapitalisation is painful but necessary

One of the main obstacles to the recapitalisation effort has been the reluctance of banks to venture into operations that could be very costly and could significantly dilute existing shareholders. This kind of resistance is well proven by recent data from the Bank of England, shown in Figure 4.[99]

Figure 4. Major banks' tier one capital raising by type since September 2007

[99] Bank of England, Markets and Operations, in "Quarterly Bulletin", Second Quarter 2008.



The figure clearly shows that banks preferred to issue hybrid instruments (essentially debt instruments that contain some features of equity, such as coupon suspension and principal write-down) and in a second stage they turned to off-market private placements of mandatory convertible securities to sovereign wealth funds. Only in the second quarter of 2008 did the focus of capital raising shift to market-based public rights issue. In other words, not only do capital injections lag behind the emergence of losses, but the financial instruments that have been used are not the less "powerful" available, from the point of view of their true equity content.

In this contest, the whole process of bank recapitalisation seems to be a new version of the Zeno's paradox. Achilles will never reach the tortoise and therefore the effects of the crisis can be very serious and long lasting.

Merrill Lynch's salutary example

The recent case of Merrill Lynch proves that realistic medicines, although bitter to swallow, can generate positive effects in the market. Only a few days after John Thain, Merrill's chief executive, had said that the bank did not need more capital, the board approved a complex plan whose main components were the sale of collateralised debt obligations ($30.6 billion of notional value at $0.22 to the dollar, implying further write-offs of $ 4.4 billion in the third quarter); a final settlement in the controversial monoline business; an $ 8.5 billion issuance of common stock, implying an increase in the number of shares of some 38%. Most analysts reacted very well[100] and the Lex Column of the *Financial Times* judged the move "cathartic" and "ahead of the crowd".[101]

More policy action needed

Notwithstanding these favourable judgments, most banks seem still reluctant to follow Merrill Lynch's example. It is therefore important to encourage new issues of capital, however painful for the existing shareholders (but more in the short term than in the long term). The moral suasion that regulators are reported to exert must be strengthened, under a strict cooperative effort, as they successfully in the field of lending at last resort in the past twelve months.

From this point of view, one can argue that the global financial system has to cope with a double shortage: liquidity and bank capital. While the first has been solved with extraordinary measures and an extraordinary cooperative effort that has profoundly changed the lender-of-last-resort mechanisms, the shortage of capital also requires an extraordinary and coordinated effort. This is even more important, as European legislation could prove to be more rigid than America's, as it requires giving shareholders first rights to new equity capital.

Europe's special problem

From this point of view, it is interesting to remember the recent initiative from a group of British institutional investors, who asked for a series of initiatives to make the process of raising new capital easier while maintaining the principle of pre-emption to existing shareholders.[102]

In other words, both from the supply- and the demand-side of bank capital, there are signs of willingness to restore the equity base of the financial industry. Regulators must do all in their power to encourage this trend. It is true that they could have mixed

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[100] Goldman Sachs, William Tanona et al, "Capitulation trade. Painful but necessary to move forward", 29 July 2008. The analyst judged that the "decision to finally sell the majority of its ABS CDO portfolio and write-off its monoline exposure was the right thing to do in order to move the firm forward. [..] Although painful, we believe putting these issues largely behind it will better enable the firm to focus on existing business opportunities in the marketplace".

[101] "CDOh no" (Lex Column), *Financial Times*, 29 July 2008.

[102] Keith Skeoch et al, Respect principle of pre-emption, *Financial Times*, 30 July 2008 and Kate Burgess, Investors propose code for rights issues, *Financial Times*, 30 July 2008.

feelings, because this would mean admitting that banks' capital was not adequate as they had pretended or that they had been aiming at the wrong indicators (risk-weighted assets instead of total assets).

But regulators must face the hard truth, as Merrill Lynch did: "the credit crisis has destroyed the idea that unregulated financial markets always efficiently channel savings to the most promising investment projects".[103] This means that regulation must be thoroughly revised and capital adequacy rules must be strengthened.

Conclusion

Supporting market forces that are already pushing banks to rebuild their capital base, at least to pre-crisis levels, appears to be of the utmost importance. The sooner we acknowledge it, the milder the hangover of the present crisis. Let Achilles reach the tortoise.

Cesari: TARP2: A totally alternative relief programme

18 October 2008

This column argues that current bailout plans do not address the roots of the crisis. It advocates a significant re-regulation of financial markets and assistance to households unable to manage their real estate debt.

After years of deregulation and decades of loose control and mistrust in the systems of surveillance and supervision of financial intermediaries, a disrupting crisis of confidence has erupted in the US and has quickly reached all developed economies.

The "perfection" of this "storm" is, I believe, in the clarity of its origins and its apparently unavoidable and tragic results.

The first version of the Paulson Plan involving $700 billion was rejected by the US Congress because (apart from obvious electoral reasons) you cannot ask people to finance the consequences when the true causes of an economic disaster have not even been considered.

The fundamental causes of this crisis are simply mortgage defaults, the poisoned windfalls of both credit deregulation, allowing lending of no-quality (no-doc mortgages) and financial deregulation, allowing for wild securitisation with abnormal leverages (up to 4000%), and retail selling with no transparency to worldwide individual savers who are, ultimately, the lenders of last resort of the system.

An alternative household-oriented plan

In the US, subprime and Alt-A mortgages, i.e. the riskier mortgages, amount to about $850 and $1000 billion, respectively.

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[103] Paul De Grauwe, Cherished myths fall victim to economic reality, *Financial Times*, 22 July 2008.

Assuming that $1 trillion has been securitised, i.e. included in structured assets, and that the default rate is 50% (at the moment, foreclosure and delinquencies are at about 8% of total mortgages) you obtain a total of about $500 billion.

At a rate of 7%, a 10-year amortising plan requires an annual repayment of $70 billion.

Considering the total $1850 billion of mortgages, total annual repayment amounts to $260 billion.

Therefore, a truly effective Troubled Assets Relief Programme must defuse the two real causes of the crisis by 1) re-regulating the markets (what Paulson did not do in the Blueprint for Regulatory Reform, last March) and 2) helping households unable to manage their real estate debt (what Paulson did not do in September).

In particular, in order to infuse new trust and help the orderly functioning of the markets we need to introduce a compelling re-regulation of assets (assessment of risks with capital adequacy rules), of liabilities (using transparency and fair valuation principles), of all financial intermediaries (supervision of banks, but also of leasing, factoring, and consumer credit firms), and of the markets (providing incentives for the transfer of trading from the abnormal OTC markets to the official ones).

On these points, the Bank of Italy-Centrale Rischi (active since 1962) and Consob-Issuer Rules could represent illuminating experiences.

Secondly, a "mortgage relief plan" for households would produce many positive effects:

- It would provide the required guarantee for the underpinnings of credit derivatives, eliminating the basic cause of this crisis.
- It would be less costly and diluted in time.
- It would counteract the domino effect that is ruining financial firms.
- It would have relevant anti-cyclical effects in the current pre-recession phase.

Of course, such a plan (as any other) would require some time and present difficulties in selecting households truly in trouble with their mortgages. However, the announcement effect would be positive and, in any case, it seems much less difficult to evaluate the income position of a borrower than to price a toxic asset made by credit derivatives with unknown underpinnings.

The approved plan

As an alternative to "real" intervention in favour of households with housing debts, different "financial" plans have been proposed, based on the balance sheets of intermediaries:

- the re-negotiation of debts and maturities;
- the swap between debts and equity;
- the acquisition of troubled assets by the State, using cash (Paulson) or Brady-style bonds (Spaventa)

In the final version of the plan, the original "socialistic" recipe has been somewhat amended with elements of alternative approaches in order to obtain congressional approval and to raise the bill from $700 to $850 billion.

Instead of tackling the fundamental causes, the plan tries to solve their effects by "socialising the losses" of the financial intermediaries while letting the households' asset and liability problems remain a private issue.

The news is that, with the Paulson Plan, a "banker-broker-market maker" State comes to life. Having seen that two wrongs don't make a right, we might try with three.

Boeri: Involving European citizens in the benefits of the rescue plan: The political paradoxes of bank socialism

15 October 2008

Are EU citizens ready to accept the crisis rescue plan that makes massive transfers of resources from taxpayers to the banking sector? This column proposes three ways to share the rescue's benefits with citizens: increased competition in the banking sector, tax reductions for low-wage earners, and temporary relief schemes for families with mortgage problems.

Leaders of the Eurozone finally agreed on a plan. It is a very ambitious rescue plan – as it should be – to stop the self-fulfilling prophecies that brought us to the brink of another Great Depression. But it should now be made acceptable to European citizens.

Making the rescue acceptable to European citizens

In the next couple of weeks we shall see how effective these extreme measures are in reducing the spread between Euribor and the ECB refinancing rate. If they are successful, there will be no need to implement these measures. If they are not, public debts in the Eurozone are bound to skyrocket. If they only partly succeed in reassuring markets, there will be sizeable outlays to the banking sector. The insurance on the interbank market is potentially very costly – before the crisis the overnight volumes in many Eurocountries were of the order of 1-2% of GDP – while the bank recapitalisation plans commit so far up to 20% of the Eurozone GDP and this share is bound to increase further as national plans are unveiled and countries are forced to raise capital to match the core tier one levels of UK banks (too bad that there was no cross-country co-ordination in this respect!).

Is the public in EU countries ready to accept such potentially massive transfers of resources from taxpayers to the banking sector?

True, it is mainly gross debt that will increase. If the banking equity is later sold for a profit, net public debts may actually go down when the crisis is over. It is also true that by saving the banking system, we ultimately save our economies and million of jobs. Nonetheless, there is a non-negligible risk that plans committing this size of resources will encounter strong opposition in national parliaments. Paradoxically, the opposition to

"bank socialism" is likely to come mainly from the ranks of the former supporters of the socialisation of the means of production.

Wealth distribution effects of stock market price drops

So far, the crisis has served to reduce wealth inequalities in Europe. This is due to the relatively low participation of households in financial markets and the relatively low take-up of pension schemes. Micro data on wealth assembled in the Luxembourg Wealth Study project suggest that a reduction of 40% in stock prices significantly reduces wealth of about 6% of Italian families compared to almost 30% of families in the US. The average wealth loss for those hit by the fall in stock prices is also lower in Italy (roughly 5% compared to almost 10% in the US). No doubt, measures dealing with the stock market crash will be perceived as measures benefiting the top deciles – Wall Street against Main Street – and even more so in Europe than in the US.

Another reason why these measures will be hard for the public to swallow is that the Eurozone package postponed much-advertised measures "punishing the bankers". There is a clear sequencing in the international package:

- First, rescue financial systems in order to restore confidence in the markets;
- Next, work on avoiding that all this happens again.

This was the right thing to do.

Mixing up the two phases could backfire, as the current priority is to anchor expectations to rule out domino effects such as those following the failure of Lehman Bros. However, are European citizens ready to accept measures rescuing banks, giving public money to bankers while deferring the punishment of those who were before the crisis earning up to $50 million (Richard Fuld's compensation in 2007) and for banks that were making profits (before the crisis) amounting in some cases to almost 0.5% of GDP (e.g. Unicredit and Banca Intesa)? Are the people ready to accept all this after the last decade's huge increase in income inequalities, driven by the gains of the richest 1% of the population (whose share in total income more than doubled in countries like the US)?

In the last few weeks, economists have been rather successful in inducing governments to come to terms with the financial crisis. At times of extraordinary politics, they were taken extraordinarily seriously by policy-makers, forcing many of them (including George Bush and Angela Merkel) to do embarrassing U-turns. Economists should now be equally effective in addressing the rescue plans' political constraints and in devising ways to involve European citizens in the benefits of this plan. Here are three options to be considered.

Three options for sharing the rescue's benefits with European citizens

1) There is an alternative way to punish banks and bankers that can be implemented immediately – increasing competition in the banking sector.

After experiencing a major liquidity crisis, banks will compete more to attract savings from the households. Removing barriers to competition in the retail sector would drive down profit margins and improve services for citizens. More contestability should also be allowed. Angela Merkel's initial reluctance to accept a European initiative was due to the fear that other countries could put their hands on German banks. The way out of the crisis

will involve a fair amount of bank restructuring. National protections against mergers and acquisitions could severely hamper this process and hence should be removed as soon as possible.

2) Governments have not been at all active in Europe in providing support to low-income families with housing mortgages.

True, the problems are not as acute as in the US, but the increase in Euribor rates (to which monthly mortgage rates are often indexed) is significantly increasing the number of poor families with problems in paying their mortgages. Temporary relief schemes for these families should be devised as long as the rates decline. They should be narrowly targeted to minimise costs and moral hazard problems applied to a large population, but they should be implemented.

3) There is also scope for implementing tax reductions for low-wage earners.

These measures would kill two birds with one stone.

- They would increase the progressiveness of taxation, reducing opposition to the iniquities of bank socialism.
- They would help anchor expectations to a moderate output fall, as the current lack of confidence is also driven by the belief that the crisis will now spread to firms and households leading to a deflationary trap.

Tax deductions for low-income earners have the advantage of acting on both sides – demand and supply. They increase demand as they target the households with the highest propensity to consume and increase supply because induce more people to work without increasing firms' labour costs. As these measures could reduce the informal sector, they would also have a limited impact on the budget.

Editor's note: An earlier version first appeared in the *Financial Times*.

Pagano: What is a reverse auction?

21 October 2008

The Paulson plan envisages that the US Treasury will purchase financial assets held by distressed financial institutions for which there is currently no market. In order to set a price for these toxic assets, reverse auctions have been proposed. As this column explains, one has to be very careful in designing these auctions in the presence of asymmetric information.

One of the most controversial aspects of the recent plan focused on supporting American financial institutions is the possibility that a Treasury agency may buy financial instruments, in particular so-called Mortgage Backed Securities (MBS), for which there is currently no market. The Treasury states that this purchase can be a good deal for taxpayers, since now these MBS can be bought at a very low price, but they can be

expected to appreciate in value as time goes on. Obviously this is only likely to happen if MBS are bought by the Treasury at a sufficiently low price. We do not know yet in detail how the purchase mechanism will be designed. It is obvious though, that if there were to be total discretion in the determination of prices and in the choice of financial institutions to buy from, this would open enormous possibilities of abuse and conflicts of interest. It is therefore advisable to adopt a clear and transparent mechanism for purchases.

On the 23rd of September, in a testimony before the US Senate, Ben Bernanke suggested adopting a method called reverse auctions. What are they? What problems can be generated if they are used to buy Mortgage Backed Securities?

What is a reverse auction?

In a reverse auction the buyer announces an amount he intends to buy and a maximum price. At this point sellers offer the quantities that they are willing to sell at that price. If the quantity for purchase exceeds the quantity the buyer intends to purchase (if supply exceeds demand), the price will be lowered and a new offer will be generated. This practice continues until supply equals demand.

In our case, the buyer is the US Treasury and the quantity to be bought is a certain amount of bonds, say MBS with ten-year maturity and face value of 100 million dollars. At this point potential sellers, i.e. banks that have these securities in their portfolio and want to sell them, announce how many they want to sell at that price. If supply exceeds demand, i.e. in our example the bonds on offer exceed the face value of 100 million, their price will be lowered. Presumably at the lower price, banks will reduce the amount of bonds they wish to sell. If the reduction is sufficient to match supply and demand, the auction will be over and the bonds are sold at the last price announced. Otherwise the price will be lowered yet again, until supply and demand are matched.

This is the simplest design. Another one has the buyer announcing the quantity he wishes to purchase and all potential sellers announcing the prices at which they are willing to tender their bonds. Once the process ends, the buyer purchases from those who announced the lowest prices.

These two designs are not equivalent in terms of final prices that can be obtained, but the choice of design is not particularly relevant in relation to the specific issues discussed in this article.

Possible problems in a reverse auction

Generally when the items on sale are homogenous and have clearly verifiable characteristics, these auctions generate an efficient outcome for the buyer. Unfortunately this is not the case with MBS, which are financial assets whose cash flow is tied to the repayment of the mortgages on which they are based. Two apparently identical MBS, say with the same maturity and interest rate, can have very different values depending on the solvency of the underlying mortgages. The main problem is the asymmetric information on the solvency and therefore on the cash flow likely to be generated by these mortgage loans: a financial institution that has certain securities in its portfolio, invariably knows better than others how reliable those securities are.

Let us imagine for example, that as a result of the auction, a bank sells securities for 10 million dollars at 50% of the face value. Out of all the securities that can be used to

satisfy the buyer's requests, which ones will the bank choose? Obviously those that they know have a lesser chance of being repaid, typically those that are worth less than 50%. The result is a loss for the buyer.

This is exactly the reason why these securities are so illiquid. Indeed, if there was no asymmetric information, private parties would start trading these securities, liquidity issues would disappear and it would be easy to establish their market value. Because of the market's failure due to asymmetrical information, the Treasury decided to intervene. But quite obviously "you can't have your cake and eat it".

Buying securities under these conditions inevitably creates the risk of overpaying

An easy way to eliminate the adverse selection problem is to buy all the securities of a specific category, or almost all of them. Unfortunately, in this case a reverse auction is not a good selling mechanism. As a matter of fact, the higher the demand, the higher the buying price will be. If there is demand for all the securities of a specific category, the selling price will be the opening one and will have to be high enough to induce sellers to get rid of all securities, even the most reliable ones. Therefore, the problem reappears again in a different form.

How to alleviate these problems

In the presence of asymmetric information, it is very difficult to avoid inefficiencies. However, there are ways to alleviate the problems. To begin with, several different auctions are needed for different securities, instead of fewer auctions with rough specifications of the securities for sale.

For example, instead of having a single auction for securities with a 5 year maturity, one could have different ones depending on the date at which mortgages were signed, depending on whether the interest on them is variable or fixed, etc. The more detailed the specification of securities, the lesser the adverse selection problems. Even so, a certain degree of heterogeneity is bound to remain. In a very recent paper on reverse auctions, the economic consultancy firm NERA estimates that there are more than 100,000 different types of MBS. It is obviously impossible to have an auction for every different type, especially if time is limited.

In an article on the Economists' Voice, Larry Ausubel and Peter Cramton, two influential auction theorists, suggested specifying before the auction that securities bought from the Treasury will be resold in a certain amount of time and that selling banks will be fined if prices are lowered.

For example, let us imagine that the Treasury buys an MBS from a bank with a face value of 100 at a price of 30. If the mortgages behind the MBS do not go in default and payments continue, in a year's time the MBS will be worth more. If payments, instead, are interrupted, the MBS will be worth less and the Treasury will suspect that the bank knew about the solvency risk of that MBS and played a dirty trick. In this case Ausubel's and Cramton's suggestion is for the Treasury to resell the security through another auction and ask the bank to pay at least in part for the price reduction.

Obviously such a mechanism would discourage banks from "being too clever", since they would be paying more at a later date. The main risk is that this mechanism may be very

ineffective with more troubled banks. If there is a high chance of bankruptcy over a short horizon, then the fear of being fined in the future will have a small deterrent effect.

Gros: 'No recourse' and 'put options': Estimating the 'fair value' of US mortgage assets

27 September 2008

How much are the toxic assets worth? A bit of logic and a straightforward application of the Black-Scholes formula suggests that if current expectations of house price declines are right, securities built on subprime mortgages might be close to worthless. The key is that US mortgages are 'no recourse' loans, i.e. debtors can walk away from the mortgage without being held personally liable, a feature that gives homeowners a virtual put option.

A key issue for the $700 billion bail out plan now being finalised is the pricing of the 'toxic assets' the US Treasury should buy. The main target of the Paulson plan is the market for securities based on low quality mortgages (sub prime and 'Alt A' mortgages). This subclass of the general universe of RMBS (residential mortgage-based securities) has become illiquid. How should these securities be priced? In the few market transactions still taking place their value has often been less than 50 cents to the dollar of face value. But it is difficult to establish a reliable market price. Are there any other ways to assess their value?

This column discusses a simple way to thinking the valuation of mortgages and the establishment on fair prices for these securities. Preliminary calculations suggest that the value of securities based on lower quality mortgages might indeed be very low.

How to estimate the value of residential mortgage-based securities

The starting point is a key feature of the US mortgage market, namely that most loans are *de facto or de jure* 'no recourse'. This means that the debtor cannot be held personally liable for the mortgage even if, after a foreclosure, the bank receives only a fraction of the total mortgage outstanding from the sale of the house.

