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Policy Responses to the Financial Crisis

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with Jacopo Carmassi and Fabrizia Peirce

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CENTRE FOR EUROPEAN POLICY STUDIES (CEPS)

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Contents

List of Tables

List of Figures

KEEP IT SIMPLE
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CARMINE DI NOIA AND STEFANO MICOSSI
WITH
JACOPO CARMASSI AND FABRIZIA PEIRCE

Executive Summary

This study finds that the global financial instability was mainly determined by unstable macroeconomic policies in the major economies and currency areas of the world, with lax regulation of financial markets in general playing the role of a permissive factor.

The urgent task at this juncture is to stabilise financial markets and halt the poisonous spiral of lower asset prices depressing economic activity, which in turn is pushing asset prices even lower. The central question is how to restore confidence in the banking system. To this end, the deployment of government money into insolvent banks should be accompanied by a straight takeover by the state, a restructuring phase and resale to private investors as soon as possible.

The arsenal of crisis-management tools available to the European Central Bank are narrower than that of other major central banks because, unlike the Federal Reserve and the Bank of England, the European Central Bank is not backed by a fiscal authority. One way to tackle this weakness without undermining the ECB's independence would be to create a European Fund which would issue Eurobonds and make the proceeds available to European institutions for their financial rescue operations.

Once the crisis subsides, the world will need new monetary arrangements whereby external payment imbalances are corrected by appropriate domestic policies and exchange rates can vary consistently with the requirements of international adjustment. Agreement on restoring external discipline on national policies of all countries will not come about unless the main emerging economies can take their proper place alongside the industrialised countries in the world's governing institutions.

Lax financial market regulation has allowed leverage of financial organisations to build up to unsustainable levels. In our view, there is no need to fundamentally change the regulatory architecture whereby prudential regulation basically concerns banking institutions. Non-bank intermediaries, including private pools of capital, do not pose systemic stability risks unless they are financed cheaply by banks with depositors' money; to the extent that this is avoided, it is not necessary to extend prudential regulation beyond the banking system. There is also no need to return to a system of legal separation between commercial and investment banking, provided there are sufficient disincentives and penalties for banks to engage in capital market activities on their own account.

Our main advice on banking capital requirements is to scrap Basle II rules and replace them with a flat capital requirement calculated with reference to total assets, with no exemptions: the maximum permitted leverage ratio should never again be allowed to exceed a ceiling of ten.

We also suggest a number of measures designed to strengthen risk management within financial organisations as well as transparency of information on all market participants and financial instruments. Appropriate incentives should push OTC instruments to migrate to organised clearing platforms.

In Europe, a drastic simplification of the regulatory structure is in order to concentrate at EU level not only rule-making, which in the main has already been accomplished, but also rule implementation, as was argued by the de Larosière Group. More specifically, it is high time that Level Three Committees be given legal powers in coordinating the implementation of EU directives.

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Introduction

Since October 2008, stock markets have fallen by over 50% and the process of deleveraging in financial markets has hit the real economy worldwide, with sharp declines in aggregate demand, trade and output. While policy-makers are still struggling to stabilise financial markets and halt the fall in economic activity, the discussion is raging about what went wrong and what changes are needed in policies and financial market rules in order to avoid a repetition of these disastrous events.

With diagnoses of the crisis still diverging widely, disgruntled citizens whose jobs are at risk and taxpayers who have been asked to foot the bill are pressuring parliaments to punish the bankers and impose tight constraints on capital markets; think tanks and advocacy groups are trying to occupy the high ground of policy advice by elaborating long lists of new rules to correct equally long lists of alleged market failures. Politicians are looking for scapegoats to be thrown to the public to hide their own failures in keeping the financial industry under check. Political economists point to the favourable conditions for acting now with the lobbying power of the financial services industry severely curtailed. In sum, there is a real danger that a host of poorly conceived new rules will cripple capital markets, limit investment flows and damage the recovery of economic activity.

In reality, what is urgent is to halt the vicious circle of falling asset prices and mounting losses by financial organisations aggravating the credit crunch and generating more bad economic news that will feed into a further round of falling asset prices. Writing new rules for financial markets is less urgent since their depressed state makes an immediate return to the destabilising practices of the boom phase highly unlikely. Moreover, under pressure from shareholders and regulators, financial

organisations are already introducing measures of their own to address some of the flaws in risk control and management incentives that resulted in massive destruction of their capital.

Therefore, policy-makers and regulators should not rush to enact new rules, but rather embark on a thorough review of the regulatory architecture and arrive at considered conclusions on what needs to be changed. The new rules should put a brake on irresponsible lending and speculation but also preserve the benefits of open and flexible capital markets.

This study addresses some main themes in the ongoing debate on financial reform with a view to clarifying and simplifying the policy and regulatory issues before us. Financial instability has been brought about first and foremost by destabilising macro-financial policies, notably in the United States, against the background of persistent imbalances in international payments leading to a massive accumulation of financial assets and liabilities worldwide (section 1). Hence, there is little doubt that the problem will persist until we can bring some international discipline to bear on the main players regarding their monetary, fiscal and exchange rate policies. In this context Europe could draw substantial benefits from an enhanced international role of the euro, but this depends upon its willingness to issue Union bonds in large quantities (section 6). It remains to be seen whether the severe recession engendered by the financial market crash will lead to a greater willingness to cooperate internationally, or will result instead in a breakdown of cooperation and the proliferation of beggar-thy-neighbour policies, as happened in the 1930s.