With a 'no recourse' mortgage, the debtor effectively receives a virtual put option to 'sell' to the mortgage-issuer the house at the amount of the loan still outstanding. Mortgage lenders are 'short' this option, but this is not recognised in the balance sheets. In most cases, the balance sheets of the banks report mortgages at face value – at least for all those mortgages on which payments are still ongoing.

All RMBS, especially all securities based on low quality mortgages, should also take this put option into account in their pricing. It appears that this had not been done when these securities were issued. In particular it appears that the ratings agencies neglected this point completely when evaluating the complex products build on bundles of mortgages. A key input in banks balance sheets and the pricing of RMBS should thus have been a valuation of the put option given to US households.

Given certain basic data, it is actually fairly straightforward to calculate the value of the put option in a standard 'no recourse' mortgage.

The following calculations are for a mortgage of $100, which has an implicit put with a strike price equal to the loan to value ratio (LTV) because this is the amount for which the owner of the house can 'sell' his house to the bank. Most of the key inputs needed for the pricing of this option are in fact relatively straightforward. In the following it is assumed that mortgages run for 10 years, and that the riskless interest rate is 2% and the interest rate on mortgages is 6%.

It is more difficult, however, to put a number on a key input in the value of any option, namely the (expected) volatility in the price of the underlying asset. Recent data might be misleading, since prices had been steadily increasing until 2006, but then started to decline precipitously. Over a longer horizon the standard deviation of the Case Shiller index has been around 5% per year, but over the last few years the volatility has greatly increased. The figure is about 10%, if one looks only at the years since the start of the bubble (2002/3). The following will concentrate on the low volatility case (5% standard deviation). It turns out, however, that this parameter is not as significant as one might first think. Under the high volatility case (10 % standard deviation) the losses would be under most circumstances only moderately higher.

Applying the usual Black-Scholes formula to a typical subprime loan with an LTV ratio of 100% yields the result that the value of the put option embedded in the 'no recourse' feature is 26.8% of the loan, even in the low volatility case. For a conforming loan (a loan that could be insured by Fannie or Freddie) with a loan to value ratio of 80%, the value of the put option would still be close to 14% (still in the low volatility case). This implies that all sub prime loans (and other mortgages with a high LTV) were worth much less than their face value from the beginning. It is evident that the risk of a mortgage going into negative equity territory diminishes sharply with the loan to value ratio. For example, with an LTV of 60% the put option is worth only 2.8%.

In reality it is not the case that all mortgages with negative equity (where the present value of mortgage payments is higher than the value of home) go immediately into default since a default on a mortgage (and a subsequent foreclosure) still has a cost to the household in terms of a poor credit record, some legal costs, etc. This fact could be taken into account by just adjusting the strike price by the implicit cost of a worse credit history, etc, maybe by around 10%. However, a foreclosure usually leads to rather substantial costs for the bank, which can be a multiple of the amount of negative equity that is calculated by using standard house prices indices. A sheriff sale often fetches a much lower price than a normal sale in which the time pressure is not that great. The loss to the mortgage lender is often far in excess of 10% of the value of the home. These two effects thus tend to offset each other and the second might even be larger. It is thus likely that the value of the option as calculated here does appropriately reflect the risk for banks, and might even constitute a slight under estimation.

Given the high value of the put option on mortgages with high LTV ratios (i.e. especially subprime) it is not surprising that the value of the securities build on these mortgages should be rather low. The first loss tranches (e.g. first 10 % loss) are obviously worthless when the put option is worth already close to 28 %. Taking this put option feature

properly into account shows why all except the 'super senior' tranches of an RMBS based on sub prime mortgages can easily fall in value below 50 cents to the dollar.

How much are the assets still on the banks' balance sheets worth?

Another implication of the approach proposed here concerns the 'fair value' accounting of the $3.6 thousand billion of mortgages still on the balance sheets of US banks. The value of the put option granted to US mortgage debtors should reflect approximately the amount of capital the US banking system would need in order to cover itself against further fluctuations in house prices.

Little is known about the quality of the mortgages that are still on the balance sheets of US banks. It must be assumed that most of them are not conforming to the standards (limits on LTV, documentation, size, etc.) set by the (now) state-owned mortgage financing institutions Fannie Mae and Freddie Mac, since banks could make substantial savings on regulatory capital by re-financing conforming loans. It is thus likely that the mortgages still on the balance sheets of US banks are either jumbo loans (Fannie and Freddie refinance-only mortgages of up to around $400 thousand) or lower quality ones. Assuming a realistic distribution of loan to value ratios, the average value of the put option embedded in all mortgages would be around 9.5% in the low volatility case and 12.7% in the high volatility case (10% standard deviation for house prices). Given that the overall stock of mortgages still outstanding on the balance sheets of commercial banks is around $3.6 thousand billion, this implies that the US banking system would need between $340 and $460 billion just to cover itself against the variability in house prices. Under 'fair value' accounting, this is the amount of losses the US would have to book today if they recognised the put option as being implicit in the 'no recourse' mortgages on their books.

The total stock of mortgages outstanding in the US is about $10 thousand billion. However, the market value of these mortgages (whether still on banks' balance sheets or securitised and embedded in RMBS) is in reality lower by $1-1.2 thousand billion, if one takes into account the value of the put option granted to US households.

Why was the value of this option not recognised earlier? One simple reason might be that as long as the housing bubble lasted it was generally assumed that house prices could only go up, as they had over the 1990s. The average annual increase in house prices had been about 5% in the 15 years to 2006. If that number is projected into the future the value of a put option even on a sub prime mortgage with an LTV of 100% would have been below 5%, as compared to the 26.8% mentioned above, if one uses the standard assumption that the price of the underlying (house prices) follows a random walk without drift. Viewed from the perspective of ever-increasing house prices, the risk of negative equity seemed minor. Expectations about house prices have now changed completely, however. If one were to assume that house prices will decline by 3% annually over the next decade, the value of the put option would be even higher than calculated so far. For a sub prime mortgage with an LTV of 100% the value of the put option would be over 40% of the mortgage, and even for a conforming loan (80% LTV) the put option would still be worth 30 cents to the dollar. The value of the put options on which the US banking system is short would then be above $900 billion, and the total losses on all US mortgages could amount to over $2 thousand billion.

If expectations of future house price declines are now appropriate, the value of all the securities built on sub prime mortgages might be close to zero. It remains to be seen what pricing, and thus what underlying hypothesis is going to be used for the $700 billion rescue plan.

Editors' note: this first appeared as CEPS Commentary, 23 September 2008 and CEPS retains the copyright.

Annex

Details for the calculation of value of a put option embedded in 'no recourse' feature of US mortgages.

Underlying Price	Loan to value ratio
Exercise Price	100
Time until expiration	10 years (mortgages tend to be long term)
Risk free interest rate	2%
Yield	6%
Volatility	5 % (low volatility case) and 10 % (high case).

Distribution of mortgages by loan to value ratio

Value of put option under low volatility case.

LTV	Weight	Value of option (in cents on the dollar) under different expected future house price changes		
		+5% p.a.	Zero	-3% p.a.
100	0.1	4.7	26.8	43.4
90	0.1	1.8	20.8	38.9
80	0.2	0.4	13.8	33.4
70	0.2	0.1	6.7	26.8
60	0.2	0	1.8	17.7
50	0.2	0	0.2	7.6
Average		0.8	9.3	25.3

Source: Own calculations based on options calculator from www.option-price.com.

Suarez: Bringing money markets back to life

13 October 2008

Government guarantees are no substitute for supervision – they are a complement. Free from short-term liquidity pressures, supervisors should focus on banks' long-term prospects and limit their behaviour or encourage restructuring as needed.

During the last couple of weeks, governments and economists have become increasingly inclined towards the temporary insurance of a broad set of bank liabilities (including, at least, retail and interbank deposits), a policy option that I already defended in March 2008.[104] In this column, I revisit some of the arguments that support the desirability of this emergency measure and its potential to bring money markets back to life.[105]

The current banking crisis is characterised by two strongly related ingredients: (i) the general concern about the possibility of experiencing a long sequence of bank failures around the globe, and (ii) the collapse of money markets. These ingredients share a common cause, the prior excesses in subprime lending and securitisation. The rise in counterparty risk due to the presence of some unidentified potentially insolvent banks created a severe "lemons problem" that, together with the self-fulfilling power of confidence crises in banking, led to the collapse of money markets. In the absence of active interventions, the normal functioning of money markets will only be restored once the current concern on counterparty risk disappears.

A temporary and aggressive extension of government guarantees on a broad set of bank liabilities could temporarily reverse the connection between the concern about bank failures and the money market collapse. If money markets lose their panic mood and recover their vitality, banks and supervisors may concentrate their efforts on sorting out the mess in banks' balance sheets without having to worry about the refinancing of the maturing fraction of each bank's debt. Restoring the exchange of funds from agents with financial surpluses to agents with financial deficits would prevent further damage to the capital positions of banks and firms with net refinancing needs, reduce the inefficiencies associated with a severe credit crunch to firms and households, and facilitate a quicker macroeconomic recovery.

Rather than a sign of desperation, a concession to greedy bankers, or a further step in the moral hazard logic, adopting this measure can be an effective way to minimise the losses of the crisis to the society as whole.

Urgency of the situation

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[104] For details, see "The Need for an Emergency Bank Debt Insurance Mechanism", CEPR Policy Insight No. 19, March 2008.

[105] Conversations on an earlier version of this proposal with Benjamin Alonso, Max Bruche, Stephen Cecchetti, Darrell Duffie, Abel Elizalde, Anil Kashyap, Luc Laeven, Rafael Repullo, Fernando Restoy, Jean-Charles Rochet, and participants in the 2008 European Summer Symposium in Financial Markets in Gerzensee were especially useful to shape the opinions expressed in this column, of which I am solely responsible.

As it has been extensively pointed out elsewhere, the roots of the current crisis are at the global and massive spreading of risks associated with a severely inflated US housing market (and its dangerous subprime mortgages) through a complex range of credit default derivatives, securitisation vehicles, and the explicit or implicit credit enhancements provided by the originators.

In the summer of 2007, the news on a first bunch of defaults on these products and their subsequent and radical downgrading created a huge increase in counterparty risk. An immediate implication was the widening of spreads and shrinkage in the volume of transactions on global money markets. After months of speculation on which bank would be the next to fail – either due to the disclosure of subprime-related losses or refinancing problems caused by the lack of confidence of its potential financiers (including the shareholders) – the casualty count is appalling and – worse – there is no evidence that the process is nearing a natural end.[106]

These months have shown that no government is willing to assume the consequences of *ex post* denying support to its "systemically important" institutions. There has been *ad hoc* commitment of public funds or the extension of public guarantees to some bank liabilities. We have seen them offered on a bank-by-bank basis, as in the case of Fortis, and on a more system-wide basis, as in Ireland. Interpreting these measures as acts of desperation and alluding to moral hazard concerns, many authorities were initially reluctant to imitate their presumably more desperate peers. Meanwhile, money markets remained inoperative, the credit crunch became tangible for an increasing number of households and firms, and the worst expectations about the prospects of the economy as a whole gradually unfolded.

Money markets' failure

Banks are crucial intermediaries in capital markets, facilitating the transfer of funds from many agents with financing capacity to many agents with financial needs. In normal times, access to interbank markets or other money markets allows many banks to lend many more funds than those taken from their depositors, and vice versa. Entire national banking sectors can be net lenders or net borrowers of other banking sectors (or the rest of the world) through capital markets. This creates a complex network of interdependencies, risk-diversification, and systemic risk, but it also contributes to funds flowing from the most abundant sources to the most profitable uses.

In general, the flow of funds between banks and across national banking systems is a natural implication of reasonably integrated national and international financial systems, increases aggregate investment and output, contributes to economic growth, and is welfare-improving. Of course, market failures may also occur (and call for public intervention), as in other markets. The list of candidate market failures in capital markets is long, if only because of the information, incentive, contract-enforceability, and

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[106] Even in the US, the recently approved Treasury Plan will take time to apply and there are numerous uncertainties on the particular way (price, time, etc.) in which each institution will manage to get rid of its toxic assets. Up to the full execution of the plan, markets may fear that a bank may go under and its creditors may suffer losses.

confidence problems to which the trade in "promises to pay" is most vulnerable. Public intervention will typically take the form of regulation, sometimes accompanied by arrangements such as deposit insurance schemes that may involve taxes, subsidies, and transfers.

In the case of subprime-related products, the mispricing associated with the housing market bubble and a clear underestimation of the underlying risks by almost all the involved players (including the regulators), created a terrible misallocation of resources. The US housing market (and, to a lesser extent, other housing markets with booming prices) received excessive credit in the sense that part of the savings directed to that use through markets and banks were, arguably, misallocated. In parallel, however, the same markets and many banks were performing the useful function of applying other funds available across the planet to their most profitable uses.

The prolonged disturbance of money markets is producing a severe form of financial market segmentation. Roughly speaking, banks seem bound to lend at most the funds that they can take as deposits. However, both loans and deposits are, to a large extent, local products, since they are commonly attached to a variety of information-intensive relationships and services that are local in their nature (personal attention, advice, monitoring, and some of the payment services). Hence, forcing banks to restructure their existing costumer bases and to lend and borrow under the new constraint that no net financing can be obtained out of their own local (insured) deposit market can be terribly restrictive.

Neighbouring banks would likely enter wars for deposits in the short run and many of them may be forced to reduce their lending relative to their pre-crisis levels, with no guarantee of other banks replacing them, especially in the short run and in economies with banks that have been structurally receiving net financing from abroad.[107] The most immediate manifestation of this misallocation of resources would be the deepening of the credit crunch and an increased fear of macroeconomic depression. Additionally, the process of adjustment would also have a cost in terms of lowered bank profitability, worsened solvency, more bank failures, and more costly rescue packages. The parallel deterioration of government accounts will not help. The vicious circle, unless effectively short-circuited, might lead the global economy into the worst recession in recent history.

Proposed response

It is time to manage the exit from the current crisis in the least socially costly way. Extending a temporary and aggressive guarantee on a broad set of bank liabilities (including, at the very least, retail and wholesale deposits) will bring the corresponding segments of the money market back in operation, not only reviving their usual trade but also absorbing some of the normal trade of the uninsured segments. The key role of money markets in the allocation of funds will be restored, pressures on central banks to act as substitutes for the missing market will vanish, and the possibility of a credit crunch

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[107] Some reduction in credit relative to pre-crisis levels would be perfectly justified by the new demand conditions of the recession as well as the correction of prior mispricing affecting, essentially, mortgage related credit.

artificially exacerbated by some banks' refinancing problems will become more remote. The restored money market transactions may become useful sources of information for supervisors to keep track of the institutions they oversee and for central banks to manage liquidity provision and monetary policy actions in a more effective way.

The insurance of bank liabilities should be provided by the governments in charge of supervising each bank (in the European Union, essentially the governments of the "home country" where the bank is domiciled). An exception should be made in the case of banks whose size is excessive relative to the country of reference, where special arrangements based on multilateral cooperation or the involvement of an international organisation to which the role is delegated should be promptly devised.

Government guarantees are not a substitute for supervision but a complement. Free from short-term liquidity pressures, supervisors should focus on banks' long-term prospects and limit their behaviour or encourage restructuring as needed. Supervisors should continue exerting discipline through the usual means (capital regulation and prompt corrective action) and explore new ones, based on, for example, establishing an upper limit to the total borrowing under coverage and conditions that can increase or decrease it over time. In the spirit of the Basel agreements on capital requirements, the upper limit might be related to the bank's capital and perhaps also to some objective measure of the risk of each bank's assets. Supervisors should be granted powers to use the threat of announcing the withdrawal of the guarantees for future borrowings as a means of encouraging banks to undertake controlled asset sales or fresh equity injections, or to move into a gradual use of uninsured borrowing once the crisis is resolved.

The harmonised introduction of the arrangement by a number of important countries (for example, at the level of the whole European Union or a large subset of its members) will definitely facilitate its success in restoring the functioning of international money markets and minimise criticism of its potential to "unlevel the playing field" in international banking. However, if harmonisation is not feasible in a timely manner, countries should proceed with their unilateral adoption. The urgency of the situation and the genuine value-added of the scheme, relative to its potential to cause negative externalities to non-joining neighbours, should outweigh the standard "fair play" arguments. Hopefully, proving the arrangement's advantages in a few countries will soon cause others to follow suit.

Acharya and Sundaram: The other part of the bailout: Pricing and evaluating the US and UK loan guarantees

26 October 2008

The recapitalisation aspects of the October rescue packages have been widely analysed by the world's most effective think-tank in this crisis – the blogosphere. Here finance professors from LBS and NYU evaluate the rescue packages' loan guarantees. The UK scheme has the flavour of a small tax, and is partly market-reliant; the US plan the flavour of a $50 billion subsidy, and is almost fully government-reliant. The UK scheme is likely to lead to a separating equilibrium, in which banks whose credit risk is lower

than the market's perceptions opt out. The US scheme will force a pooling outcome wherein all eligible banks – regardless of their health – participate because it is not possible to re-enter later. Which scheme works better depends upon the depth of the coming recession. The UK scheme assumes that following the recent capital infusions, even the unhealthy players are now solvent and are unlikely to fail. If the financial crisis worsens, this may prove incorrect.

To thaw frozen credit markets, governments on both sides of the Atlantic have taken a two-pronged approach – bank recapitalisation and loan guarantees. Specifically, the US, the UK and some European governments are re-capitalising their troubled financial institutions. They are also trying to kick-start interbank lending by announcing plans to guarantee all new senior unsecured debt out to three years.

The recapitalisation has received plenty of attention, but the load guarantees have largely flown under the radar – despite the huge sums involved. This raises questions:

- Are there taxpayer costs to loan guarantees?
- How big are the costs to taxpayers likely to be?
- What are the relative merits of the US and the UK schemes?

First, some details concerning the schemes.

The US and UK Guarantee Schemes

In the UK, nine financial institutions have been identified as initially eligible for the program (though more may be added later at the discretion of the UK Treasury). Senior unsecured borrowings of these institutions made on or prior to 13 April 2009 will be guaranteed by the UK government for a period of 3 years or maturity of the issue, whichever comes first. Participation in the program is optional, not just at the institutional level, but also at the *issue level*; that is, a prospective borrower wishing to issue a "Guaranteed Liability" applies to the UK government for a guarantee on that particular issue. Limits on the total volume of guarantees that may be sought by any one institution have not been laid out explicitly, though the UK Treasury has announced a cap of GBP 250 billion as the maximum amount of liabilities that will be guaranteed under the scheme.

The US program, administered by the FDIC, works very differently. *All* banks, depository institutions, and savings and loan companies are eligible to participate in the program. Institutions *not* wishing to participate in the program must inform the FDIC by 12 November 2008. If an institution does not opt out of the program, then *all* senior unsecured loans issued by it between 14 October 2008 and 30 June 2009 will be guaranteed by the FDIC for a maximum period of three years or until maturity of the debt, whichever comes first. The only exception is if a participating institution informs the FDIC (again prior to 12 November 2008) of its desire to also issue, during this period, *non-guaranteed* long-term debt maturing after 30 June 2012, in which case the guarantee applies to all new senior unsecured issues except these long-term issues. The maximum amount of liabilities issued by a single institution that will be guaranteed by the FDIC is 125% of the outstanding senior unsecured liabilities of the institution as of 30 September

2008; but unlike the UK, no cap has so far been proposed on the overall liabilities that will be guaranteed under the plan.

The Fees

Unsurprisingly, given the differences in the schemes, the pricing of the guarantees in the two countries is also along very different lines.

In the UK, an institution seeking a guarantee on an issue will be charged an annual fee of 50 basis points *plus* that institution's median 5-year credit-default swap (CDS) spread observed in the 12 months before 7 October 2008.

As an example, on 21 October 2008, Barclays decided to issue GBP 1 billion in 3-year senior unsecured bonds backed by the UK government's guarantee. Since Barclays' median 5-year CDS spread over the 12 months to 7 October 2008 was around 82 basis points, Barclays will be paying the UK Treasury a figure of 1.32% — about GBP 13.2 million — per annum for the guarantee. A few days earlier, on 17 October, taking advantage of the issue-level optionality available in the UK scheme, Lloyd's TSB elected to issue a GBP 400 million debt issue *without* seeking a guarantee. Lloyd's median CDS spread during the relevant period was only 62 basis points, among the lowest of any UK or US financial institution.

In the US, each participating institution will pay a flat 75 basis points per annum on the entire amount of its new senior unsecured liabilities (subject to the 125% cap mentioned above). If the institution has informed the FDIC of its intent to also issue non-guaranteed long-term debt, then the 75 basis points fee applies to the guaranteed portion of its new debt issues. But in the latter case, the institution must also pay a one-time fee of 37.5 basis points of that portion of its senior unsecured liabilities as of 30 September 2008, that will mature on or before 30 June 2009.

So, for example, under the US scheme, both Morgan Stanley – whose relevant median five-year CDS spread was over 159 basis points – and Bank of America – whose relevant median spread was 85 basis points (among the lowest of any major US bank) – would both pay the same 0.75% fee (about $7.50 million per year on a $1 billion guaranteed issue) despite the large difference in their market-perceived credit risks.

Question 1: Tax or Subsidy?

Table 1 presents information on the median 5-year CDS spreads on the eligible British banks over the one-year period expiring 7 October 2008.

Even a casual glance at these numbers suggests that the British Treasury's fees are a great deal higher than the proposed American flat fee structure (0.75% versus anything between 109 basis points for HSBC to over 178 basis points for Nationwide).

Are the British fees too steep — effectively levying a tax on participating banks — are the American fees are too low, with the taxpayer subsidising the banks?

Providing a meaningful answer to this question requires identifying a benchmark "fair price" of a three-year sovereign guarantee. Three benchmarks seem relevant. (Note we are in uncharted territory here; there is no history of sovereigns writing default protection on market issues of debt and pricing these off market quotes. The numbers we describe in this analysis should therefore be taken as indicative amounts rather than literally.)

- The *market* price of a similar three-year guarantee is a useful place to begin, namely the spread on a 3-year CDS.
  However, this market price represents a private, not sovereign, guarantee, and so is of lower quality. Using this approach will result in estimates that are possibly too generous to the banks.
- An alternative is to compensate for this undervaluation by adding the three-year swap spread to the three-year CDS spread.
  Roughly speaking, the three-year swap spread measures the difference between the three-year borrowing rates of an AA-rated institution and the Treasury in each country, and so is a measure of the difference in credit quality of the sovereign and the "best" private borrowers. However, the greater liquidity of Treasuries may also widen the spread, so some portion of the spread may be due to liquidity factors.
- As a third option, to account for potential liquidity effects that may widen the swap spread but have nothing to do with credit risk, we can take the mid-point of the first two estimates.

We compare the fees below under all three alternatives.

Alternative 1: The first alternative we consider is where the fair value of the government guarantee is estimated as the market value of the three-year CDS spread plus the three-year swap spread.

The three-year swap spread over the last year has been on average around 90 basis points in both the US and the UK. For the 3-year CDS spread, we take the median value of the 3-year CDS spreads over the 12 months ending 7 October 2008. We note that these median spreads are well below the spreads prevailing in recent days (see, for example, the last two columns of Table 1 that describe CDS spreads as of 10 October 2008). The fourth column of Table 1 describes the resulting fair values by financial institution in the UK and the US.

The UK numbers

Table 1a: CDS fees and loan guarantee fee for the UK banks

Bank	Median 3-year CDS fee in year up to 7 Oct 2008 (bps)	Median 5-year CDS fee in year up to 7 Oct 2008 (bps)	Loan guarantee fee (median 5-year CDS + 50 bps)	"Fair-price" guarantee fee (median 3-year CDS + 90 bps)	3-year CDS fee as of 10 Oct 2008 (bps)	5-year CDS fee as of 10 Oct 2008 (bps)
Abbey National	56.5	72.6	112.6	146.5	76.5	83.3
Barclays	66.0	81.4	131.4	156.0	122.9	137.5
HBOS	93.3	112.7	162.7	183.3	180.0	185.0

HSBC	48.5	58.8	108.8	138.5	67.7	77.5
Lloyds TSB	55.6	62.5	112.5	145.6	102.4	105.0
Nationwide	122.8	128.3	178.3	212.8	248.7	291.8
Royal Bank of Scotland	73.5	85.9	135.9	163.5	185.1	190.0
Standard Chartered	50.3	67.5	117.5	140.3	80.7	91.7
Average	70.8	83.7	133.7	160.8	133.0	136.5

Source: Datastream.

The average guarantee fee over all eligible institutions works out to 133.7 basis points, whereas the average fair price works out to 160.8 basis points. This means an average *subsidy* of 27 basis points per year. If the entire available guarantee amount of GBP 250 billion is taken up, the resulting subsidy to be borne by UK taxpayers is of the order of about GBP 0.675 billion per year, or about GBP 2 billion over the three years of the scheme. The figure will be higher if the stronger banks opt out of the scheme, but even if only the four weakest banks participate in the scheme, the subsidy estimate rises to only about GBP 3.4 billion.

US numbers are of a different order altogether

The guarantee fee for all institutions is 75 basis points, while the average fair price works out to almost 120 basis points higher at 194.9 basis points. Assuming a total guarantee figure of $1.5 trillion (an estimate that is likely on the lower side), this means an annual government subsidy to the participating banks of $18 billion, or well over $50 billion over the three years of the scheme.

Table 1b: CDS fees and loan guarantee fee for the US banks

Bank	Median 3-year CDS fee in year up to 7 Oct 2008 (bps)	Median 5-year CDS fee in year up to 7 Oct 2008 (bps)	Loan guarantee fee (bps)	"Fair-price" guarantee fee (median 3-year CDS + 90 bps)	3-year CDS fee as of 10 Oct 2008 (bps)	5-year CDS fee as of 10 Oct 2008 (bps)
Bank of America	71.0	85.0	75	161.0	149.1	186.2
Citigroup	100.0	115.2	75	190.0	367.2	341.7
Goldman Sachs	109.0	107.0	75	199.0	605.2	540.0

JPMorgan Chase	70.6	85.0	75	160.6	152.1	162.5
Morgan Stanley	174.1	159.4	75	264.1	1621.6	1300.9
Average	**104.9**	**110.3**	**75**	**194.9**	**579.0**	**506.3**

Source: Datastream.

Alternative 2: What if we take a very generous (to the banks) approach and use the unadjusted 3-year CDS spread to represent the fair value of the guarantee? In this case, the average CDS spread for UK banks is around 70.8 basis points, about 63 basis points *less* than the average fee of 133.7 basis points. In this case, the UK fee represents a *tax* on participating banks that amounts, over the three years of the scheme, to over GBP 4.5 billion. If only the four weakest banks participate, then the tax figure falls to about GBP 3.3 billion.

But even if we use the unadjusted three-year CDS spreads for the US banks, a substantial subsidy remains. The average three-year CDS spread works out to 104.9 basis points against the fee of 75 basis points. This means a subsidy of 30 basis points per guaranteed dollar per annum, or about $13 billion over three years on a guaranteed principal amount of $1.5 trillion.

Alternative 3: As a final computation, we take the mid-point of the two earlier estimates. The cost of the guarantee scheme to UK taxpayers ranges between a low estimate of –GBP 4.5 billion and a high estimate of +GBP 2 billion. Averaging these estimates results in a figure of –GBP 1.25 billion, i.e., in a *tax* on the banks of about GBP 1.25 billion. If only the four weakest banks participate, then these low and high estimates become -GBP 3.4 billion and +GBP 3.3 billion, for an average cost near zero, meaning the scheme breaks even.

The high and low estimates for the US are, however, $13 billion and $54 billion, so even the average of these numbers leaves US taxpayers with a bill of over $30 billion over the three-year period.

Question 2: Optional Participation and Pooling/Separating Outcomes

As we have noted earlier, the US and UK schemes have very different optionality features for the participating banks. What are the implications of these differences for take-up of loan guarantees and easing of inter-bank lending and other credit markets?

UK scheme to produce a separating equilibrium

The UK scheme is likely to lead to what economists term a *separating equilibrium.* Banks (with some hindsight, HSBC and Lloyds TSB) whose credit risk is lower than the market's perceptions can opt out since the loan guarantee scheme provides them little subsidy relative to the fair price for guaranteeing their debt (and potentially imposes a cost). And there is no cost to opting out. In contrast, banks whose credit risk is worse than market's perceptions would find it costly to opt out and thus avail of the scheme. This separation will reveal to the markets which banks are healthy and which are not. It should be noted that the UK capital injection scheme has similar features too: it allows healthy

institutions to opt out of accepting government infusion, and indeed HSBC, has opted out there as well.

US scheme to produce a pooling equilibrium

In contrast, the US loan guarantee scheme will force a *pooling* outcome wherein *all* banks within the eligible set – regardless of their health – will participate because it is not possible to re-enter later should conditions worsen and capital become even harder to access. To this stick is attached the carrot of guarantee rates that seem to be heavily subsidised relative to fair price. As an aside, we note that the US capital infusion plan too involved such pooling, with none of the nine eligible institutions allowed to opt out.

One would expect that in either case, government guarantees of bank debt should boost inter-bank lending in the near future. The question really is whether they will thaw markets sufficiently that the guarantees are not relied upon any further. On this front, the separating and pooling outcomes have sharply differing implications.

By revealing healthy banks from the pool, the separating outcome enables banks and markets to provide credit at prices that more accurately reflect the credit risk of counterparties. Such pricing of credit risk is also an important step in ensuring lending markets continue to function in an orderly manner once guarantees are removed. Separation also enables healthy banks to signal their quality to other banks and markets, making it costly for the unhealthy ones to raise debt and equity capital in future. Thus, the UK scheme, by design or coincidence, aims to achieve a market-style outcome at little cost to taxpayers (and possibly even at negative cost). All this is to the good.

The pooling outcome, in contrast, may keep the system reliant on government guarantees for a longer period since it does not facilitate a better pricing by banks and markets of individual banks' credit risk. It effectively gets healthy banks to subsidise the borrowing of unhealthy ones and does not impair capital-raising ability of the latter. The US scheme is best characterised as a bailout that transfers taxpayer funds to the banking sector.

But might the UK scheme end up being too harsh under some scenario? The answer is: it depends on the evolution of the financial crisis over next several months.

US vs UK schemes if the financial crisis deepens

The UK scheme implicitly relies on the assumption that following the recent capital infusions, even the unhealthy players are now solvent to a point that they are simply unlikely to fail in foreseeable future. If the financial crisis deepens further, due to global macroeconomic woes or revelation of more losses linked to imprudent lending, this assumption may prove incorrect. Under this pessimistic scenario, the unhealthy banks, having been separated out, will find it more difficult to issue capital and/or borrow and potentially fail. The inter-connectedness of banks may transform a significant bank failure, through contagion risk, into a systemic crisis that once again causes credit markets to freeze. And, the unhealthy banks, that took the government recapitalization and loan guarantees, will be forced to rely even more on taxpayer money. That is, the strength of the UK scheme – its attempt to achieve a market-style outcome – could end up being its Achilles' heel in case of further market stress. In contrast, the US scheme, by being a government bailout, has the one virtue in that it will ensure smoother tiding over such stress in future.

Conclusion

How should governments assist banks during a severe systemic crisis: in the UK style that uses market information in its operation and looks to separate healthy and unhealthy institutions, or in the US one-solution-fits-all style? The answer is ambiguous.

The only clear picture that emerges at this stage is that the US and the UK schemes – both part of a globally coordinated rescue plan – in fact sit at opposite extremes – one with the flavour of a subsidy, the other laden with a tax; one partly market-reliant, the other almost fully government-reliant. Which one will emerge better? We will be able to tell only once we gauge the depth of looming recessions.

Gros and Micossi: The beginning of the end game…

20 September 2008

The radical moves in the US have direct implications for European banks and indirect implications for European governments. This column discusses the likely channels and notes that several European banks are both too big to fail and may be too big to be saved by their national governments alone.

The US financial system is being nationalised. The piecemeal approach which culminated with the AIG operation was clearly not working. The US government had taken control of its biggest insurance company just two weeks after it had to save Fannie and Freddie, by far the world's largest mortgage underwriters. All this was not enough to restore orderly market conditions, hence the US political system is working over time to find a general solution whose outline is already apparent. The US government is going to buy the so-called "toxic" assets still on the banks' balances and will then recapitalise the banks to the extent that they make losses. As a result, it will soon own a large share of its own banking system. If the details are generous enough, this will finally be enough to restore orderly market conditions. It is not going to be the end of the story, as it is likely that a number of medium-sized regional banks heavily exposed to the real estate market (through mortgages, not "toxic assets") will soon have to be saved as well.

It is fitting that the first institutions to be formally nationalised in this crisis were not banks in the traditional sense, but institutions (Fannie and Freddie, AIG) that were supposed to play only a supporting role in the financial system.

The AIG operation: "Haircut" without the hair

Formally, the AIG operation is composed of two separate elements:

- The Federal Reserve of New York has been "authorised to lend" AIG up to US$ 85 billion, and
- The US Treasury is taking control of AIG, of which it will own 80%, thereby immediately changing its management.

The Federal Reserve is thus providing financing to the US government. The punitive terms (850 bps above LIBOR) agreed for the loan to AIG are irrelevant as any interest payments would merely go from the left to the right hand pocket of the government.

Fed independence and the recapitalisation by the Treasury

But at the same time the balance sheet of the Federal Reserve has now been loaded with so many assets of dubious value that the Fed itself may soon no longer be solvent; hence the Fed's request for a recapitalisation by the Treasury. This means that the US Central Bank has lost its independence, since it now survives on a life-line from the US government.

An independent central bank committed only to the goal of price stability used to be considered an essential cornerstone of a modern macroeconomic stability-oriented policy framework. In the US, this is giving way to a situation in which the central bank has ended up in the pockets of the finance ministry as a consequence of its frantic efforts to re-establish normal operating conditions in financial markets. In all likelihood, the large increase in US government debt under way will be matched by increased monetary financing of the deficit.

Will Europe be far behind?

Links between global financial markets

Global contagion works on the way down and up. The near miss of AIG, followed closely by the mother of all bailouts now planned in the US, provides a vivid illustration of the nature of the links between global financial markets. One key link has been risk-sharing. European (and other) financial institutions held a large share of the assets based on US residential mortgages and thus shared in the losses that arose when the US housing market turned sour. This type of risk-sharing is exactly what financial globalisation should be able to provide. The US banking system would be in an even worse shape had all the losses from US sub prime-based securities been concentrated in the US.

AIG's impact on European bank's regulatory capital

But the AIG case shows the importance of another link across financial markets, namely massive circumvention of regulatory requirements. The K-10 annex of AIG's last annual report reveals that AIG had written coverage for over US$ 300 billion of credit insurance for European banks. The comment by AIG itself on these positions is:

> "…. for the purpose of providing them {European Banks} with regulatory capital relief rather than risk mitigation in exchange for a minimum guaranteed fee".

Thus, a formal default of AIG would have exposed European banks' large gap of regulatory capital, with possibly devastating effects on their ratings and market confidence. Which explains why AIG's problems had sent shock waves through the share prices of European banks. Thus, the US Treasury has saved, inter alia, the European banking system. However, *as AIG is to be liquidated, European banks will have to quickly shore up their regulatory capital*.

The extent of regulatory arbitrage can also be seen in the very large gap between overall leverage ratios and the official, regulatory ratios. The dozen largest European banks have

now on average an overall leverage ratio (shareholder equity to total assets) of 35, compared to less than 20 for the largest US banks. But at the same time most large European banks also report regulatory leverage ratios of close to 10. Part of the difference is explained by the fact that the massive in-house investment banking operations of European banks are not subject to any regulatory capital requirement. Another part of the explanation must the regulatory arbitrage, for example though the credit insurance offered for example by AIG.

Positive spillovers for Europe's banks

Europe's banks will benefit greatly from the wholesale effective nationalisation of the US financial system now being planed because the prices of the so-called "toxic" assets will be stabilised. But it remains unclear how many of them they hold in their balance sheets and how volatile their liability base will prove if confidence does not return quickly. And the ECB is already overloaded with assets of dubious quality in gigantic amounts.

Too big to fail and too big to save?

The key problem on this side of the Atlantic is that the largest European banks have become not only too big to fail but also too big to be saved. For example, the total liabilities of Deutsche Bank (leverage ratio over 50!) amount to around 2,000 billion euro, (more than Fannie Mai) or over 80 % of the GDP of Germany. This is simply too much for the Bundesbank or even the German state to contemplate, given that the German budget is bound by the rules of the Stability pact and the German government cannot order (unlike the US Treasury) its central bank to issue more currency. The total liabilities of Barclays of around 1,300 billion pounds (leverage ratio over 60!) surpasses Britain's GDP. Fortis bank, which has been in the news recently, has a leverage ratio of "only" 33, but its liabilities are several times larger than the GDP of its home country (Belgium).

Are European regulators living on borrowed time?

With banks that have outgrown national regulators and the financing capacities of national treasuries, European central banks and regulators are living on borrowed time. They cannot simply develop "road maps" but must contemplate a worst case scenario.

The ECB must be in charge; Britain and Switzerland should pray

Given that solutions for the largest institutions can no lounger be found at the national level, it is apparent that the ECB will need to be put in charge. It is the only institution in the euro area that can issue unlimited amounts of global reserve currencies. The authorities in the UK and Switzerland –- who cannot rely on the ECB – can only pray that no accident happens to the giants they have in their own garden.

	Leverage Ratio (total assets/equity)	
	30-Jun-08	2007
UBS	46.9	63.9
ING Group	48.8	35.3
HSBC Holding	20.1	18.4

Barclays Bank	61.3	52.7
BBV Argentaria	20.1	18.6
Deutsche Bank		52.5
Fortis	33.3	26.4
KBC	24.4	20.5
Lloyd's TSB	34.1	31.0
RBS	18.8	21.8
Credit Agricole	40.5	34.8
BNP Paribas	36.1	31.5
Credit Suisse	33.4	31.5

Source: Authors' calculations on data drawn from FT.com

Wyplosz: Financial crisis resolution: It's all about burden-sharing

20 July 2008

Should taxpayers bail out the banking system? One of the world's leading international macroeconomists contrasts the Larry Summers "don't-scare-off-the-investors" pro-bailout view with the Willem Buiter "they-ran-into-a wall-with-eyes-wide-open" anti-bailout view. He concludes that either way, taxpayers are always the losers. The best policy makers can do is to be merciless with shareholders and gentle with bank customers.

An old and familiar debate is back. Should taxpayers bail out the US banking system, quite possibly the British and European ones as well?

There are two standard views on the multi-trillion dollar question of who pays for getting us out of the financial crisis

- One view is that the situation has become so desperate that ordinary citizens will in any case be paying a high price for the crisis; throwing money at banks right now might lower the overall burden by preventing a deep, protracted recession.
- The other view is that banks ought to be left hanging to pay for their sins. Governments ought to be worried about their taxpayers, not bank shareholders.

In fact, we don't have that much choice.

Too big to fail: the Bagehot rule

It has long been a poorly hidden secret that large banks cannot be left to go bankrupt. Walter Bagehot, a 19th century economist and editor of *The Economist*, designed the solution that remains as relevant today as it was then. The Bagehot rule is that the central bank ought to lend freely to a failing bank, against high-quality collateral and at a punitive rate (see Xavier Vives' Vox column).

The modern version of the rule adds that shareholders ought to bear serious costs and the managers ought to be promptly replaced. This is exactly what happened with Bear Stearns last March, where another bank, JP Morgan, was used as the conduit for the operation. The cost to the taxpayers was a $1 billion guarantee and a $29 billion loan to JP Morgan guaranteed by Bear Stearns assets. We don't yet know if this was a taxpayer-financed bailout. If JP Morgan redresses the situation within ten years, the taxpayers will make a profit. If not, US taxpayers will have borne the burden. Bear Stearns shareholders were almost completely expropriated.

As the US economy keeps limping and the housing market deteriorates, most observers believe that there will be many more bank failures. Indeed, in early July, a large Californian mortgage lender, IndyMac, went belly up and was also subjected to Bagehot's recipe. The possibility that some very large financial institutions, and many smaller ones, will follow provides urgency for the current debate.