Recognising the paramount role of macro-policies does not imply that financial regulation and supervision do not need overhauling. Financial organisations have displayed a systemic tendency to over-leverage their capital and take excessive risks, pointing to fundamental distortions in incentives: in essence, a skewed distribution of returns from risk-taking in which large gains are accrued to management and shareholders, while large losses are partly or wholly borne by public budgets and taxpayers. As rewards grew larger with rising stock markets, financial innovation was increasingly used to circumvent legal capital requirements and hide risk exposure – sometimes even to the governing bodies of the intermediaries themselves. Excessive risk-taking was favoured by loopholes in the regulatory system worldwide, an inadequate design of capital requirements and the lack of transparency in financial products and risk exposure (section 2).

Section 3 addresses crisis management in the main countries and the ongoing debate on how to halt falling asset prices and mounting losses of financial organisations. A main conclusion is that financial market stabilisation may well require not only much larger resources for capital injections in distressed intermediaries, but outright nationalisation of troubled banks in order to avoid writing yet more blank cheques with taxpayers' money. This section also calls attention to institutional limitations of the European Central Bank (ECB) that might limit its ability to maintain credit flows to end-users of funds or to handle the failure of a large bank.

Section 4 discusses two fundamental issues in the new regulatory structure on which preliminary decisions must be made. First, should commercial and investment banking activities be legally separated once again, as they once were under the Glass-Steagall Act, or can we live with the system of large universal banks which now also prevails in the United States, following the demise of Wall Street investment banks? Second, should the new regulatory structure be organised by institution, e.g. for banks, insurance companies, private pools of capital; or should it rather be organised by objectives, with separate authorities taking care of macro-prudential (system) stability, micro-prudential supervision, and transparency and investor protection? As will be seen, we favour this second solution, which is also more liable to result in a rapid concentration at EU level of regulatory and supervisory powers. Finally, section 5 is devoted to the key ingredients of micro-prudential regulation: capital requirements, management incentives and disclosure. Our main thesis is that – while indeed no financial organisation of systemic relevance should escape appropriate public monitoring – there is no need to regulate every market or financial activity where there is evidence of market failures. On the contrary, a limited number of measures concentrated on banks, which enjoy the benefits of deposit insurance, together with enhanced transparency obligations for other financial intermediaries, can do the job. The main change that we propose is to scrap the Basle II framework for regulatory capital and substitute it with a total capital ratio calculated with reference to a bank's overall balance sheet. Our main proposals are summarised in section 7.

1. The macro-policy faults

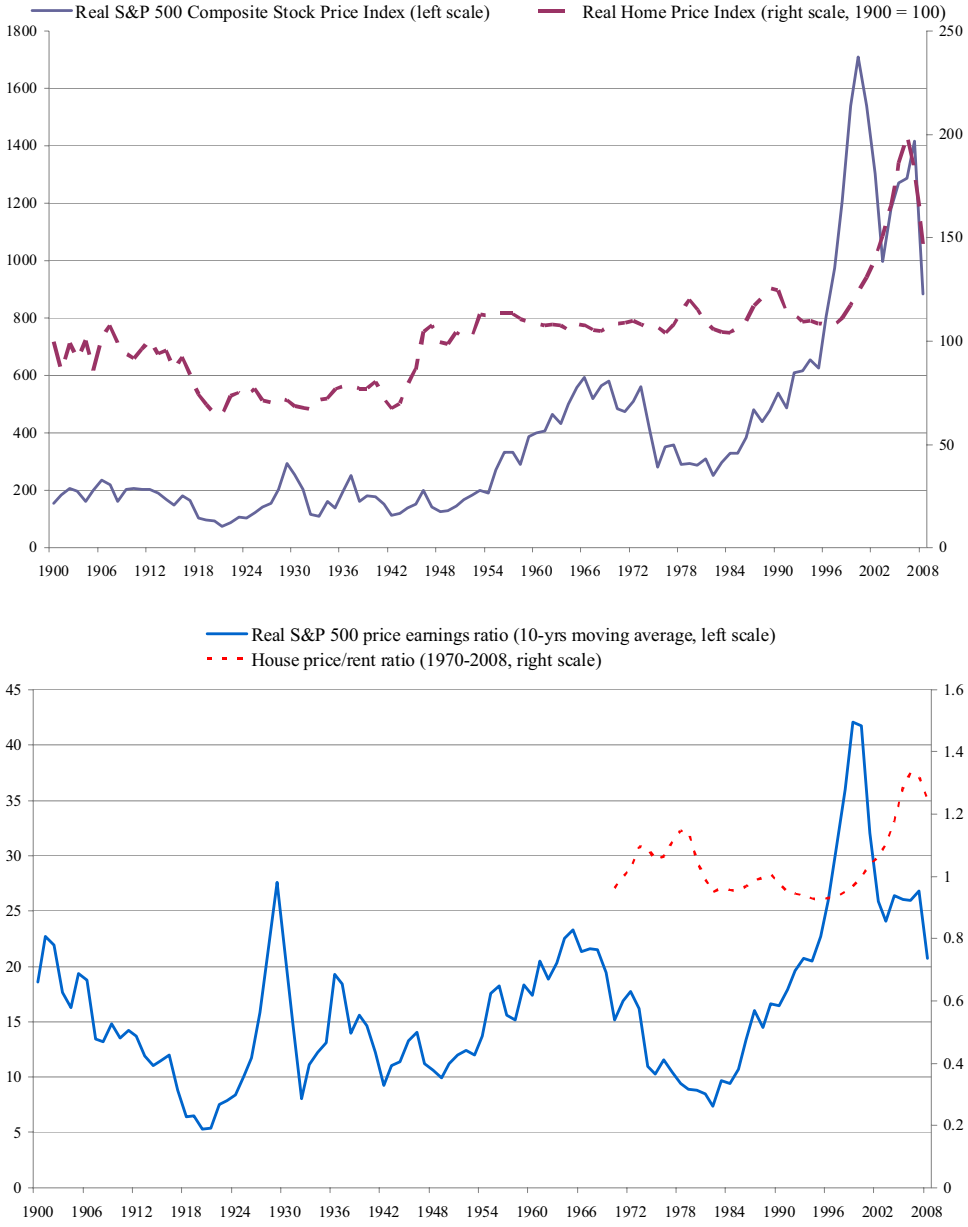
By all possible metrics, the last three decades have seen prices in the main asset markets massively and unprecedentedly deviating from 'fundamental' economic values. At their peak in December 1999, the Standard & Poor's 500 shares stood at 44 times the average yearly earnings, the highest ever, well above the excesses of 1929; after the burst of the dot.com bubble, the ratio fell but only to around the peak of 1929 (Figure 1). When stock prices tumbled, housing prices accelerated sharply, eventually peaking in 2006: at that point, they had almost doubled relative to 1996, in the most dramatic housing boom in American history. Meanwhile, the total indebtedness of the US economy surpassed 350% of GDP, mostly owed by the private sector, i.e. about 290%, of which over 100% pertained to households (or 140% of their disposable income).