The Larry Summers school of thought: Don't scare off the investors

One school of thought – let's call it, fairly I think, the Larry Summers School – is that the Fed has been far too tough with Bear Stearns. It has scared investors and managers alike. The result is that investors are now unwilling to provide much needed cash to banks that must rebuild their badly depleted balance sheets while bank managers strenuously resist acknowledging their losses and continue selling their toxic assets. As a result, the whole banking system is in a state of virtual paralysis, which means that borrowing is both difficult and costly.

Lowering the interest rate, as the Fed vigorously did, does not even begin to redress the situation. This all leads to a vicious circle where insufficient credit drags the economy down, which leads to more loan delinquencies, which further impair banks ability to lend. Memories of 1929 immediately come to mind, when the Fed made matters considerably worse by clinging to financial orthodoxy.

This school of thought fears that the same fascination with high-minded principles turns a bad crisis into another nightmare of historical proportions. The Larry Summers School wants the Fed to lend freely and more generously with the goal being to reassure potential investors. If that is done, so goes the argument, banks will be able to rebuild their balance sheets and resume their normal activities. This would signal the end of the now one-year old financial crisis as a virtuous circle unfolds – more loans, a resumption of growth and the end of the housing market decline, healthier banks, and more loans.

The Willem Buiter school of thought: They ran into a wall with eyes wide- open

The other school of thought – let's call it, a bit unfairly, the Willem Buiter School – sees things in the exact opposite way.

The crisis is the result of financial follies by financial institutions that bought huge amounts of products that they did not understand – the infamous mortgage-backed

securities and their derivatives – parked them off-balance-sheet to avoid regulation, and made huge profits in doing so. In short, they ran into a wall with wide-open eyes.

Once the all-too-well foreseen crisis erupted, these institutions kept hiding the extent of their losses as long as they could – they are still playing that game – and started to lobby for a bailout from their governments.

The classic credit cycle: Look who's crying now

This school notes that the crisis is part of a classic credit cycle that involves excessive risk-taking in good times and ends up in tears. The question is: whose tears?

The challenge is ensure that these are not the taxpayers' tears. Indeed banks are in a unique position. They used to call for a bailout to protect their depositors, but deposits are now insured in all developed countries. Still, because bank credit is the blood supply of the economy, we cannot let our banking system sink. But once banks know that they can play the high-risk, high-return game, pocket the profits, and let taxpayers face the risks, bailouts provide a temporary relief but set the ground for the next crisis.

Wilder and wilder parties

Bank of England Governor Mervyn King nicely sums up the situation: "If banks feel they must keep on dancing while the music is playing and that at the end of the party the central bank will make sure everyone gets home safely, then over time, the parties will become wilder and wilder." Bagehot principles can be applied when one or two banks fail, but when the whole system is under threat, this is no longer an option.

Which school is winning with policy makers?

Both schools have developed consistent views. The dismaying part of the story is that they lead to radically different policy implications.

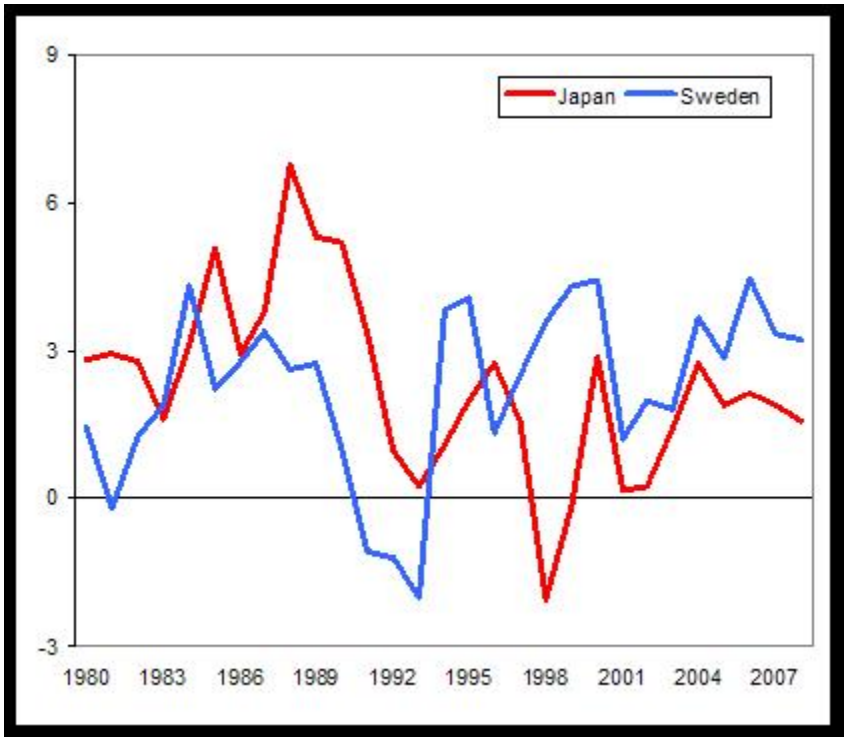
So far, the monetary authorities have been closer to the Willem Buiter School view, but things may be changing. The most recent bailout of Fannie Mae and Freddie Mac is clearly a soft rescue operation, with no set limits and, so far at least, no penalty on shareholders and managers. Even though Fannie Mae and Freddie Mac are very special institutions with a federal mandate, the Larry Summers School is right to see some glimmers of hope and therefore must be taken seriously.

In most respects, we have gone through a very classic credit boom- and bust cycle. Two cases from the 1990s are worth pondering:

- Following years of fast bank credit growth accompanied, as should be, by housing price bubbles, bank crises started in 1990 in both Japan and Sweden. The Swedish authorities reacted swiftly, bailing out most banks at a cost to taxpayers estimated at some 4% of GDP, but shareholders were essentially expropriated
- The Japanese authorities protected their banks with generous loans, even as some banks were serving dividend payments to their shareholders.

Sweden recovered in three years and, nowadays, Swedish banks are not found among those that indulged in mortgage-backed securities. Japan has still not recovered from a nearly twenty-year long "lost decade" and, nowadays, several Japanese banks have already failed under the weight of the toxic assets that they acquired, once again.

Figure 1: GDP Growth in Japan and Sweden



Source: Economic Outlook, OECD

Conclusions

Of course, there is more to it than this simple comparison, including the accompanying macroeconomic policies. But three unmistakable messages emerge:

- Be merciless with shareholders and gentle to bank customers
- Either way, taxpayers are always the losers.
- Bagehot had it all right.

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de la Dehesa: Is the euro area facing a credit crunch or a credit squeeze?

16 July 2008

The current credit crisis should be both a squeeze and a crunch, but it seems to have been neither in the euro area. This column explains why credit may become costlier or scarcer under current conditions and explores how European financial entities seem to be defying the negative news.

There are two channels through which the present credit crisis can affect economic activity. The first is prices, making credit more costly, and the second is quantities, making it scarcer. Dearer credit is called a "credit squeeze" and while scarcer credit is called "credit crunch". The euro area seems to be suffering neither of the two, at least for the time being.

Credit may be getting dearer for at least for four reasons.

- Today's banks tend to face higher spreads when issuing debt compared to non-banks, even of the same rating, thus their lending to non-banks is less profitable or unprofitable unless they get other fees from these corporations or charge higher rates to other borrowers with lower ratings.
- Average inter-bank one- and three-month euribor rates have gone up from 10bp a year ago to 80bp today over the OIS (overnight index swap) or EONIA, which is a proxy for future central bank rates.
- Banks are re-pricing their credit because they finally have found out – after experiencing an increase in non-performing loans – that they were lending at too cheap rates for the risk that they were taking.
- Banks' credit default swap or the market price for insuring their risk of default has gone up more than that of non-banks.

Credit may be becoming more restricted for two reasons.

- *Banks have been forced to do large write-downs of many of their assets that have depreciated using IFRS mark-to-market valuation.*
  As of today, total write-downs by large banks in developed countries have reached around $400 billion, but they have been able to raise capital by around $300 billion to be able to continue lending. According to the ECB, banks in the euro area only made €21 billion in write downs from August 2007 to the end of February 2008 (9.5 % of their total asset level of €22 trillion), and they have been able to raise capital enough to deleverage 8 percentage points and compensate most of them.
- *Some euro area banks have created, with the approval or consent of their supervisors, off-balance sheet vehicles that proved to be riskier than their rating, so both asset-backed securities commercial paper markets have been drying up since August 2007, falling by more than $450 billion.*
  These off-balance sheet vehicles (SIV and other conduits), which were created with minimum capital, were borrowing short in the asset-backed securities commercial paper market both in the United States and Europe and investing long in asset-backed securities and other instruments; the purchased assets were used as collateral.
  For example, although the ABX HE index is not a very reliable source of

valuations given that transactions are small and few, the fall in their values is remarkable. After an improvement in the indexes during April and May, today, triple A asset-backed securities has fallen from 100 in January 2007 to less than 50, double A has fallen to less than 10, single A to less than 7 and triple B to 5. That trend means that banks write-downs may continue for some time, because subprime credits are increasingly defaulting as every year there is a new reset of their interest rates upwards (teaser rates), and in 2008 it will affect $280 billion of them.

As banks are unable to refinance these investing vehicles in the capital markets, they may be forced to put them back into their balance sheets.

It is estimated that if all these vehicles were to be reincorporated into the euro area banks balance sheets, their regulatory capital would fall by more than 1 percentage point, from 8% to 7% of total eligible assets and therefore, if no capital were raised –highly improbable – credit would have to be reduced by 12%.

Neither a crunch nor a squeeze

Nevertheless, for the time being, seasonally adjusted annual credit growth in the euro area keeps slowing down rather slowly.

According to the June ECB report on bank lending, the annual growth rate of total credit to the private sector fell from 12.2 % in March to 12.0% in April and to 11.9% in May. Lending annual growth rate to private sector companies fell from 10.8% in March to 10.6% in April and to 10.4% in May. Annual growth rate of loans to non-financial corporations decreased to 14.2% in May from 14.9% in April. Annual growth rate of loans to households fell from 5.4% in March to 5.2% in April and to 4.9% in May. Loans growth rate for house purchase declined 5.5% in May from 5.9% in April and loans growth rate for consumer credit fell to 4.8% in May from 5.2% in April.

Moreover, credit is not getting dearer.

According to the ECB, interest rates on loans to the private sector have not changed on average. On loans to non-financial corporations, they have fallen slightly: Banks' overdraft interest rates have gone down, from 6.62% in December 2007 to 6.54% in April 2008. On loans up to €1 million, floating rate and over-five-years initial rate fixation have gone down from 5.30% in December to 5.22% in April and on loans over €1 million, up to five years rates have gone down from 5.48% to 5.39%. In the case of interest rates on loans to households, banks' overdrafts have gone slightly up from 10.46% in December 2007 to 10.55% in April 2008, as well as in the case of loans for consumption floating rate and over-five-years initial rate fixation, which have increased slightly from 8.17% to 8.45%. Interest rates for house purchase have come down slightly. For loans floating rate and over 10 years initial fixation rate, they have gone down from 5.18% to 5.11% in the same period.

Defiant behaviour

It is really difficult to understand why the increase in banks' borrowing costs, their continuous increase in write-downs, the incorporation of vehicles into their balance sheets, their re-pricing of risk, and the increase in their non-performing loans ratios are

not having a more negative impact on the flow and the price of their loans to the private sector in the euro area.

Some reasons include:

- In the case of corporations, banks have maximum loan and price commitments to their main clients that contractually are still in force and have not been disposed yet by borrowers.
- In the case of private equity funds and hedge funds, (which actually have increased their annual growth rate from 22.2% in April to 25.7% in May) it might be that banks seem to be comfortable with their average collateral ratio of 90% of loans and because most of them have met their banks' margin calls on time by de-leveraging.
- Unlike in the US, many large banks in the euro area did not create special vehicles off-balance sheet or they were very small.
- The average small and medium size company in the euro area is not highly indebted; most households have taken loans to invest in houses and not for consumption and have seldom used equity withdrawals.
- Many large European corporations still have sound financials and good ratings.

Will this soft loan and interest rate trend persist longer or is it going to change if the credit crisis continues biting the euro area banks balance sheets? Time will tell.

Claessens et al: Global financial crisis: How long? How deep?

7 October 2008

The house and equity price busts on top of a credit crunch make this an unprecedented crisis for the modern US economy; its real economy effects are thus difficult to assess. This column provides insights based on evidence from 122 recessions in 21 advanced nations since 1960. Findings suggest recessions in such circumstances are much costlier and slightly longer. But the outcome can be affected by policy, and it's high time that policymakers act swiftly and decisively.

Although the unprecedented events of the past few weeks in financial markets have dominated the headlines, the debate will inevitably shift to how the most severe financial crisis in modern times impacts the broader economy, and, if recessions in major advanced countries were to occur, how long and how deep these will be. There are already indications that the spillovers from the financial crisis to the broader economy will not be mild—in fact, activity in the US and several other advanced economies has slowed down in recent months.

The unique nature of the current financial crisis - combining a house price bust, a credit crunch, and an equity price bust - unlike any other one the US has experienced before, makes it difficult to assess its implications for the real economy. Barry Eichengreen recently assessed the lessons from the Great Depression (Vox 2008), but what of the

evidence from modern times? We have witnessed many such episodes of credit crunches and busts in house and equity prices around the world since 1960. In fact, in recent work, we identified 28 credit crunches, 28 house price busts, 58 equity price busts, and 122 recessions in 21 advanced countries over 1960-2007 (Claessens, Kose and Terrones, 2008). These episodes provide some insights on how financial crises evolve and their implications for the broader economy.

How to identify economic and financial cycles?

Before analysing recessions and their interactions with credit crunches and asset price busts, it is necessary to determine the dates of these events. The methodology we employ for this purpose focuses on changes in the levels of variables to identify cycles (see Harding and Pagan, 2002). Consistent with the guiding principles of the National Bureau of Economic Research (NBER), which is the unofficial arbiter of US business cycles, this methodology assumes that a recession begins just after the economy climbs a peak of activity and ends as the economy reaches its trough. With the help of this methodology, we identify cycles in output (GDP), and various financial variables, including credit, house prices and equity prices.

How costly are recessions?

As shown in Figure 1, a recession on average lasts about 4 quarters (one year) with substantial variation across episodes — the shortest recession is 2 quarters and the longest 13 quarters. The typical decline in output from peak to trough, the recession's amplitude, tends to be about 2 percent. For recessions, we also compute a measure of cumulative loss which combines information about both the duration and amplitude to proxy the overall cost of a recession. The cumulative loss of a recession is typically about 3 percent of GDP, but this number varies quite a bit across episodes. We classify a recession as a severe one when the peak-to-trough decline in output is in the top-quartile of all output declines during recessions. These recessions tend to be more than a quarter longer and much more costly than do typical recessions.

Crunches and busts: Often long and painful

The episodes of credit crunches and housing busts are often long and deep (Figure 2). For example, a credit crunch episode typically lasts two and a half years and is associated with nearly a 20 percent decline in real credit. A housing bust tends to last even longer: four and a half years with a 30 percent fall in real house prices. And an equity price bust lasts some 10 quarters and when it is over, the real value of equities has dropped to half.

Are recessions associated with crunches and busts worse than other recessions?

Contrary to the view of some commentators, the triple whammy of a house price bust, a credit crunch and an equity price bust has not always led to an eventual recession. What is true is that many recessions are indeed associated with credit crunches or asset price busts. In about one out of six recessions, there is also a credit crunch underway, and in about one out of four recessions a house price bust. Equity price busts overlap for about one-third of recession episodes. There can also be considerable lags between financial market disturbances and real activity. A recession, if one occurs, can start as late as four to five quarters after the onset of a credit crunch or a housing bust.

One of the key questions surrounding the current financial crisis is whether recessions associated with crunches and busts are worse than other recessions. Here, the international evidence is clear: these types of recessions are not just slightly longer on average, but also have much larger output losses than others. In particular, although recessions accompanied with severe credit crunches or house price busts last only a quarter longer, they have typically result in output losses two to three times greater than recessions without such financial stresses. During recessions coinciding with financial stress, consumption and investment usually register much sharper declines, leading to the more pronounced drops in overall output and unemployment.

Global nature of economic and financial cycles

For some, the global nature of the current crisis has been unprecedented as several advanced economies have simultaneously witnessed declines in house and equity prices as well as difficulties in their credit markets. This is not unusual, however, as recessions, crunches and busts often occur at the same time across countries. Recessions in many advanced countries have been bunched in four periods over the past forty years — the mid-70s, the early 80s, the early 90s and the early-2000s — and have often coincided with global shocks. Moreover, when many countries experience a recession, many also go through episodes of credit contractions, declines in house and equity prices.

What are the lessons for the current episode?

The lessons from the earlier episodes of recessions, crunches and busts are sobering, suggesting that recessions, if they were to occur, would be more costly since they would take place alongside simultaneous credit crunches and asset price busts. Furthermore, although the effects of the current crisis have already been felt gradually around the world, its global dimensions are likely to intensify in the coming months.

The main take-away of the past episodes is that some tough times are ahead for the global economy before matters get better. Nevertheless, the nature of a recession in a particular country, if it happens, would ultimately depend on a number of factors, importantly how healthy the financial positions of its firms, banks, and households are prior to the recession, and what policies are being employed. This is high time for policy-makers to act swiftly and decisively to undertake the necessary measures at both the national and global levels to meet the challenges of the crisis.

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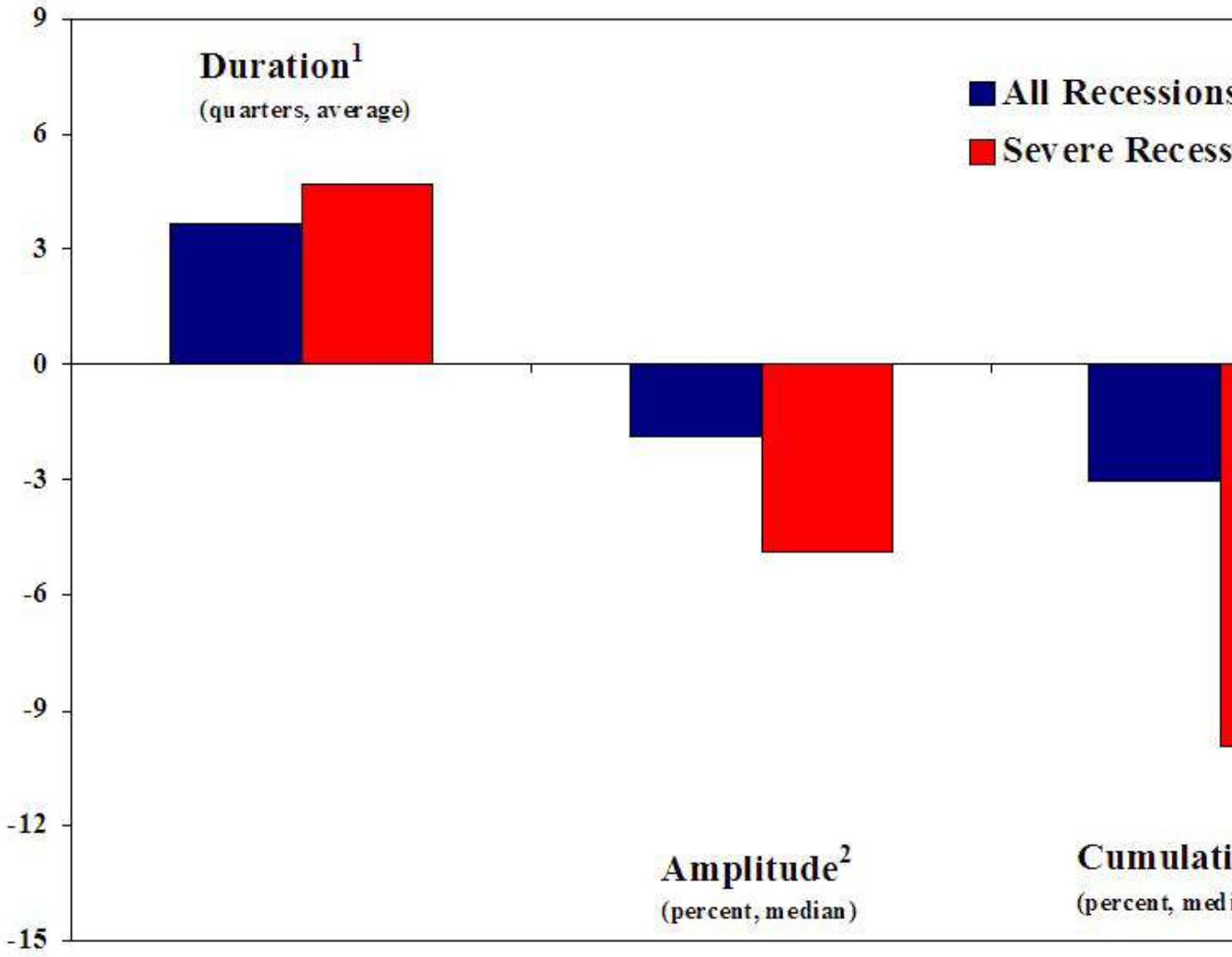
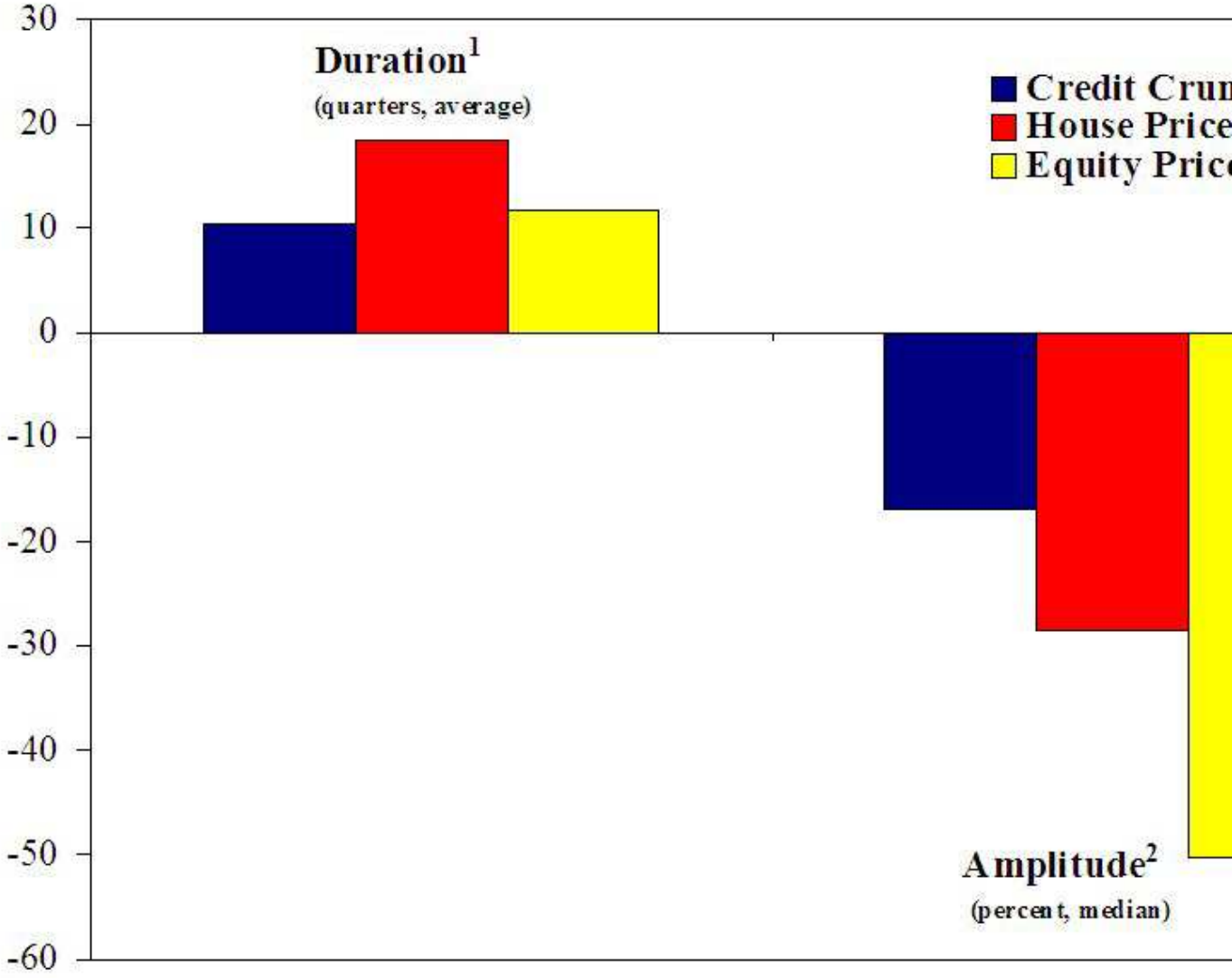
Figure 1. Recessions: Duration, Amplitude and Cumulative Loss
(duration, amplitude and cumulative loss)



[1] Duration refers to the number of quarters between the peak and trough of a recession.
[2] Amplitude is the change in GDP between the peak and trough of a recession.
[3] Cumulative loss is the total output loss between the peak and trough of a recession.

Figure 2. Crunches and Busts: Duration and Amplitude



[1] Duration refers to the number of quarters between the peak and trough of a credit crunch or a house/equity price bust.
[2] Amplitude is the change in credit volume or house/equity price between the peak and trough of a credit crunch or a house/equity price bust, respectively.

Source: Claessens, Kose and Terrones (2008).

Laeven: The cost of resolving financial crises

31 October 2008

A new IMF database, which covers the universe of systemic banking crises from 1970 to 2007, shows that the average fiscal cost was about 15% of GDP, or three times the US's $700 billion. This column points out that quick action often lowers the ultimate cost. Moreover wishful thinking teamed with regulatory forbearance and bank liquidity plans often raises the cost by delaying vital, but politically painful, government action.

The crisis is evolving with breakneck speed. The debate about why it happened and how it will unfold is still very much ongoing, as Felton and Reinhart (2008) show.

While it may be too early to write about the lessons learned, authorities do not have the luxury to wait for these, and have already embarked on large-scale interventions in the financial sector and beyond.

US moves: $700 billion only a third of the average cost

Earlier this month, after a first round of hesitation, the US House of Representatives voted in favour of the Stabilization Act to bail out the US financial sector in the amount of $700 billion. Though the Act was initially sold as a government program to purchase distressed financial assets, it has since been recast as a program to recapitalise financial institutions by directly injecting capital.

$700 billion is of course a large number by any measure if taken at face value. But let's put this number in perspective. It amounts to 4.9% of US GDP. This is not an outlier when compared to fiscal costs associated with government action to resolve financial crises of the past.

An IMF study of 40 financial crisis episodes puts the fiscal costs associated with resolving financial crises in the average country at 16% of GDP (Laeven and Valencia 2008). Although this average includes some small and emerging economies, the fiscal cost is equally high among industrialised economies - at 15% of GDP on average.

- About half (or 8% of GDP) of these fiscal outlays relate to costs associated with government-assisted recapitalisation of banks.
- The remainder relate mainly to costs associated with government asset purchase and debtor relief programs.

Variation in the fiscal cost of resolving financial crises

There is much variation in this number, though, as the severity and management of crises have varied a great deal. The crisis management packages in countries as diverse as Finland, Japan, Korea, Mexico, and Turkey all cost the taxpayer a multiple of the current US bailout plan, ranging from 13% of GDP in Finland to as high as 32% in Turkey. Countries like Norway and Sweden fared much better with costs to the taxpayer of 3% and 4% of GDP, respectively.

Of course, the current US financial crisis is still ongoing and the ultimate fiscal costs could be much higher. Recent bailouts of individual financial institutions and extensions of government guarantees for deposits and money market funds have already added significant contingent fiscal liabilities. Other countries, particularly in Europe, have followed suit, varying from the announcement of a blanket guarantee on bank liabilities in Ireland to a comprehensive bailout package for major financial institutions in the UK.

Speed saves

A key driver of this variation in ultimate fiscal costs is the speed with which governments act to resolve the crisis. Speed is of the essence and is often accomplished through a comprehensive package of simple assistance measures to borrowers and banks that is politically acceptable.

Also, while the upfront cost of interventions is high, if done right, the government will not be left empty handed. If the government purchases bad assets, these assets may recover in value, and if the government takes equity stakes in banks, the value of these stakes may increase in the years to come. The ultimate cost to the taxpayer is likely to be smaller.

Necessary but politically sensitive wealth transfer

Surely, any bailout plan involves a transfer of wealth from creditors to debtors, from those that behaved prudently to those that took excessive risks. However, the consequence of no action is likely to be worse. What starts as a crisis of confidence in the financial system often quickly spreads to the real economy, negatively affecting household wealth. Declines in banks' net worth, which may result in bank failures, reduces their ability to supply loans to households and firms, and at a minimum increases the cost of borrowing. At the same time, initial declines in economic activity that begin as a normal recession become larger as declines in borrowers' income and net worth destroy bank net worth, creating a vicious cycle of wealth destruction that in the past has often led affected economies into deep recession. It is for this reason that financial crises call for swift policy responses. *Sound policies today will avoid even larger fiscal and economic costs tomorrow.*

Little agreement on best practice

Choosing the best way of resolving a financial crisis and accelerating economic recovery is far from unproblematic. There has been little agreement on what constitutes best practice or even good practice. Policy responses depend on the nature of the crisis.

So let's first agree on the underlying problem of the current crisis. Markets appear unable to resolve the uncertainty about the value of bank assets and associated counterparty risk between banks. This problem is intensified by the low levels of capital in banks.

This market failure requires government intervention. But what kind of intervention and on what scale?

Regulatory forbearance and bank liquidity support can backfire

Governments have employed a broad range of policies to deal with financial crises. They typically start with regulatory forbearance and generous liquidity support to banks. Forbearance, however, does not really solve the underlying problems of too little bank capital and therefore a key component of almost every systemic banking crisis is bank restructuring plan. All too often, government intervention in financial institutions is delayed because regulatory capital forbearance and liquidity support are used for too long to deal with insolvent financial institutions in the hope that they will recover, ultimately increasing the stress on the financial system and the real economy.

Central to identifying sound policy approaches to financial crises is the recognition that policy responses that reallocate wealth toward banks and debtors and away from taxpayers face a key trade-off.

Such reallocations of wealth can help to restart productive investment, but they have large costs. These costs include taxpayers' wealth that is spent on financial assistance and indirect costs from misallocations of capital and distortions to incentives that may result from encouraging banks and firms to abuse government protections.

Those distortions may worsen capital allocation and risk management after the resolution of the crisis. For example, government recapitalisations of insolvent banks may lead shareholders of the bank to "gamble for resurrection" at the expense of other stakeholders of the bank.

More generally, government bailouts generate moral hazard as they increase the perception that bailouts will occur next time around. While policymakers should take these tradeoffs into account when crafting their bailout plans, they do not have the luxury to wait for the perfect solution.

Conclusion

The economic cost of no action can be enormous, making even $700 billion sound like a small number. Let's hope the money will be spent wisely.

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Kobayashi: Financial crisis management: Lessons from Japan's failure

27 October 2008

Japan's banking crisis of the late 1990s and early 2000s offer critical lessons on how to deal with the current financial crisis. This column warns against relying on fiscal stimulus, stresses the importance of recapitalising viable bank but letting the 'zombie banks' go bust to boost certainty about financial firms' solvency. In order to avoid a vicious cycle of steady economic decline as in Japan, the G8 and emerging economies should create a "Financial System Stabilisation Fund".

The current crisis in the US and European financial systems seems to be growing similarly to Japan's banking crisis of the late 1990s and early 2000s. Although the current

crisis developed much faster[108] than Japan's crisis, the key mechanism is the same – changes in the prices of real estate that were used as collateral for bank lending. The further development of the crisis will crucially depend on the evolution of these real-estate prices. Figures 1 and 2 show the land price index in Japan and the housing price index in the US. How far will housing prices in the US fall? If we base our projections on the trend line of the 1990s, they should pick up by 2011 at the latest. But this reasoning reminds me of a similar mindset in the early 1990s in Japan. When Japan's real estate bubble burst in 1991, the trend line indicated that land prices would bottom out around 1995, when in fact they continued to decline steadily for 12 more years.

Figure 1. S&P Case-Shiller US national home price index

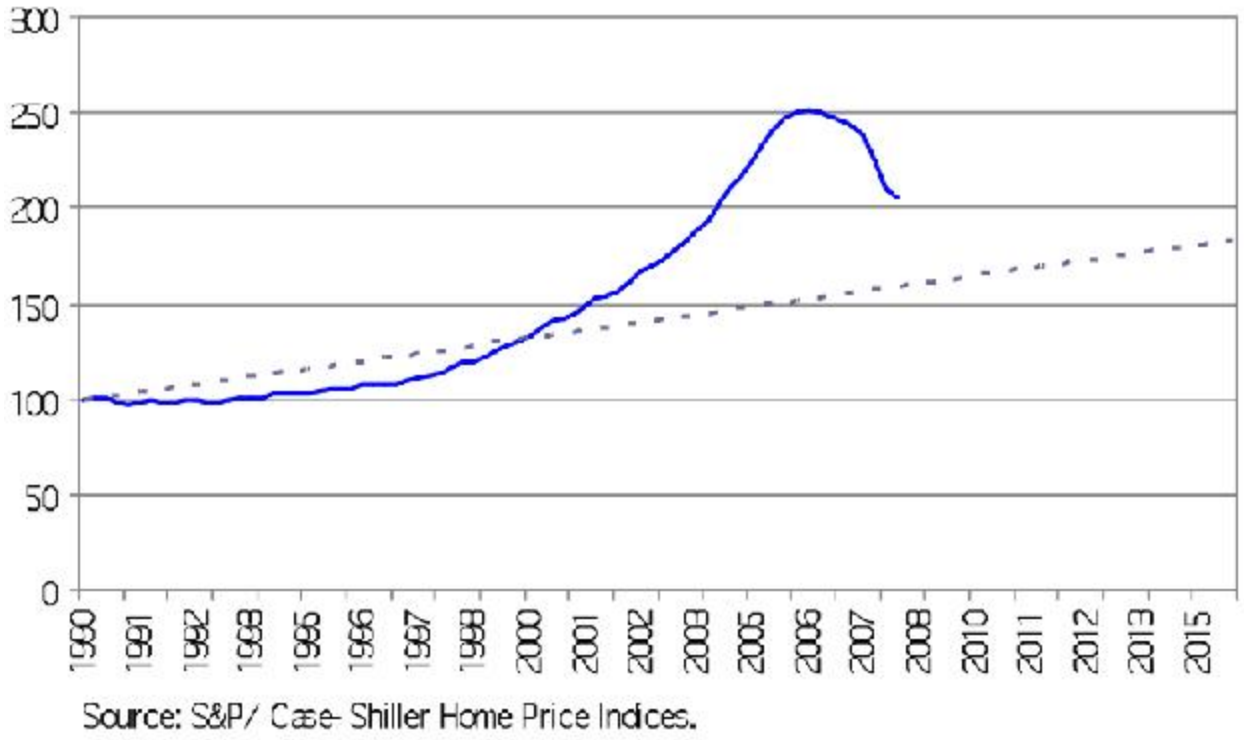
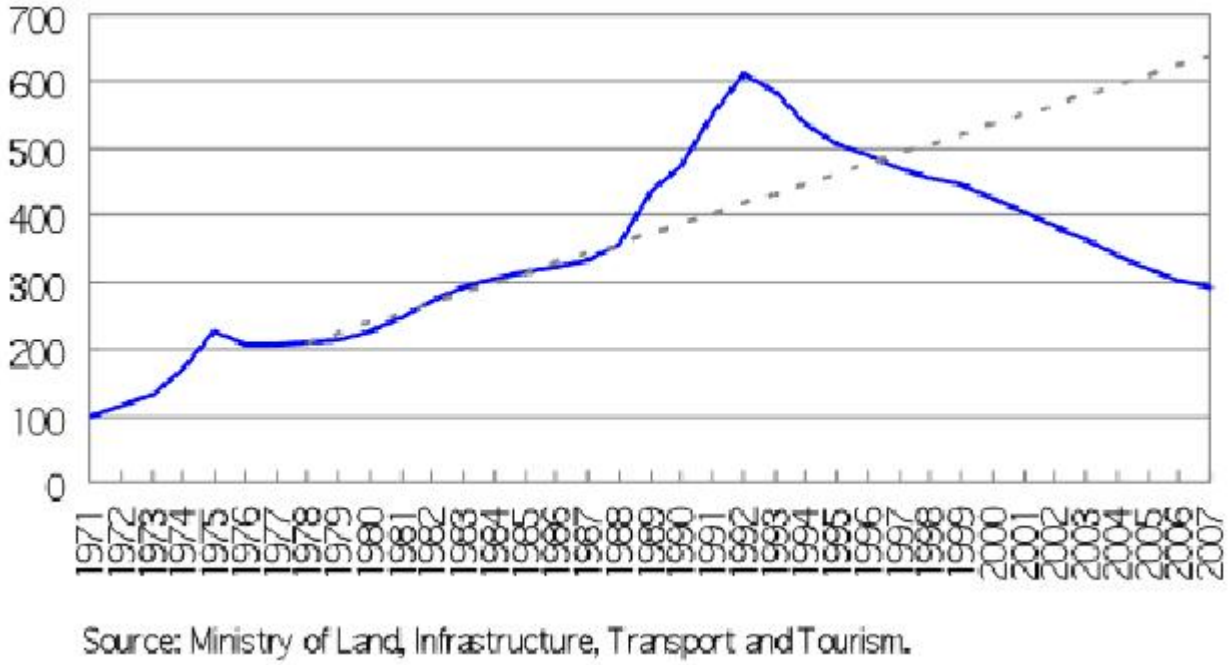


Figure 2. Official land price in Japan

[108] In February when I warned about the necessity of bank capital injections with taxpayer money, I thought it would not happen until 2009 or 2010. See Kobayashi (2008).



Source: Ministry of Land, Infrastructure, Transport and Tourism.

Japan experienced more than a decade of continuous land-price declines and low productivity growth. The decade-long stagnation seems to be the result of a protracted external diseconomy that set in due to uncertainty and fear surrounding the payment system. Banks and firms in Japan felt the fear of not being paid in full when they expanded lending because some of their customers hid the fact that they were insolvent. If insolvent agents stick around, healthy agents are forced to face uncertainty and fear. They hesitate to start new transactions with unknown trading partners. Their reluctance results in the shrinkage of the economy-wide division of labour among firms and industries, lowering growth of aggregate productivity. The lower productivity, in turn, drives down asset prices even further and increases the number of insolvent agents, reinforcing the persistence of uncertainty and fear. We may refer to this external diseconomy, or vicious cycle, as "payment uncertainty."[109]

While the payment uncertainty that has spread through the global interbank market in the last several weeks may be contained by bank-capital injections and government guarantees, the challenge now is to prevent payment uncertainty from spreading to the real sector (i.e., businesses and households). Japan's policy failures in the 1990s offer several instructive lessons.

Debt restructuring is absolutely necessary to prevent a vicious cycle

Debt relief and rehabilitation of viable but debt-ridden firms and the liquidation of nonviable firms are crucially important to wipe out the payment uncertainty from the economy and restore market confidence. If zombie firms stick around in the market,

[109] See Kobayashi (2006) for a formal model and Kobayashi and Kato (2001) for informal arguments.

uncertainty and business shrinkage will linger on.[110] Capital injections into banks are just a beginning.

Stringent asset evaluation and sufficient write-offs

Stringent and conservative evaluation of the toxic assets should be the premise behind bank-capital injections and debt restructuring. I suspect that the current capital injections in the US and Europe may not eradicate the payment uncertainty unless they are accompanied by sufficiently stringent asset evaluations. Financial regulators should establish task forces for asset evaluation and push financial institutions to recalculate their asset values conservatively enough so that the market can rely on their numbers. The regulators may have to employ financial engineers (e.g., former employees of the Lehman Brothers) as investigators and let them analyse the risk and losses of the toxic derivative securities by "reverse engineering.''

Purchase of bad assets by public asset management companies

If bad assets are disposed of by distress selling in the market, stringent asset evaluation will result in a vicious cycle of debt deflation: distress selling causes asset prices to decline further, which in turn accelerates the distress selling of assets. To stop the vicious cycle of debt deflation, the governments struggling with the financial crisis should establish asset management companies, public entities that purchase and hold the bad assets. The purchase and freezing of toxic assets is necessary to stop debt deflation. The public entities should then restructure the bad assets and sell them off gradually after the market stabilises.