Although equally long time series are not available for all countries, there is little doubt that similar patterns prevailed in the main asset markets worldwide. Residential property prices hit record highs in most countries – the exceptions being Germany, Japan and Switzerland, where property markets had boomed in earlier decades. Stock prices rose very strongly in advanced countries and spectacularly in emerging economies. Some advanced countries recorded house prices and private debt increases larger than in the United States, e.g. the United Kingdom (where total debt rose above 450% of GDP and household debt to over 170% of disposable income), Ireland and Spain, and Japan in the 1980s (where stock prices increased six-fold and house prices ten-fold over a decade before crashing early in the 1990s).

If a 'speculative bubble' is defined as an unsustainable price increase – with un-sustainability confirmed by the subsequent crash – not only have we witnessed in sequence the greatest asset price bubbles in history, but also in 2006 the first-ever *global* housing and stock price bubble.

Once asset prices started to decline, it became apparent that Wall Street investment banks and the banking system worldwide had built up during the long upswing an unsustainable leverage and risk exposure, and furthermore that they were tightly interconnected by a thick web of interbank, investment and derivative transactions that acted as powerful amplifiers in spreading the contagion between markets and intermediaries. The decision to let Lehman Brothers go bankrupt on 15 September 2008, detonated a banking crisis that had in all likelihood become inevitable, once the scramble for deleveraging got under way (Brunnermeier, 2009, The Economist, 2008, Morris, 2008 and Schinasi, 2006).

Figure 1. Asset prices and price earnings ratios in the United States, 1900-2008



Annual data. For stock price index value for 2008 as of December.

Data sources: Authors' own calculations based on Shiller 2009 for stock price, real home price and price earnings, and on Gros 2009 for price rent ratio.

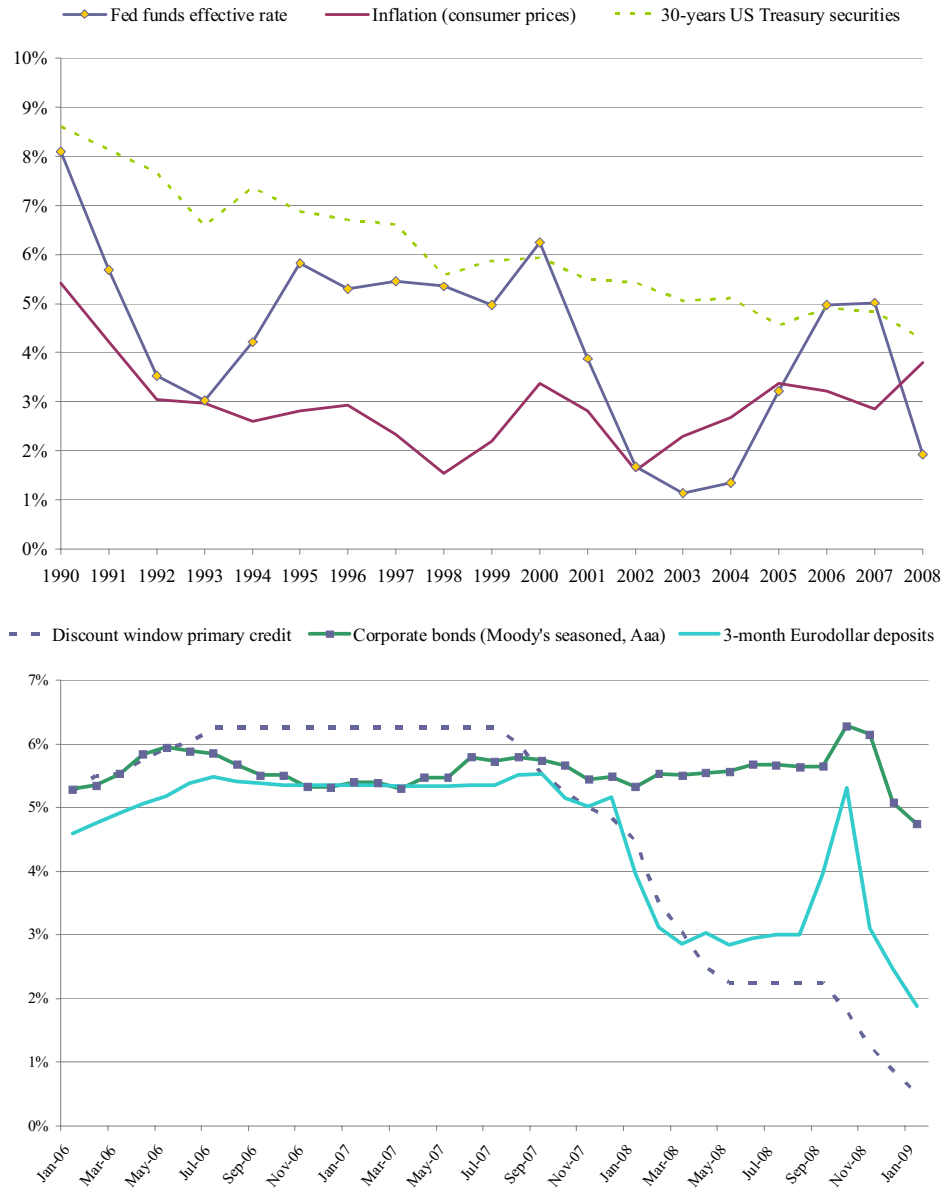
Now that mayhem has struck, the key policy question is how to make it unlikely that it will happen again without forsaking the benefits of open and integrated financial markets. To this end, it is of help to review recent events in light of historical precedents of asset price and banking crises that fortunately are available in abundance (see especially Chancellor, 1999, Galbraith, 1954 and 1993, Kindleberger & Aliber, 2005, Reinhart & Rogoff, 2008a and b and Shiller, 2005 and 2008).

One main finding in that literature is that a steep run-up in stock and housing prices is the best leading indicator of an impending banking crisis and related economic recession (Reinhart & Rogoff, 2008b; cf. also International Monetary Fund, 2008b): this was the case in the United States in 1873 and the late 1920s, and again in the numerous banking crises of the last three decades in Japan and East Asia, Russia and the Nordic European countries. Moreover, all episodes that may be characterised as 'asset price bubbles' or 'manias' were preceded by credit booms, as a result of some combination of loosening monetary policy, large capital inflows from abroad and financial deregulation and innovation (Kindleberger & Aliber, 2005 and Eichengreen & Mitchener, 2003). Financial innovation is relevant here for its effects on the aggregate supply of credit, rather than its specific impact on leverage or the distribution of risk in the financial system.

In its annual reports, the Bank for International Settlements (BIS) has called attention to loose monetary policy, notably in the United States, as the prime mover of asset inflation (Bank for International Settlements, 2008). Indeed, standard measures of monetary stance indicate that US monetary policy was mostly accommodating in the 1990s, after the mild recession at the beginning of the decade, and aggressively expansionary in the 2000s. Between mid-2003 and mid-2004, federal fund rates were kept well below inflation (Figure 2), an event unseen since the unstable 1970s. Reinhart & Rogoff (2008b) speculate that this aggressive expansion can explain the higher increase in housing prices observed in the United States relative to average behaviour in the run-up to five 'big' banking crises in advanced countries during the past three decades.

In the view of the BIS, low interest rates on longer maturities – an outcome that was attributed in official circles to the anti-inflation credentials of the Federal Reserve – in fact owed a lot to positive supply shocks related to globalisation that muted inflation (see also International Monetary Fund, 2006) and depressed investment demand in continental Europe and Japan. In addition, larger and larger deficits in US current external payments found their counterpart in capital inflows.