Fiscal stimulus packages may not work

One big lesson from Japan's 1990s is that Keynesian policy per se did not work for the financial crisis due to the collapse of asset prices. While Japan undertook huge fiscal stimulus packages repeatedly in the 1990s, the government did not pursue a serious policy effort to make banks dispose of their nonperforming loans. As a result, a huge amount of hidden nonperforming loans swelled under implicit collusion between the government and banks. Naturally, the payment uncertainty and economic shrinkage persisted for years. The essential problem was the spreading of payment uncertainty, and policies centred on public works and tax cuts were not direct enough to attack the problem, though they were temporarily effective at mitigating the severity of the economic downturn. Direct debt relief for mortgage borrowers and distressed (but viable) firms, along with fiscal assistance for the liquidation of nonviable firms, are straightforward, cost-effective fiscal policies much more capable of wiping out the payment uncertainty than standard public works and tax cuts.

Suspension of mark-to-market accounting has a long-term side effect

The development of huge nonperforming loans in Japan was made possible by the virtual nonexistence of mark-to-market accounting for bank assets. Although suspension of mark-to-market accounting may temporarily calm the panic, it may also enable and seduce bankers to hide their toxic assets from regulators and market participants. If

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[110] For zombie firms, see also Caballero, Hoshi and Kashyap (2008).

bankers hide bad assets, zombie firms will persist and the payment uncertainty will remain, setting the stage for very low long-term economic growth in the coming years.

The global nature of the current crisis seems to posit interesting points in the arguments for international policy coordination. As the external diseconomy of payment uncertainty affects economies all over the world, the cost to eradicate this diseconomy should be borne worldwide. This normative argument may be justified from the following efficiency point of view: To minimise the prospective tax distortions caused by huge fiscal outlays for global financial rescues, it may be optimal for the world as a whole to let emerging market economies with high prospective growth and solid fiscal positions, such as China and India, bear a considerable amount of the fiscal cost of global financial rescues. (The social surplus generated by the international policy coordination should be shared by both developed and emerging market countries after the crisis is over.) To bear the cost to stabilise the world economy matches with the national interests of China and other emerging economies, since otherwise they should suffer from much greater economic and noneconomic costs for adjusting to shrinkage of the US and European economies.

One idea to cement this global coordination would be the establishment of a new international fund, like the IMF, which could be called the "Financial System Stabilisation Fund" or "World Dollar Stabilisation Fund." The Fund should be established as a temporary organisation to stabilise the current financial crisis, and eventually be dissolved and merged into the IMF in the next three years or so. Emerging market countries would invest public money, which may be their huge stocks of foreign reserves and/or may be raised by issuing new bonds, in the Fund. The Fund could then make loans to the governments of the US and major European countries affected by the financial crisis. The affected governments would use the loan proceeds to make fiscal expenditures needed for injecting capital into their banks and restructuring the debt of their domestic borrowers.

The G8 meeting with emerging market countries, scheduled to be held in New York in November, would be a good occasion to coordinate the global cost distribution for the resolution of the current financial crisis.

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Eichengreen: And now the Great Depression

28 September 2008

The Paulson Plan, whatever its final form, will not end the crisis quickly. Unemployment will rise but will the most serious credit crisis since the Great Depression bring about a new depression? Here one of the world's leading economic historians identifies the relevant Great-Depression lessons. We won't see 25% unemployment as in the 1930s, but double digits are not out of the question.

A couple of months ago at lunch with a respected Fed watcher, I asked, "What are the odds are that US unemployment will reach 10% before the crisis is over?" "Zero," he responded, in an admirable display of confidence. Watchers tending to internalise the outlook of the watched, I took this as reflecting opinion within the US central bank. We may have been in the throes of the most serious credit crisis since the Great Depression, but nothing resembling the Depression itself, when US unemployment topped out at 25%, was even remotely possible. The Fed and Treasury were on the case. US economic fundamentals were strong. Comparisons with the 1930s were overdrawn.

The events of the last week have shattered such complacency. The 3 month treasury yield has fallen to "virtual zero" for the first time since the flight to safety following the outbreak of World War II. The Ted Spread, the difference between borrowing for 3 months on the interbank market and holding three month treasuries, ballooned at one point to five full percentage points. Interbank lending is dead in its tracks. The entire US investment banking industry has been vaporised.

And we are in for more turbulence. The Paulson Plan, whatever its final form, will not bring this upheaval to an early end. The consequences are clearly spreading from Wall Street to Main Street. The recent performance of nonfinancial stocks indicates that investors are well aware of the fact.

So comparisons with the Great Depression, which have been of academic interest but little practical relevance, take on new salience. Which ones have content, and which are mainly useful for headline writers?

First, the Fed now, like the Fed in the 1930s, is very much groping in the dark. Every financial crisis is different, and this one is no exception. It is hard to avoid concluding that the Fed erred disastrously when deciding that Lehman Bros. could safely be allowed to fail. It did not adequately understand the repercussions for other institutions of allowing a primary dealer to go under. It failed to fully appreciate the implications for AIG's credit default swaps. It failed to understand that its own actions were bringing us to the brink of financial Armageddon.

If there is a defence, it has been offered Rick Mishkin, the former Fed governor, who has asserted that the current shock to the financial system is even more complex than that of the Great Depression. There is something to his point. In the 1930s the shock to the financial system came from the fall in the general price level by a third and the consequent collapse of economic activity. The solution was correspondingly straightforward. Stabilise the price level, as FDR did by pumping up the money supply, and it was possible to stabilise the economy, in turn righting the banking system.

Absorbing the shock is more difficult this time because it is internal to the financial system. Central to the problem are excessive leverage, opacity, and risk taking in the financial sector itself. There has been a housing-market collapse, but in contrast to the 1930s there has been no general collapse of prices and economic activity. Corporate defaults have remained relatively low, which has been a much-needed source of comfort to the financial system. But this also makes resolving the problem more difficult. Since there has been no collapse of prices and economic activity, we are not now going to be able to grow or inflate our way out of the crisis, as we did after 1933.

In addition, the progress of securitisation complicates the process of unravelling the current mess. In the 1930s the Federal Home Owners Loan Corporation bought individual mortgages to cleanse bank balance sheets and provide home owners with relief. This time the federal agency responsible for cleaning up the financial system will have to buy residential mortgage backed securities, collateralised debt obligations, and all manner of sliced, diced and repackaged paper. Strengthening bank balance sheets and providing homeowners with relief will be infinitely more complex. Achieving the transparency needed to restore confidence in the system will be immensely more difficult.

That said, we are not going to see 25% unemployment rates like those of the Great Depression. Then it took breathtaking negligence by the Fed, the Congress and the Hoover Administration to achieve them. This time the Fed will provide however much liquidity the economy needs. There will be no tax increases designed to balance the budget in the teeth of a downturn, like Hoover's in 1930. Where last time it took the Congress three years to grasp the need to recapitalise the banking system and provide mortgage relief, this time it will take only perhaps half as long. Ben Bernanke, Hank Paulson and Barney Frank are all aware of that earlier history and anxious to avoid repeating it.

And what the contraction of the financial services industry taketh, the expansion of exports can give back, what with the continuing growth of the BRICs, no analogue for which existed in the 1930s. The ongoing decline of the dollar will be the mechanism bringing about this reallocation of resources. But the US economy, notwithstanding the admirable flexibility of its labour markets, is not going to be able to move unemployed investment bankers onto industrial assembly lines overnight. I suspect that I am now less likely to be regarded as a lunatic when I ask whether unemployment could reach 10%.

Hughson and Weidenmier: Financial markets and a lender of last resort

28 November 2008

The current crisis raises serious questions about the role of a lender of last resort. This column provides historical insight into its importance. Such a lender is critical to containing crises, as demonstrated by the frequent autumn harvest financial crises in the US prior to the establishment of the Federal Reserve.

The recent subprime mortgage crisis raises serious questions about the role of a lender of last resort and the appropriate role of monetary policy. Academics, policymakers, and the

financial press have debated the extent to which central banks should intervene in the marketplace, provide liquidity, and even purchase the non-performing assets of troubled financial institutions. Although economists, Washington insiders, and the media may debate the extent to which the lender of last resort function should be intensified in wake of the current financial market meltdown, proponents and opponents of monetary policy generally agree that it is very difficult to identify the effect of the lender of last resort function on financial markets.

Fortunately, history provides some insight into the importance of a lender of last resort in dealing with a financial crisis, especially the provision of liquidity by financial institutions to help cash-strapped firms in the short run. Following the Panic of 1907, which was accompanied by one of the shortest but most severe financial crises in American history, the US Congress passed two important pieces of legislation that established a lender of last resort: (1) the Aldrich Vreeland Act of 1908 which allowed banks to temporarily increase the money supply during a financial crisis, and (2) the Federal Reserve Act of 1913 which replaced Aldrich-Vreeland and established a public central bank in the US (Moen and Tallman, 2000).

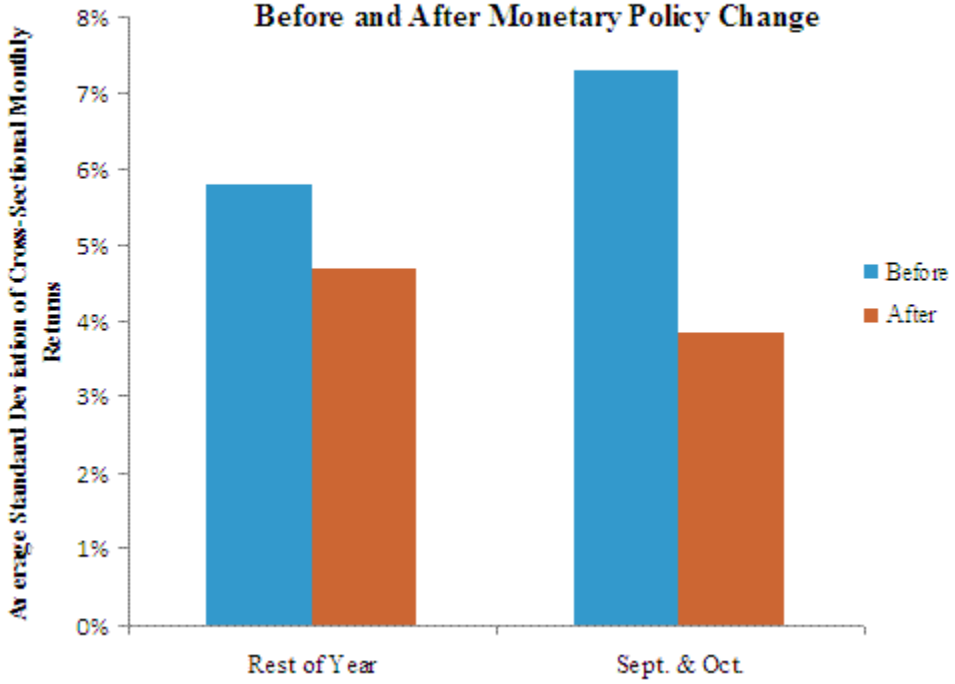
The two acts were designed to increase the elasticity of the money supply, which was largely fixed by the supply of gold and the requirement that banks could only issue notes if they were sufficiently backed by US government bonds. The money supply was especially inelastic during the fall harvest seasons when the financial markets tended to be illiquid as cash moved from the money centre banks to the interior to finance the harvesting of crops. The financial stringency made New York financial market vulnerable to banking and financial crises in the fall as financial institutions were often forced to call in stock market loans in response to large unexpected withdrawals of cash in response to a greater than expected harvest season. Indeed, several of the largest financial crises of the National Banking Period (1870-1913) occurred during the fall harvest season including 1870, 1890, 1893, and 1907 (Kemmerer, 1910; Miron, 1986; Sprague, 1910).

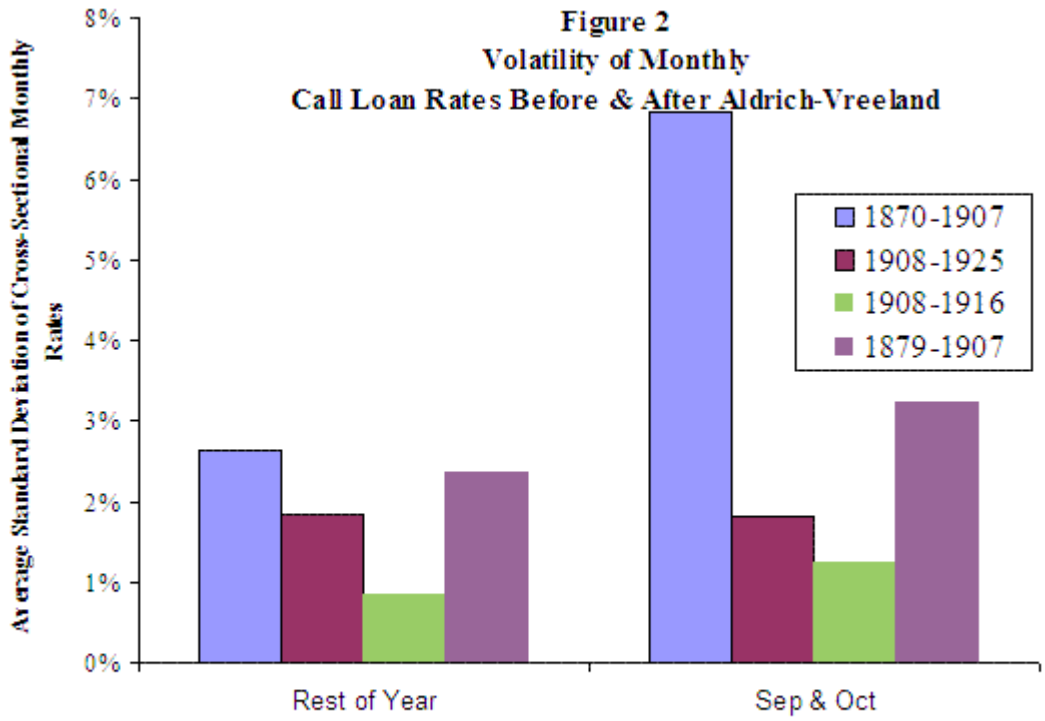
A lender of last resort reduces financial volatility

In work with Asaf Bernstein, we use the seasonal nature of financial crises during the National Banking Period as an identification strategy to isolate the impact of the introduction of a lender of last resort on financial markets (Bernstein, Hughson, and Weidenmier 2008). We compare the standard deviation of stock returns in September and October over time before and after the introduction of a lender of last resort. The identification strategy should isolate the effects of the lender of last resort function on interest-rates and stock returns from other macroeconomic shocks. Wohar and Fishe (1990), for example, argue that World War I and the closure of the New York financial markets played an important role in the change in the stochastic behaviour of interest rates, in addition to the founding of the Federal Reserve. Given that these events all occurred around the same time, they argue that it is difficult to separate out the effects of these different events on interest rates. Our strategy enables us to identify the effect of the introduction of the lender of last resort because if the lender of last resort is responsible for what we find – lower volatility in financial markets - the effect should be largest in September and October.

We investigate stock volatility for two reasons: (1) stock volatility typically rises prior to the onset of a recession (i.e., the current financial crisis) and (2) given the poor quality of high frequency macroeconomic data from the National Banking Period, we can use stock volatility as a metric to provide some insight into the chicken and egg problem: do financial crises have real effects or do real shocks cause financial crises? If the former is true, then the introduction of a lender of last resort should reduce financial market volatility. As shown in Figure 1, stock volatility was more than 40% lower in the pre-lender of last resort period (1870-1908) versus the period 1908-1925. Although we find that stock volatility in September and October was larger than the other ten months of the year prior to the monetary regime change, this was no longer true after the introduction of a lender of last resort. We find similar results using the call loan interest rate, the interest rate financial institutions charged investors to buy stocks on margin. Figure 2 shows that interest rate volatility declined more than 70% in the months of September and October after the establishment of a lender of last resort. These volatility reductions are statistically significant at conventional levels.

Figure 1
Volatility of Monthly Stock Returns
Before and After Monetary Policy Change





The dramatic decline in volatility during the months of September and October has several implications for today's policymakers and the current global financial crisis. First, financial crises can have large economic effects. Second, the provision of liquidity by a lender of last resort can be very important for containing the spread of a financial crisis that can have significant macroeconomic economic effects. Third, the reduction in uncertainty associated with a lender of last resort is likely to increase investment and shorten the duration of recessions. Fourth, while our analysis provides some insight into the importance of containing a liquidity crisis, it has less to say about the role of a lender of last resort when the solvency of financial institutions is uncertain.

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Duflo: Too many bankers?

8 October 2008

With its relatively high wages, the financial sector has, over the last two decades, attracted many brilliant minds, probably too many. In this column, Esther Duflo explains how the current financial crisis could lead to a better allocation of talent where creative energies would be socially more useful.

The emergency rescue of the financial sector drew attention to the phenomenal financial sector wages. Nicholas Kristof reported in his column in The New York Times that the CEO of Lehman Brothers, one of the first banks to go bankrupt in September, had won 45 million dollars in 2007, and half a billion between 1993 and 2007.

This is not an exception: the series built by Thomas Piketty and Emmanuel Saez showed that the proportion of income of the 1% richest Americans has increased constantly since the early 1980s. But even compared to other rich people, the "golden boys" of finance have seen their incomes soar. A recent study by Thomas Philippon and Ariell Reshef[111] shows that at equal competence, an employee earned the same wage in the financial sector as in the rest of the economy in 1980. But a gap emerged in the 1980s and has continued to widen since. In 2000, wages were 60% higher in finance than in other sectors. This is partly explained by an increase in the number of highly skilled employees in finance, and an increased risk of unemployment, but only in part: Philippon and Reshef calculates that financial sector wages are 40% above what we might have expected based on these factors. The last time they were so high was in 1929...

Naturally, the wage issue was part of the discussions around the Paulson plan, which authorizes the government to spend up to 700 billion dollars to buy shares the market does not want. It seems unfair for the taxpayer to pay from his pocket the mess created by others who earn 17,000 dollars an hour. Ultimately, no ceiling on executive compensation has been imposed on banks that sell shares to funds set up by the government, although some limits were placed on "golden parachutes". In any case, as Thomas Piketty pointed out in his liberation column last week, a wage cap is easily circumvented, and it would be preferable to tax high incomes, as the Roosevelt administration did.

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[111] Thomas Philippon and Ariell Reshef “Skill Biased Financial Development: Education, Wages and Occupations in the U.S. Finance Sector” NYU Stern Business School mimeograph, , September 2007

If paying the bankers (a lot) less or taxing them (a lot) would certainly be more desirable from a moral point of view (not to mention considerations of equity), would it be harmful in terms of economic efficiency, as many economists suggest? Is there a risk of discouraging the most talented to work hard and innovate in finance? Probably. But it would almost certainly be a good thing. The temptations to join the financial sectors are even stronger for the elite of undergraduates than what Philippon and Reshef estimate. The "Harvard and Beyond" survey, a survey of several cohorts of Harvard graduates conducted by Claudia Goldin and Larry Katz showed that in 2006 those who worked in finance earned almost 3 times more (195%) than others, after controlling for grades in college, standardized scores at entry, choice of major, year of graduation, etc.[112] The temptation for a young talent to work in this sector is enormous: the survey showed that 15% of males Harvard graduates of the classes 1988-1992 were working in finance, against only 5% of those of the 1969-1972 class. More generally, the massive deregulation of the financial sector, which began in the 1980s, and the opportunity to make extraordinary profits, has been accompanied by an increase in the number and qualifications of employees in this sector. Again, according to Philippon and Resheff, one has to go back to 1929 to see such a gap between the average education of an employee in the financial sector and one in the rest of the economy. The complex financial products, but also the evolution of standards in the social sectors over the past 30 years has made the financial sector particularly attractive to any graduate, intelligent as he may be.

What the crisis has made bluntly apparent is that all this intelligence is not employed in a particularly productive way. Admittedly, a financial sector is necessary to act as the intermediary between entrepreneurs and investors. But the sector seems to have taken a quasi-autonomous existence without close connection with the financing requirements of the real economy. Thomas Philippon calculates that the financial sector, which accounts for 8% of GDP in 2006, is probably at least 2% above the size required by this intermediation.[113] Worse, the sub-prime crisis is almost certainly in part linked to the fact the needs of the financial markets (the insatiable demand from banks for the famous "mortgage backed securities") led to excessive borrowing and a housing bubble. Watching the events of the last few days unfold does make us one want to send some of the finance CEOs back home. More pragmatically, the disappearance of their exorbitant earnings may encourage younger generations to join other industries, where their creative energies would be socially more useful. The financial crisis could plunge us into a severe and prolonged recession. The only silver lining is that it could cause a more realistic allocation of talents. One must hope that the bail-out packages in Wall Street and in Europe does not convince the best and brightest that the financial sector is still their best option.

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[112] Claudia Goldin and Lawrence Katz "Transitions: Career and Family Life Cycles of the Educational Elite" *American Economic Review* (2008) 98:2 pp 263-269

[113] Thomas Philippon "Why Has the U.S. Financial Sector Grown so Much?" MIMEO, NYU Stern.

Chronology

2007

December 28: Ownit Mortgage Solutions files for bankruptcy.

February 7: U.S. Senate Banking Committee holds hearing on predatory lending in subprime sector.

February 22: HSBC losses top $10.5 billion. Head of HSBC U.S. mortgage lending business is fired.

March 7: The Federal Deposit Insurance Corporation issues a cease and desist order against Fremont Investment & Loan bank, which had been "operating without adequate subprime mortgage loan underwriting criteria."

March 8: Donald Tomnitz, the CEO of D.R. Horton, the largest U.S. homebuilder, tells investors, "I don't want to be too sophisticated here, but '07 is going to suck, all 12 months of the calendar year."

March 12: Lenders to New Century Financial, a large subprime lender, cut off its credit lines. Trading in its shares is suspended by the New York Stock Exchange.

March 16: Subprime lender Accredited Home Lenders to sell, at heavy discount, $2.7 billion of loans. The New York Attorney General announces an investigation of subprime lending.

April 2: New Century Financial files for bankruptcy.

April 24: The National Association of Realtors announces that existing home sales fall 8.4 percent during March, the greatest drop in 18 years.

May 3: GMAC, the finance arm of General Motors, reports losses of $1 billion. UBS closes its U.S. subprime business. First comprehensive plan to help homeowners avoid foreclosures presented in U.S. Senate.

June 6: The Bank of England reduces the overnight bank rate by 25 basis points to 5.5 percent.

June 22: Bear Stearns injects $3.2 billion into two of its hedge funds hurt by falling CDO prices.

July 4: UK authorities take action against 5 brokers selling subprime mortgages.

July 10: All three major credit ratings agencies announce review of subprime bonds.

July 13: General Electric to sell WMC Mortgage, its subprime lending business.

July 18: U.S. housing starts down 20 percent from the previous year.

July 31: The two Bear Stearns hedge funds that were under stress file for bankruptcy protection

August 6: American Home Mortgage, one of the largest U.S. home loan providers, files for bankruptcy.

August 9: BNP Paribas suspends three investment funds hit by subprime crisis. AIG warns that mortgage defaults spreading beyond subprime sector.

August 10: The ECB provides 61 billion euros of funds for banks. The Fed said it would provide as much overnight money. The interest rate on 15-day AAA asset-backed commercial paper hits 6.14 percent for a historically high

August 13: Goldman Sachs to pump $3 billion to rescue a hedge fund. The ECB and central banks in the U.S. and Japan continue supplying liquidity to markets.

August 16: Countrywide draws down its $11.5 billion credit line.

August 17: The Federal Reserve cuts the discount rate to 5.75 percent.

August 23: Bank of America purchases 16 percent of Countrywide Financial for $2 billion. Four large U.S. banks announce coordinated borrowing of $2 billion from the Federal Reserve's discount window.

August 28: German bank Sachsen Landesbank is sold to Landesbank Baden-Wuerttemberg. The S&P/Case-Shiller Home Price Index for second quarter 2007 is down 3.2 percent from a year earlier, the greatest drop in the 17-year history of the index.

August 31: Subprime lender Ameriquest files for bankruptcy.

September 1-3: The Federal Reserve's annual Jackson Hole conference focuses on the link between housing and monetary policy.

September 3: IKB, German regional lender, records $1 billion loss due to U.S. subprime market exposure.

September 4: Bank of China reveals $9 billion in subprime losses.

September 6: The delinquency rate on 1-4 family mortgages reaches 5.1 percent, according to the Mortgage Bankers Association.

September 13: Global Alpha, a hedge fund managed by Goldman Sachs, reveals that it lost 22 percent during August.

September 14: A run on the deposits of British mortgage lender Northern Rock begins.

September 18: The Federal Reserve cuts the fed funds rate by 50 basis points to 4.75 percent, its first cut since 2003.

October 1: UBS and Citigroup announce losses of $3.4 billion and $3.1 billion respectively.

October 9: The Dow Jones Industrial Average closes at 14,164, its all-time high.

October 10: The U.S. government teams up with mortgage servicers and investors to launch the HOPE NOW alliance, to encourage the voluntary modification of adjustable-rate mortgages to fixed-rate.

October 14: Citigroup, JPMorgan Chase and Bank of America, with the support of the Treasury Department, announce a plan to form a Master-Liquidity Enhancement Conduit (MLEC) that would purchase asset-backed commercial paper from liquidation Structured Investment Vehicles.

October 15: Citigroup and Japanese bank Nomura announce subprime losses of $5.9 billion and $621 million, respectively.

October 16: The National Association of Home Builders confidence index hits 19, the lowest since the series began in 1985.

October 26: Countrywide Financial reports a loss of $1.2 billion for third quarter 2007. This is its first loss in 25 years.

October 30: Merrill Lynch announces losses of $7.9 billion and the resignation of CEO Stan O'Neal.

October 31: The Federal Reserve cuts the federal funds rate by 25 basis points to 4.5 percent. Deutsche Bank reveals a €2.2 billion loss.

November 1: Credit Suisse discloses a $1 billion loss. Fed injects $41 billion.

November 5: Citigroup announces that its $55 billion portfolio of subprime-related investments has declined in value between $8 billion and $11 billion. CEO Charles Prince resigns.

November 8: Morgan Stanley and BNP Paribas disclose mortgage losses of $3.7 billion and €197 million, respectively. Insurance company AIG writes down $2 billion of mortgage investments.

November 9: Wachovia announces $1.7 billion loss.

November 13: Bank of America announces $3 billion subprime loss.

November 14: Japan's second largest banking group, Mizuho reports full-year operating profit fell 13 percent. HSBC reports losses of $3.4 billion.

November 15: Barclays reveals $2.7 billion loss. The U.S. House of Representatives passes the Predatory Lending and Mortgage Protection Act.

November 16: Goldman Sachs forecasts financial losses due to subprime crises at $400 billion.

November 19: Reinsurance company Swiss Re to lose $1 billion on insurance of client hit by subprime crises.

November 20: Freddie Mac reports a $2 billion loss.

November 27: Freddie Mac and Citigroup raise $6 billion and $7.5 billion of capital respectively. U.S. house prices record biggest quarterly drop in 21 years.

December 5: New York Attorney General sends subpoenas to major investment banks to investigate subprime mortgage securitization.

December 6: Royal Bank of Scotland to write off £1.25 billion due to subprime crisis. The Bank of England cuts UK interest rates.

December 10: UBS and Lloyds TSB report $10 billion and £200m losses due to bad debts in the U.S. housing market.

December 11: The Federal Reserve lowers the federal funds rate by 25 basis points to 4.25 percent. Washington Mutual subprime losses to reach $1.6 billion.

December 12: The Federal Reserve announces the creation of the Term Auction Facility (TAF), which will auction a fixed amount of funds to the banking system, initially set at $20 billion. The Federal Reserve, the European Central Bank, and the Swiss National Bank also announce that they will engage in currency swaps of up to $20 billion to the ECB and $4 billion to the SNB. The Bank of England and Bank of Canada also announce that they will increase their liquidity facilities.

December 14: Citigroup takes $49 billion worth of SIV assets back on its balance sheet.

December 17: Federal Reserve makes $20 billion available to commercial banks.

December 18: The Federal Reserve tightens rules on subprime lending. The European Central Bank lends European commercial banks $500 billion. The Bank of England makes £10 billion available to UK banks.

December 19: As subprime losses reach $9.4 billion, Morgan Stanley sells a 9.9 percent stake in the company to the China Investment Corporation.

December 21: The spread of 15-day AAA asset-backed commercial paper over AAA nonfinancial commercial paper hits 173 basis points as banks scramble for funding through the end of the year. The spread is usually less than 10 basis points.

December 22: The M-LEC plan to rescue struggling SIVs is abandoned by the sponsoring banks.

2008

January 4: The U.S. unemployment rate rises from 4.7 percent to 5.0 percent.

January 9: Bear Stearns reveals subprime losses of $1.9 billion. CEO James Cayne steps down. The World Bank says that world economic growth will slow in 2008 due to subprime crisis credit crunch.

January 11: Bank of America buys Countrywide for $4 billion after its shares plunge 48 percent. Merrill Lynch doubles projection of subprime losses to $15 billion.

January 15: Citigroup reports a $9.8 billion loss for the fourth quarter, including $18 billion loss in mortgage portfolio.

January 17: Lehman Brothers retires from wholesale mortgage lending and will cut 1,300 jobs.

January 19: Fitch Ratings lowers the rating of Ambac, the second-largest monoline insurer after MBIA, from AAA to AA. This is the first downgrade of a large monoline.

January 22: In a surprise move between regularly-scheduled meetings, the Federal Reserve cuts the federal funds rate by 75 basis points to 3.50 percent.

January 24: French bank Société Générale announces that it lost €4.9 billion due to the unauthorized activity of one of its traders. While the bank closed out the trades during a holiday weekend in the United States, stock markets plunged around the world.

January 30: The Federal Reserve cuts the federal funds rate by 50 basis points to 3.00 percent. Regularly-scheduled auctions for municipal debt of the state of Nevada and Georgetown University fail due to lack of bidders and uncertainty about monoline insurers. The debt issuers are forced to pay a penalty rate.

February 13: President Bush signs the Economic Stimulus Act of 2008. The act provides approximately $100 billion of tax rebates to be distributed during summer 2008 and $50 billion of investment incentives.

February 14: UBS announces fourth quarter 2007 loss of CHF 12.4 billion ($12 billion).

February 15: Problems in the auction-rate securities market continue to spread; over 1,000 auctions fail this week. Investment banks do not allow investors to withdraw funds invested in those securities.

February 28: AIG, a large insurance company, announces fourth quarter 2007 losses of $5.3 billion due to more than $11 billion of losses on its credit default swap portfolio.

March 6: The delinquency rate on 1-4 family mortgages was 5.82 percent during fourth quarter 2007, up 87 basis points from a year earlier, according to MBA's National Delinquency Survey.

March 11: The Federal Reserve Bank of New York announces the creation of the Term Securities Lending Facility (TSLF), which lets primary dealers swap AAA-rated securities for Treasury securities. The Federal Reserve, European Central Bank and Swiss National Bank increase the size of their dollar swap lines to $30 billion and $6 billion respectively.

March 14: Investment firm Carlyle Capital defaults on $17 billion of debt. The fund is leveraged more than 30 to 1 and invests mostly in agency-backed RMBS.

March 16: The Federal Reserve Bank of New York announces the creation of the Primary Dealer Credit Facility (PDCF), which essentially opens the discount window to primary dealers, including non-depository institutions.

March 17: Investment bank Bear Stearns is acquired by JPMorgan Chase for $2 per share. Bear Stearns stock had been trading at $60 the previous week before a run pushed it to near-insolvency. The Federal Reserve Bank of New York agrees to guarantee $30 billion of Bear Stearns assets, mostly mortgage-related.

March 18: The Federal Reserve cuts the federal funds rate by 75 basis points to 2.25 percent.

March 24: JPMorgan Chase raises its bid for Bear Stearns to $10 per share and agrees to indemnify the Federal Reserve Bank of New York against the first $1 billion of losses on the $30 billion that it guaranteed.

April 8: Washington Mutual, one of the largest U.S. mortgage originators, raises $7 billion from TPG, a private equity firm. The IMF's Global Financial Stability estimates total credit losses of $1 trillion.

April 15: *Alpha* magazine reports that hedge fund owner John Paulson is the highest-paid trader in 2007. His fund Paulson & Co. rose more than $20 billion during the year shorting the mortgage market.

April 18: Citigroup announces another $12 billion of losses related to subprime mortgages, leveraged loans, exposure to monoline insurers, auction-rate securities, and consumer credit.

April 21: National City Corp., a large regional U.S. bank, announces a $7 billion capital infusion from Corsair Capital, a private equity firm.

April 22: Royal Bank of Scotland announces that it will raise about £16 billion pounds from investors and by selling assets.

April 29: The FDIC proposes that the Treasury Department make new Home Ownership Preservation (HOP) loans to borrowers with unaffordable mortgages.

April 30: The Federal Reserve lowers the federal funds rate by 25 basis points to 2.0 percent.

May 2: The Federal Reserve expands the range of acceptable collateral for the TSLF to include AAA-rated asset-backed securities, increases the amount of money auctioned under the TAF to from $50 billion to $75 billion, and increases its dollar swap lines with foreign central banks.

May 5: The Federal Reserve's Senior Loan Officer Survey reports tighter lending standards close to, or above, historical highs for nearly all loan categories.

May 6: UBS AG announces CHF 11.5 billion ($11.1 billion) loss during first quarter 2008. Fannie Mae announces a $2.2 billion quarterly loss and plans to raise $6 billion of capital. Home builder D.R. Horton reports $1.3 billion quarterly loss and a 33 percent cancellation rate on orders for new houses.

May 8: Insurance company AIG reports a $7.8 billion quarterly loss, including more than $15 billion of write-downs on its investment portfolio.

May 12: Monoline insurer MBIA announces a $2.4 billion loss during first quarter 2008.

May 14: RealtyTrac reports that foreclosures filings are 65 percent higher than a year earlier.

May 16: The University of Michigan's Consumer Confidence Survey fell to 59.5, the lowest level since June 1980.

May 23: The city of Vallejo, CA, files for bankruptcy, unable to pay rising pension costs.

May 29: The FDIC reports that the U.S. banking industry earned $19.3 billion in first quarter 2008, a decline of 46 percent from a year earlier.

June 5: The Mortgage Bankers Association that a record 6.35 percent of all mortgage loans are delinquent and another record 2.47 percent of mortgages are in foreclosure.

June 16: Lehman Brothers announces a $2.8 billion quarterly loss.

June 20: The U.K.'s National House Building Council says that new housing starts in May were 56 percent below a year earlier.

June 27: The Wall Street Journal reports that Senator Charles Schumer sent a letter to bank regulators about the health of IndyMac bank. The University of Michigan consumer sentiment survey falls from 59.6 in May to 56.4 in June, its lowest level since 1980.

July 1: U.S. auto sales fall 18 percent during June, including a 36 percent fall of sales at Chrysler. Starbucks reports that it is closing 600 stores and cutting 12,000 jobs.

July 3: The Federal Reserve reports that it the Bear Stearns assets that it acquired have fallen in value by $1.1 billion so far.

July 9: U.S. retailer Steve and Barry's files for bankruptcy.

July 11: The FDIC closes IndyMac bank. With $32 billion of assets, this is the second-largest bank failure in FDIC history.

July 13: The Treasury Department announces emergency liquidity measures for Fannie Mae and Freddie Mac.

July 17: Merrill Lynch reports a quarterly loss of $4.65 billion, including $9.75 billion of write-downs.

July 18: Citigroup announces a quarterly loss of $2.5 billion.

July 22: Wachovia reports an $8.66 billion quarterly loss. Washington Mutual reports a $3.3 billion quarterly loss.

July 24: National City bank reports a quarterly loss of $1.76 billion.

July 25: Ford Motors reports an $8.7 billion quarterly loss.

July 28: Merrill Lynch agrees to sell securities with a par value of $30.6 billion to investment group Lone Star Funds for $6.7 billion. It will provide non-recourse funding for 75 percent of the purchase.

July 29: Retailer Mervyn's files for bankruptcy. Homebuilder Centex reports a $150 million loss.

July 30: Restaurant chain Bennigan's files for bankruptcy.

July 31: The Bureau of Economic Analysis estimates that U.S. GDP growth was 1.9 percent in second quarter 2008. It also revises down its estimate of fourth quarter 2007 growth from 0.6 percent to -0.2 percent, marking the first GDP decline since 2001.

August 1: GM posts a quarterly loss of $15.5 billion.

August 4: Homebuilder WCI and department store operator Boscov's both file for bankruptcy.

August 6: Freddie Mac loses $821 million and AIG loses $5.36 billion during the quarter.

August 7: Deutsche Bank forecloses on a $3.5 billion casino after the owner defaults on a $760 million loan.

August 9: Fannie Mae reports a quarterly loss of $2.3 billion.

August 26: The FDIC reports that the U.S. banking industry earned $5.0 billion in second quarter 2008, a decline of 87 percent from a year earlier. 2.04 percent of all loans and leases were noncurrent, the highest level for the industry since 1993.

September 2: Fitch reports that losses on securitized auto loans nearly doubled from June to July.

September 5: The Bureau of Labor Statistics reports that the unemployment rate rose from 5.7 percent in July to 6.1 percent in August.

September 7: The Treasury Department takes Fannie Mae and Freddie Mac into conservatorship.

September 10: Lehman Brothers announces a quarterly loss of $3.9 billion, plans to sell its brokerage unit Neuberger Berman, and spin off its commercial real estate assets.

September 12: The Commerce Department reports that retail sales fell 0.3 percent in August and were revised downward for July.

September 14: Lehman Brothers files for bankruptcy. Merrill Lynch agrees to be bought by Bank of America for $50 billion. AIG asks the Federal Reserve for aid. The Federal Reserve expands the range of collateral eligible for the TSLF and PDCF.

September 16: Money market fund The Reserve suspends redemptions as its per-share value falls below $1, hurt by its investment in Lehman Brothers commercial paper. The Federal Reserve agrees to lend AIG up to $85 billion.

September 17: Morgan Stanley announces quarterly earnings of $1.43 billion. Goldman Sachs earns $845 million. Three-month Treasury bill yields fall to 0.23 percent, their lowest level since at least 1954. The Census Bureau reports that single-family housing starts are at their lowest level since 1991. DataQuick reports that almost half of all southern California home sales are of foreclosed homes.

September 18: Putnam Investment closes a $15 billion money market fund because of heavy redemptions. The Financial Services Agency temporarily bans short-selling financial stocks in the United Kingdom.

September 19: The Securities and Exchange Commission temporarily bans short-selling financial stocks in the United States. The Treasury announces that it will insure money market funds for a year. The Treasury first proposes the TARP.

September 21: Goldman Sachs and Morgan Stanley announce that they will become bank holding companies regulated by the Federal Reserve.

September 22: Australia, Taiwan, and the Netherlands announce temporary short-selling bans. Futures prices of crude oil rise $25, the biggest recording trading gain.

September 24: President Bush addresses the United States, saying "our entire economy is in danger."

September 25: The FDIC closes Washington Mutual and engineers a sale to J.P. Morgan.

September 28: The Benelux countries partially nationalize Fortis bank.

September 29: The United Kingdom announces that it is nationalizing lender Bradford & Bingley and selling it to Spanish bank Santander for £612 million. Citigroup acquires Wachovia in a deal guaranteed by the FDIC. Mitsubishi UFJ buys 21 percent of Morgan Stanley for $9 billion. The House of Representatives does not pass the bailout package.

September 30: LIBOR hits an all-time high of 6.88 percent.

October 1: Ireland guarantees the debt of six major banks. French-Belgian bank Dexia is partially nationalized. The central bank of India lends money to ICICI to stop a run on the bank.

October 6: The Federal Reserve announces that it will pay interest on bank reserves in an attempt to stabilize volatility in the interbank lending market.

October 7: The Federal Reserve announces the creation of the Commercial Paper Funding Facility, which marks the first time that the Fed will lend directly to corporations since the Great Depression.

October 8: Central banks around the world lower interest rates in concert. The Federal Reserve, European Central Bank, Bank of England, Bank of Canada, Sveriges Riksbank, and Swiss National Bank all lower their target rates by 50 basis points. The U.K. sets up the Credit Guarantee Scheme, which guarantees bank debt. Eight large British banks agree to raise £25 billion in new capital.

October 10: Trading volume on the New York Stock Exchange sets a record of almost 9 billion shares.