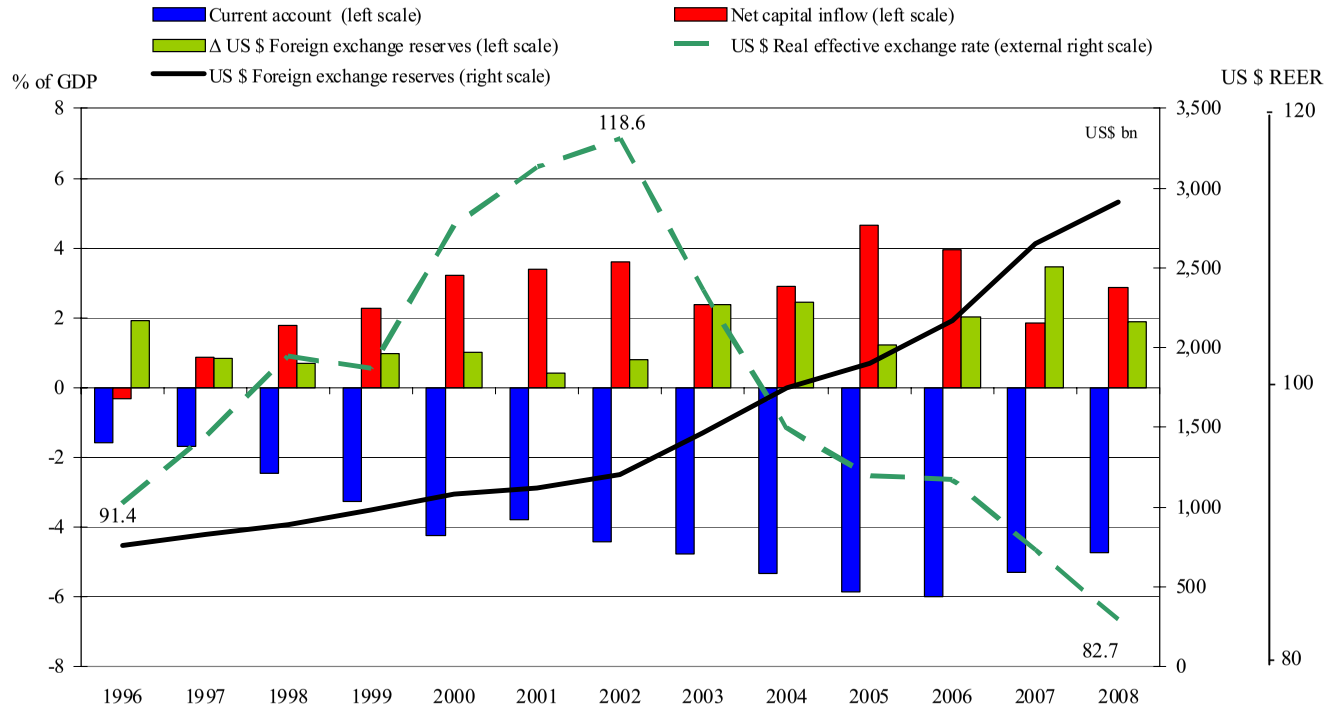
Figure 2. US inflation rate and selected dollar interest rates



Notes: Due to temporarily ceased publication of the 30-year series, for 2003, 2004 and 2005 the yield on 30-year Treasury securities is calculated by adding to the 20-year US Treasury securities yield an extrapolation factor determined by the Treasury to compute an estimated 30-year rate. Average annual data for upper graph, monthly data for lower graph.

Data sources: Federal Reserve 2009; US Bureau of Labor Statistics 2009 for inflation rate.

Figure 3. US balance of payments, official reserves and real effective exchange rate (REER), 1996-2008



Notes: Net capital inflow calculated as residual. 2008 data for reserves and capital inflow are our estimates. For real effective exchange rate, 100 = average of sample period.

Data sources: Bureau of Economic Analysis 2009 for current account and GDP; IMF 2009 for official foreign exchange reserves and real effective exchange rate.

These inflows were mainly from Asia, which directly lowered interest rates in US markets' long maturities (on this see Wolf, 2009). Risk premia on corporate bonds and equity also fell to historically low levels, as investors' perceptions of the future became ever rosier. This view has been shared by the European Central Bank, which argued in a policy study published in 2005: "major asset-price escalations can be encouraged by lax monetary conditions which are not immediately reflected in an increase in price inflation."

An alternative view based on investors' psychology has been offered by Robert Shiller: he argues that, after a long period of benign economic environment and increasing capital gains on their assets – as indeed was the case in 1982-1999 – investors start basing their decisions on the actions of others, rather than their own independent information, because "they feel that everyone else simply couldn't be wrong", in an atmosphere in which price increases feed back into further price increases and from time to time produce a speculative bubble . Schiller's regular surveys of investor sentiment (Shiller, 2005) confirm the gradual convergence of investors' opinions along with rising asset prices. He doesn't deny that monetary policy was too loose, but maintains that it cannot be seen as the exogenous cause of the real estate boom, because the Federal Reserve was prey to the same delusion gripping private investors, and "honestly saw the home-price increases as continuing indefinitely" (Shiller, 2008, p. 47).

Certainly, by the late 1990s the Federal Reserve had become a hostage of the financial markets, which maintained a strong expectation that declines in asset prices would be countered by monetary expansion: but this should rather be seen primarily as a result of its own past record. Indeed, the increased frequency of changes in policy rates in the late 1990s and 2000s – seven times in 1997-99 and 43 times in this decade – reveals a growing short-term orientation of policy; the old wisdom whereby monetary policy must tread carefully, due to its potent lagged effects, seems to have been forgotten.

In this connection, Morris (2008,) reproduces some excerpts from "an influential investment newsletter" (dated August 2007), as follows:

… [After the stock market crash of 1987] there were widespread fears that the big banks might be in trouble and that a credit crunch would follow … In response the Fed cut interest rates three times in six weeks. The US economy continued to grow, stocks recovered to new highs. …

The 1998 stock market plunge saw the S&P 500 dive … of course we were headed for serious recession. In response the Fed cut interest rates three times in seven weeks … In 1999 and 2000 the US and global economies recorded their strongest growth in a decade …

The 2001 recession, worsened by the 9/11 attacks, sparked many concerns … about a credit crunch. As a result, the Fed cut rates three times in seven weeks. There was no serious credit crunch … (pp. 64-65)

Thus, the Fed's behaviour was well recognised by investors and market agents and duly incorporated into their expectations. Following the 2003-04 monetary expansion, Wall Street bankers commonly spoke of a 'Greenspan put' as their insurance against stock market declines. They were convinced that the Federal Reserve "does not appear to believe there can be an excessive level of monetary growth, credit creation or asset inflation … [while] they do … believe there can be an unacceptably low level of all these variables" (Cooper, 2008, p. 24) and that, as a result, their responses to monetary and credit developments had become asymmetric and bent towards loose money.

Another constant feature in the run-up to financial bubbles – which was recognised by Galbraith (1954) in his account of the events leading to the 1929 stock market crash – was an increasingly skewed distribution of income, with wages stagnating and profits and financial incomes taking up an ever-growing share of GDP. In the United States in 2007, the share of wages and salaries in GDP was the lowest ever recorded since the 1950s; everywhere in the advanced world real wages have stagnated and even declined in the past two decades, under the constant pressure of delocalisation of manufacturing and technological change, making unskilled labour redundant (Turner, 2008). Thus, while capitalism was in full flower, working classes were under the increasing strains of declining incomes and weakening social protection (Frieden, 2006). More important, this development has become a major factor in shaping national economic performances and the structure of international payments; it has also been a key ingredient in feeding liquidity to stock markets and expectations of ever-increasing profits, on one hand, and unsustainable private debt on the other.

In some advanced countries – including Japan and Germany, Switzerland and Nordic European countries – consumption demand stagnated and growth was sustained by net exports, leading to large

external surpluses and slow overall growth. Elsewhere, notably the United States, the United Kingdom, Ireland and Spain,[1] the shortfall in real income and domestic demand was offset by easy credit for the purchase of housing that generated construction booms and, thanks to rising (nominal) wealth, high consumption growth; personal savings rates declined sharply – turning even negative in the United States– and household indebtedness was pushed to unsustainable levels. As in the 1920s, the final phase of the upswing saw an explosion of irresponsible lending, helped by financial innovations such as consumer loans and credit cards in the 1920s, and sub-prime mortgages in the 2000s.

Meanwhile, rising profits and financial incomes contributed to boosting the demand for financial assets – encouraged by reductions in taxation of high incomes and capital gains – further feeding the increase in stock prices; in turn, rising stock prices imparted an additional push to the consumption spree through the wealth effect. The Economist has calculated that 40% of profits in the US economy in 2007 were coming from the financial sector, which represented at that time only about 10% of total value added. Thus, not only external payment imbalances were a reflection of enormous domestic imbalances, but these domestic imbalances were also directly instrumental in the generation of asset price booms through their effects on consumption and asset demand.

Turning to the international dimension of the financial turmoil, in retrospect the maelstrom that has devastated financial markets appears as the culmination of repeated bouts of financial instability, following the demise of Bretton Woods fixed exchange rates, that had their cause in growing external payments imbalances – in turn generated by changing patterns of net savings and investment inside the major economic areas. These imbalances have kept international markets awash with liquidity in search of returns, with strong destabilising effects.

Kindleberger & Aliber (2005) identify four distinct asset price bubbles from the second half of the 1980s to the end of the 1990s: in Japan (late 1980s), the Nordic European countries (early 1990s), South East Asia and the United States (late 1990s); they were not yet aware of the fifth, the US

[1] The same had happened in Japan in the 1980s, where however most of the borrowing for real estate investment was by banks and corporations; see Kindleberger & Aliber (2005).

housing bubble in the 2000s. Before this sequence, asset bubbles had been a rare event; therefore, to have experienced so many over such a short time-span clearly points to a systematic relationship among them.

Thus, these authors describe how the US deficit of the 1970s fed the Japanese ballooning financial surplus in the 1980s and ignited the asset price boom in that country; how the asset price increases in Japan fed a massive expansion abroad of Japanese bank lending, that found ready outlet in Nordic countries where foreign borrowing by domestic banks had just been liberalised; how the outflow of funds from Tokyo, after the implosion of the bubble, fed a new bubble in Bangkok, Kuala Lumpur, Jakarta and Hong Kong; how, following the financial crisis in South East Asia (and Russia), the dot.com bubble was fed by large capital inflows from Asia to New York – where the Federal Reserve had just managed to stop the fallout of the Long Term Capital Management (LTCM) failure by cajoling Wall Street investment banks to come to the rescue and pump-printing money to support stock prices.

Shocked by the crisis, East Asian countries started to accumulate foreign exchange reserves by running ever-larger surpluses in their external payments; this money was by and large invested in dollar assets, available in ample supply – unlike assets denominated in euro, whose supply is constrained by the lack of an EU Treasury able to issue Union sovereign debt.