October 14: The U.S. Treasury Department announces that it will make direct capital injections into banks, including $150 billion immediately into 9 large banks. The FDIC announces that it is creating the TLGP, which extends unlimited deposit insurance for noninterest-bearing transaction accounts and guarantees a variety of bank debt.

October 16: The VIX, a measure of stock market volatility, reaches a record level of 80.

October 20: Argentina begins nationalizing $30 billion of private pension funds.

October 21: The Federal Reserve creates the Money Market Investor Funding Facility to purchase assets from money market funds.

October 24: The U.K. reports that GDP growth in third quarter 2008 was -0.5 percent, the first decline since 1992. The IMF announces an initial agreement to lend $2.1 billion to Iceland. U.S. regional bank PNC announces that it is buying troubled bank National City with proceeds from the Treasury's capital injection program.

October 26: The IMF announces a $16.5 billion loan to Ukraine. Porsche says that it has accumulated almost three-quarters of Volkswagen shares through derivatives, leading to large losses at hedge funds. The Nikkei 225 index falls to its lowest level since 1982.

October 27: The S&P 500 rises 10.8 percent, the greatest one-day rise in New home sales in the United States unexpectedly rise by 2.7 percent in September. The median price of a new home is down 9.1 percent from a year earlier.

October 28: The IMF, the European Union, and the World Bank announce a joint financing package for Hungary totaling $25.1 billion. BP says that third quarter profits rose 83 percent from a year earlier to $8.1 billion. Aegon NV receives €3 billion in capital from the Netherlands. The Baltic Dry Index, a measure of shipping demand, fell below 1,000 for the first time since 2002 and is down 90 percent from its peak.

October 29: The IMF creates the Short-Term Liquidity Facility (SLF) with $100 billion to lend to emerging markets with strong macroeconomic fundamentals but short-term liquidity needs. Iceland increases interest rates to 18 percent. The Federal Reserve cuts the federal funds rate by 50 basis points to 1.00 percent.

October 30: The Bureau of Economic Analysis reports that U.S. GDP growth in third quarter 2008 was -0.3 percent. ExxonMobil announces quarterly profit of $13.4 billion, up 42 percent from a year earlier and an all-time high for any U.S. corporation. The Federal Reserve opens currency swap lines with Brazil, Korea, Mexico, and Singapore. The Federal Reserve's balance sheet is now over $2 trillion, more than doubling from a year ago.

October 31: Global stock markets lose a total of $9.5 trillion during October. Barclays raises £7 billion from investors in Qatar and Abu Dhabi. The Bank of Japan cuts its policy rate 20 basis points to 0.3 percent and the Japanese government announces a new $51 billion stimulus plan. According to the Nationwide House Price Survey, U.K. house prices are 14.6 percent lower than a year earlier. American Express plans to cut 7,000 jobs, or about 10 percent of its workforce. Spain reported a quarterly decline in GDP of 0.2 percent, the first decline since 1993.

November 1: The U.S. national debt reaches $10 trillion for the first time in history. JPMorgan Chase announces a plan to modify $70 billion of mortgage debt.

November 3: Commerzbank receives €8.2 billion in new capital from the German government. Spain announces a plan to let unemployed homeowners and some retirees postpone payment of half their monthly mortgage payments for two years starting in January. The U.S. Institute for Supply Management's ISM factory output index falls to 38.9, its lowest level since 1982. GM reports that car and truck sales were 45 percent

lower than a year earlier; Ford reported a 30 percent decline and Nissan a 33 percent decline.

November 4: Italy plans to inject €30 billion to recapitalize its banks. Brazilian banks Banco Itaú and Unibanco announce merger plans to create South America's largest bank. The British Construction Purchasing Managers' Index falls to 35.1, a seasonally-adjusted record low. The Depository Trust & Clearing Corp. says that credit-default swaps outstanding were more than $33 trillion, about half on individual credits and half on indexes. The Reserve Bank of Australia cuts its target rate by 75 basis points to 5.25 percent.

November 5: GMAC, the financing arm of General Motors, reported a quarterly loss of $2.5 billion, its fifth straight loss.

November 6: The Bank of England cuts the target rate by 150 basis points to 3.0 percent. The ECB lowers its target rate by 50 basis points. The Swiss National Bank lowers its target rate by 50 basis points. The U.S. weekly continued unemployment claims data is at its highest level since 1983. Hedge fund Platinum Grove Asset Management, co-founded by Nobel laureate Myron Scholes, suspends redemptions after losing 29 percent in early October. Only one securitization deal of $500 million occurs during October, down from $50 billion a year earlier. It was the first month with no credit card securitizations since 1993. Australian asset manager Allco Finance files for bankruptcy with AUD 1 billion in debt. Wells Fargo raises $11 billion in new capital.

November 7: Spain announces that it will guarantee up to €200 billion of new bonds issued by its banks. The U.S. unemployment rate rises from 6.1 to 6.5 percent. Ford announces a quarterly operating loss of $3 billion.

November 10: China announces a $586 billion stimulus plan. The Federal Reserve renegotiates the terms of its loan to AIG, lowering the interest rate and injection $40 billion of capital. Fannie Mae says that the $100 billion line of credit to it and Freddie Mac from the Treasury may not be enough. American Express becomes a bank holding company in order to borrow from the Federal Reserve and access the TLGP. Spanish bank Santander raises €7.2 billion in new capital. German logistics company DHL withdraws from U.S. market. Japanese factory orders fall 10.4 percent during the quarter, matching the largest drop in history.

November 11: U.S. Congress member Nancy Pelosi calls for "immediate action" to support Ford, GM, and Chrysler as GM stock prices hit a 65-year low. U.S. electronics retailer Circuit City files for bankruptcy.

November 12: Fannie Mae reports $29 billion quarterly loss, including $21 billion writedown of deferred tax assets. Fannie Mae and Freddie Mac announce streamlined mortgage modification process. The Treasury announces that the TARP program is officially switching focus from buying illiquid assets to injecting capital into banks. Hedge fund Tontine Partners, with more than $11 billion under management, shuts down

two of its flagship funds. The Russian stock market falls 12.5 percent in the first three hours of trading before trading is suspended.

November 13: Germany reports a quarterly decline in GDP of 0.5 percent, the second quarterly decline in a row. German real-estate finance company Hypo Real Estate Holding AG reported a €3.1 billion quarterly loss driven by €2.5 billion in write-downs to its public finance subsidiary, Depfa. Pakistan raised its target interest rate by 2 percentage points to 15 percent to help reduce inflation rates of 25 percent. Chinese bank Citic Pacific assumes $1.3 billion of currency losses from its Hong Kong affiliate. General Electric announces that it will have as much as $139 billion of GE Capital debt guaranteed under the TLGP. China's industrial output rises 8.2 percent from a year earlier, the slowest growth rate in seven years.

November 14: Eurostat reports that GDP growth in the 15 euro nations was negative 0.2 percent, the second decline in a row, marking a recession. Freddie Mac reports a $25.3 billion quarterly loss due to writedowns on securities, deferred tax assets, and mortgages. It submits a request to the Treasury for a capital injection of $13.8 billion. The FDIC proposes a loan-modification program that would have the government bear up to 50 percent of losses if modified loans default, at an estimated cost of about $25 billion.

November 15: Pakistan agrees to a $7.6 billion IMF loan.

November 16: After meeting in Washington, D.C., the Group of 20 announces a set of plans to overhaul international bank regulation and increase financial supervision of member countries.

November 17: Citigroup announces that it plans layoffs of up to 50,000.

November 20: European countries agree to augment the IMF's loans to Iceland, bringing the total to $10 billion. The Swiss National Bank lowers its target range by 100 basis points to 0.5-1.5%.

November 23: The Treasury and FDIC guarantee $306 billion of Citigroup's assets and invest $20 billion from the TARP into preferred shares with an 8% yield.

November 24: President-elect Barack Obama announces his economic team, including Timothy Geithner as Secretary of the Treasury; Lawrence Summers as the Director of the National Economic Council; Christina Romer as Chair of the Council of Economic Advisors; and Melody Barnes as Director of the Domestic Policy Council.

November 25: The Federal Reserve announces the creation of the Term Asset-Backed Securities Loan Facility (TALF), which will lend up to $200 billion against various types of asset-backed securities. It will also, separately, begin purchasing up to $500 billion of GSE debt.

November 26: The People's Bank of China lowered its target interest rate by 108 basis points to 5.58 percent. Fitch lowers Toyota's debt rating from AAA to AA.

November 27: ArcelorMittal, the world's largest steelmaker, announces 9,000 job cuts.

December 1: Morimoto, a Japanese condominium developer, files for bankruptcy with $1.7 billion of debt outstanding.

December 3: The Reserve Bank of Australia lowers its target interest rate by 100 basis points to 4.25 percent. The IMF lends $77 million to Malawi.

December 4: The European Central Bank reduces its target interest rate by 75 basis points to 2.5 percent; the Bank of England cuts 100 basis points to 2.0 percent, the lowest rates since the Bank of England was founded in 1694; and the Swedish Riksbank cuts 175 basis points to 2.0 percent. France proposes a €25 billion stimulus plan. Halifax reports that British house prices fell 2.6 percent during November, bringing prices back to their July 2005 level.

December 5: The Bureau of Labor Statistics reports that the United States had a net loss of 533,000 jobs in November, the greatest decline since 1974. AT&T announces job cuts of 12,000.

December 8: The Tribune Company, a Chicago-based media corporation owned by real estate magnate Sam Zell, files for bankruptcy.

December 9: Three-month U.S. Treasury bills trade with a negative yield for the first time since the Great Depression. Sony Corp. announces 16,000 job cuts. Third quarter Japanese GDP growth is revised downward to an annualized rate of -1.8 percent.

December 10: The Chinese customs bureau reported that exports in November were 2.2 percent lower than a year earlier, the first decline in seven years. The IMF lends $100 million to Kyrgyzstan.

December 11: FBI agents arrest Bernard Madoff, owner of broker-dealer Madoff Securities, who had been running a Ponzi scheme that may have resulted in $50 billion of investor losses. The National Bureau of Economic Research announces that the recession in the United States began in December 2007. The Swiss National Bank lowers its target range by 50 basis points to 0.0-1.0 percent. The Bank of Korea lowers its target interest rate by 100 basis points to 3.0 percent and the Taiwanese central bank lowers its target interest rate by 200 basis points to 2.75 percent. Bank of America announces job cuts of up to 35,000. A proposed record private equity buyout of Canadian telecom company BCE for C$35 billion is cancelled. S&P downgrades $5 billion of California municipal debt.

December 12: Ecuador defaults on $510 million of bonds. Japan announces a new $255 billion stimulus plan.

December 15: AIG sells RMBS with a face value of $39 billion to the Federal Reserve for $20 billion. Citadel Investment Group, a hedge fund with about $15 billion under management, suspends investor redemptions, joining other hedge funds including

Farallon Capital Management, Fortress Investment Group, and D.E. Shaw. The Tankan index of Japanese business confidence falls 21 points, the most in 34 years.

December 16: The Federal Reserve announces that it is lowering the federal funds rate to a target range of 0 to ¼ percentage points, the lowest level in its history. Housing starts decline to 625,000 at a seasonally adjusted annual rate, according to the Census Bureau, the lowest level since the series began in 1959. Goldman Sachs announces a $2.1 billion third quarter loss.

December 17: OPEC cuts its production target by a record 2 million barrels per day. Chrysler, the third largest U.S. car manufacturer, announces that it will close all of its U.S. factories for at least a month.

December 18: Deutsche Bank surprises investors by not exercising a call option on its bonds, choosing to pay a penalty rate to avoid having to refinance the bonds. Credit Suisse gives year-end bonuses in the form of shares in a $5 billion fund of illiquid assets. Morgan Stanley reports a $2.2 billion third quarter loss. Almost half of all sales of existing homes in the California bay area are of previously foreclosed homes, according to information provider DataQuick.

December 19: The Japanese government announces that it will buy up to 20 trillion yen ($223 billion) of stocks held by Japanese banks as part of a larger stimulus package. Yves Leterme, the Belgian prime minister, resigns after accusations that he influenced a court case over the government's takeover of Fortis. Consultancy Hedge Fund Research reports that 344 hedge funds close during the quarter, which was the first in which there were more liquidations than launches since the company began tracking the data in 1996.

December 20: The U.S. Treasury Department announces that it will lend $17.4 billion of TARP money to the three large U.S. automakers. The Irish government injects €5.5 billion into its three largest banks, taking a 75 percent stake in Anglo Irish Bank. Japan increases the size of its economic stimulus plan to $716 billion.

December 21: Canada lends C$4 billion to Canadian subsidiaries of General Motors and Chrysler.

December 22: Toyota announces that it foresees its first quarterly loss in its 70-year history. Japanese exports are 27 percent lower than a year ago, with shipments to the United States down 34 percent. Mortgage applications double in the United States in just two weeks after the Federal Reserve's announcement that it will buy mortgage bonds to lower mortgage interest rates.

December 23: Third-quarter U.K. GDP growth is revised down to -0.6 percent, the lowest level since 1990. U.S. new home sales in November were at a seasonally adjusted annual rate of 407,000, the lowest level since 1982. El Salvador reaches a precautionary agreement with the IMF to borrow $800 million.

December 24: The IMF agrees to lend $2.4 billion to Latvia. U.S. weekly unemployment claims were 586,000, the highest level since 1982. Freddie Mac reports

that interest rates on 30-year fixed rate conforming mortgages fall to 5.14 percent, the lowest level since the survey began in 1971. Oil prices fall 9.3 percent to $35/barrel, down 63 percent for the year. The Federal Reserve approves the application by GMAC, the financing arm of General Motors, to become a bank holding company. GM and private equity company Cerberus will be required to divest their controlling shares.

December 26: Japanese industrial output falls 8.1 percent from a month earlier, the greatest decline on record.

Glossary

ABX.HE Index: An index produced by Markit that tracks prices on credit default swaps on tranches of selected asset-backed securities composed of residential mortgages.

Alternative-A (or Alt-A): A category of mortgage borrower, generally with FICO scores that qualify them for prime rates but are not eligible for prime for other reasons, such as lack of income documentation.

Asset-Backed Security (ABS): A security collateralized by financial assets, such as mortgages.

Asset-Backed Commercial Paper (ABCP): *see Commercial Paper*.

Asset Backed Commercial Paper (ABCP) Money Market Mutual Fund (MMMF) Liquidity Facility (AMLF): a lending facility by the Federal Reserve that provides funding to U.S. banks and bank holding companies to finance their purchases of high-quality asset-backed commercial paper (ABCP) from money market mutual funds.

Auction-Rate Security: A municipal bond whose interest rate is set at specified intervals, often two weeks, at auction. In early 2008 a large number of auctions failed due to lack of bidders, causing the municipalities to pay high penalty rates.

Basel II: a revision to the international rules governing bank capital allocation. Coordinated by the Bank for International Settlements. It was designed to lessen the amount of regulatory arbitrage that occurred under its predecessor, Basel I. European banks were supposed to implement Basel II rules by 2008, while U.S. banks implementation may occur in 2009.

Collateralized Debt Obligation (CDO): a structured finance product composed of debt instruments such as corporate and consumer loans, mortgages, and bonds. The cash flows from the underlying debt are paid out to the tranches of the CDO according to their seniority. CDO issuance averaged $500 billion in 2006 and 2007.

Commercial Paper (CP): Bonds with maturity less than 270 days. CP can be issued by corporations, banks, or trusts holding securities. The latter is usually referred to as asset-backed commercial paper (ABCP). ABCP was one of the first casualties of the crisis, starting to decline rapidly in August 2007 as the Structured Investment Vehicles unwound.

Commercial Paper Funding Facility (CPFF): a program under which the Federal Reserve Bank of New York purchases commercial paper; the first time the Fed lent directly to nonfinancial corporations since the Great Depression.

Conduit: a financial entity whose purpose is to buy financial assets from correspondents, repackage them, and sell interests in the new securities to other entities.

Credit Default Swap (CDS): a type of insurance against a firm defaulting on its debt. According to the Bank for International Settlements, the notional amount of CDS outstanding was $43 trillion as of June 2007.

Discount Window: The mechanism through which the Federal Reserve lends directly to banks, thrifts, and other chartered depository institutions. The PDCF essentially extended the discount window to primary dealers.

Fannie Mae/Freddie Mac: U.S. government-sponsored enterprises (GSEs) that enhance the flow of credit to the mortgage market. The GSEs purchase mortgages from banks and thrifts and either keep the mortgages or package them into RMBS and sell them to the secondary market.

Federal Deposit Insurance Corporation (FDIC): the U.S. agency that insures bank deposits.

FICO Score: A numerical rating of the credit history of individuals, developed by the Fair Isaac Corporation.

Government-Sponsored Enterprise (GSE): An private entity set up by the U.S. government to further social policy goals, usually related to credit provision. Major GSEs include Fannie Mae, Freddie Mac, and the Federal Home Loan Bank system.

LIBOR: London Interbank Offered Rate, the interest rate that banks charge each other to borrow money. Denominated in various currencies. U.S. dollar LIBOR is usually tied closely to the federal funds rate but diverged beginning in August 2007 due to a combination of credit and liquidity risk.

Money Market Investor Funding Facility (MMIFF): A program in which the Federal Reserve Bank of New York purchased illiquid assets from money market funds.

Monoline Insurer: An insurance company that specializes in insuring the performance of financial instruments, usually mortgage-related. Most offer private mortgage insurance, which is used to insure payments on mortgages with high loan-to-value ratios. Many also insured AAA-rated portions of CDOs.

Mortgage-Backed Security (MBS): A security that is composed of mortgages. Often separated into MBS backed by residential mortgages (RMBS) and commercial mortgages (CMBS). Fannie Mae and Freddie Mac dominated MBS issuance in the United States until 2004 when private-label MBS, often of subprime mortgages, became more prevalent. Payments of interest and principal on the underlying mortgages can be paid pro-rata (pass-through MBS) or in a "waterfall" fashion, with "tranches" getting paid in order of seniority.

Primary Dealer Credit Facility (PDCF): A new policy introduced by the Federal Reserve that essentially opens the discount window to primary dealers. Normally only banks and other depository institutions have access to the discount window. The PDCF was introduced by the Federal Reserve the same weekend that Bear Stearns was acquired by JPMorgan Chase.

Residential Mortgage-Backed Security (RMBS): *see Mortgage-Backed Security*.

Securitization: the practice of bundling securities into new securities. Used by financial institutions as a way of moving assets off their balance sheets in order to lend more. Mortgages are most commonly securitized but other debt instruments can also be included. In the United States, Fannie Mae and Freddie Mac actively promote mortgage securitization.

Short-Term Liquidity Facility (SLF): An IMF program established on October 2, 2008, to provide emergency to liquidity to countries with otherwise sound macroeconomic situations.

Structured Investment Vehicle (SIV): A fund that holds long-term securities (such as mortgages) and funds its investments with commercial paper.

Subprime: borrowers whose poor credit history does not qualify them for prime interest rates. In the United States, about 20 percent of mortgage originations totaling over $1 trillion in 2005 and 2006 were subprime, far above historical levels.

Temporary Liquidity Guarantee Program (TLGP): a program by the FDIC to offer unlimited deposit guarantees on noninterest-bearing transaction accounts and guarantee senior debt issued by banks and bank holding companies.

Term Asset-Backed Securities Loan Facility (TALF): a Federal Reserve facility to lend up to $200 billion against asset-backed securities (ABS) as collateral. The ABS can be collateralized by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Administration

Term Auction Facility (TAF): an auction held by the Federal Reserve for a set quantity of money. The TAF was introduced in December 2007 in response to pressures for short-term lending in the money markets.

Term Securities Lending Facility (TSLF): An arrangement by the Federal Reserve to lend Treasuries and accept other AAA-rated financial instruments as collateral.

Tranche: A method of apportioning cash flows in a structured finance product, such as an asset-backed security. Senior tranches are paid principal and interest first, and junior tranches are paid with whatever cash is left. Senior tranches have more security and consequently earn lower interest rates than junior tranches. Several tranches may be rated AAA. The most senior of the AAA tranches is often called “super-senior.”

Troubled Asset Relief Plan (TARP): Originally, a program under which the U.S. Treasury would purchase illiquid MBS and other assets. It evolved into the Capital Purchase Program (CPP), in which the Treasury purchased shares in banks.