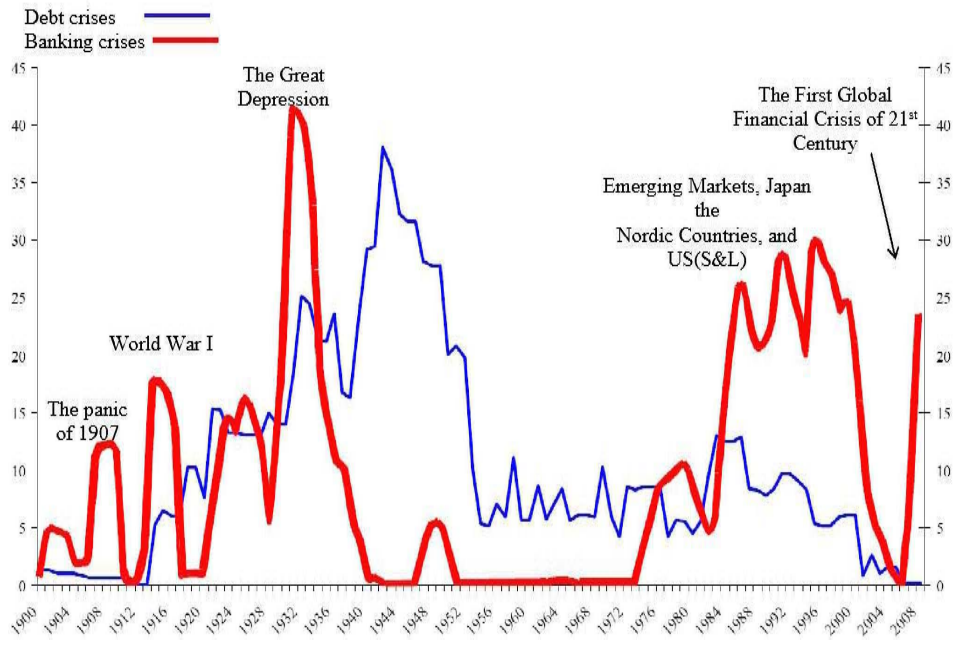
In the early 2000s once again the United States embarked upon strongly expansionary monetary and fiscal policies. Demand growth accelerated worldwide, leading eventually – as in 1972-73 – to a sharp rise in oil and commodity prices that further fuelled international payments imbalances. In 2006 the US deficit reached an unprecedented 6% of GDP; its main counterpart was the accumulation of dollar assets by Asian countries and, after the surge in oil prices later in the decade, by oil exporters. As international investors grew worried about the accumulation of US foreign debt, the dollar started to depreciate and official dollar reserves began to snowball, as a reflection of mounting foreign exchange interventions by Asian countries trying to slow the descent of the dollar, thus amplifying and spreading worldwide the US monetary expansion (Figure 3).

Finally, the three decades under consideration have seen a protracted concentration of banking crises, some in connection with the imploding bubbles that have been recalled, and others with a life of their own. As may be seen in Figure 4, replicated from Reinhart & Rogoff (2008b), the share of countries with ongoing banking crises was abnormally high for over two

decades, from 1980 to 2000, plunged at the beginning of this decade into what can be seen with hindsight as the lull before the storm, and has risen sharply since 2008, with a new peak expected for 2009. These crises also happened in waves, pointing again to common shocks and strong international linkages (Kindleberger & Aliber, 2005 and Reinhart & Rogoff, 2008b): in the beginning of the 1980s, when the Volcker monetary crunch exposed the credit excesses of the previous decade in euro-dollar loans to the developing countries and the savings and loans industry in the United States; the beginning of the 1990s in Latin America and the Nordic countries; the late 1990s in South East Asia and Russia; and finally the United States in 2007-09.

In all these instances the banking systems collapsed after several years of reckless credit expansion – up to 30% per year over several years – with no apparent consideration by lenders of the potential risks of insolvency. Another constant feature is that, in the final phase before the crash, credit was generously extended also to meet debt service obligations that debtors were no longer able to honour.

Figure 4. Share of countries (%) with banking and debt crises, 1900-2008



Source: Reinhart & Rogoff (2008b).

Banking crises were often associated with currency crises and sovereign debt insolvencies, which did not deter further lending sprees shortly afterwards: thus, Argentina and Mexico went twice into default on their sovereign debt. When banking crises hit the periphery of world capital markets, Western banks were basically spared significant losses on their international lending thanks to the intervention of their governments and the International Monetary Fund (IMF), while the economies of the countries concerned were left to bear costs amounting sometimes to very large shares of their GDP. When the crisis hit home, as it did in the US savings and loan crisis of the late 1980s, the costs were borne by taxpayers.

It may also be seen from Figure 4 that in the 1920s the wave of banking crises was followed by a wave of sovereign debt crises with a lag of several years. While World War II probably played a role in the increased number of sovereign defaults, the long depression of economic activity was central to this development. This is not a good omen for the future, should the current fall in activity and trade be followed by a prolonged depression.

In sum, since the end of fixed exchange rates, large actors in the global economy have behaved independently as if no external constraint existed, but the combination of their actions has produced an unsustainable pattern of international payments. The resulting flows of capital have proved strongly destabilising, generating a wave of excessive asset price increases and credit booms worldwide, until eventually the entire construction collapsed under the weight of unsustainable debt.

If monetary laxity was a main culprit in the story, international bankers compounded the mess with their apparent belief that the bonanza could continue indefinitely, despite accumulated evidence of increasing fragility. This calls attention to the nature of financial innovation and the inherent instability of banking, to which we now turn.

2. Regulation, innovation and financial instability

When asset prices burst, there is always an abundance of technical explanations pointing to 'what is different', i.e. specific technical features of market functioning or financial instruments that are identified as the culprits. Thus, the 1987 market crash in New York was explained by portfolio insurance and automatic selling; in the dot.com bubble of the late 1990s it was some buccaneering tycoons who engineered gigantic frauds; this time round it is exotic financial instruments such as collateralised debt

obligations (CDOs) and credit default swaps (CDSs), and rating agencies that misled risk managers, admittedly to massive scale. 'What is different' is the preferred approach of financiers, who thus manage to circumscribe the responsibilities for the losses incurred by investors and can continue to play the same game. Politicians and regulators also like it very much since it offers up easy scapegoats they can toss to the public – tax havens, hedge funds, derivative products – and diverts their attention from the role played by conniving legislation and supervision.

However, only by concentrating our attention on 'what is the same' – i.e. on the common features that reappear in each financial crisis – can we hope to identify the specific regulatory failures that made it possible this time, and thus build adequate policy remedies.

Two premises should be stated from the start. First, in financial markets there is a constant game whereby banks and other agents innovate to circumvent regulation and boost returns by taking greater risks, and regulators tighten the screws to moderate risk-taking. Innovation accelerates when expected gains are larger, that is normally when inflation accelerates – be it for wages, manufactured goods prices or asset prices: here lies the fundamental microeconomic link between financial instability and macro-financial policies. Without unstable macroeconomic policies, the likelihood of financial instability is reduced because the pace of financial innovation is slower and regulators are better able to adapt their rules so as to prevent excessive risk-taking in the financial system. As a consequence, we should not overburden financial regulation with the task of preventing the consequences of unstable macro-financial policies, since this would lead to very restrictive rules, including the outright prohibition of many useful financial activities.

Second, there is overwhelming evidence that free banking – essentially, the possibility to offer freely to the public financial instruments redeemable on demand at par, and make money by extending credit not redeemable at sight to companies and individuals – is unstable, i.e. likely to lead to credit booms and busts and bank runs, due to a combination of private incentives to over-lend and asymmetric information on the quality of loans (Conant, 1909, Cooper, 2008, De Grauwe, 2008, Eichengreen, 1999, Galbraith, 1993 and Minsky, 2008). This is what explains historically the need to obtain a licence for the exercise of banking and the existence of central banks providing liquidity support to banks, deposit insurance to shore up depositors' confidence, and prudential regulation to make sure

banks don't assume excessive risks. However, the very existence of these apparatuses encourages excessive risk-taking by the bankers, who expect to be rescued from their mistakes by monetary authorities, and insufficient monitoring of their banks by depositors who feel that their deposits are safe anyway (Rochet, 2008). Therefore, the policies designed to stabilise banking systems are themselves a source of instability, notably when individual banks are 'too large to fail', owing to the disruptive effects that would result from their failure for the entire financial system and the economy.

Complex structures were also used to leverage risk-taking on a regulated business. This is apparent in the high leverage of large cross-border banks in Europe, as will be discussed later. Similarly, AIG banked on its Triple-A rating, built on a solid insurance business and under serious regulatory oversight, to embark after a point in risky but highly profitable games, such as massive issuance of CDSs, using for the purpose its holding company, which basically escaped all supervision. And so did scores of the so-called 'monoline' insurers in the United States.

Since the start of the crisis, the regulatory safe harbour has been used to stabilise troubled institutions: thus, Goldman Sachs and Morgan Stanley turned themselves into bank holding companies, able to attract a stable deposit base under the umbrella of deposit insurance, once their survival as stand-alone businesses came under threat. Similarly, the German authorities encouraged the purchase of Postbank by Deutsche Bank to provide the latter with a larger deposit base over which to spread the risk of its bloated investment banking business.

Moral hazard due to regulation is compounded by certain features of financial markets that further distort incentives and increase the potential for instability. The mathematician Mandelbrot (2004) showed that asset returns not only 'have memory', that is, they are serially correlated and not independent over time – as rational expectation theorists[2] had claimed – but also that their distribution is characterised by 'fat tails' of disastrous events that happen at discontinuous intervals. This specificity of asset return distribution was an important factor in creating 'free options' for bankers and traders, whereby they kept on riding the market tide and hiding the rising risks of their businesses, while taking ever-larger pay, until their banks and the system at large blew up. As Taleb put it, "you

[2] For a critical review of efficient market theories and related empirical evidence, see Schleifer (2000).

earn a stream of steady bonuses for seven or eight years, then, when the loss takes place, you are not asked to disburse anything ... thus the incentive is to engage in risks that explode rarely, after a period of steady gains".[3] As a result of reckless strategies built on this anomaly, much of the financial industry is now in ruin.[4]

While history has confirmed these simple truths over and over again, memory in financial markets is short and people are always eager to repeat the same mistakes in the hope of large gains; and regulators are equally likely as the public at large to fall prey to waves of optimism generated by a benign economic environment (Chancellor, 1999, Galbraith, 1954 and 1993 and Kindleberger & Aliber, 2005). They are encouraged by economists ready to argue that past instability was due to specific policy mistakes (as Friedman and Schwartz, 1963, famously did in their monetary history for the Great Depression; see Temin, 1991, for a confutation) or particular market structures (as Calomiris, 2000, who argued that unit banking was the culprit in the wave of banking crises in the 19th century in the United States) or, more fundamentally, that private incentives are sufficient to keep bankers honest (Kroszner & Rajan, 1997).

There are three main ingredients to every speculative bubble. The first ingredient is excessive leverage of equity capital: before the recent crisis leverage climbed to well above 30 times capital, on average, for both Wall Street investment banks and the large European cross-border banks, with peaks over 50 (Table 1). A large share of liabilities was very short term, increasingly coming from the wholesale money market – with growing interdependence between banks rapidly spreading contagion.[5]

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[3] N.N. Taleb, "How bank bonuses let us all down", *Financial Times*, 25 February 2009.

[4] On the failure of specific strategies of the main actors in the financial industry, see J. Plender, "Error-laden machine", *Financial Times*, 3 March 2009.

[5] This feature of the recent crisis, i.e. the paramount role of the collapse in the wholesale money market, likens it, at least in its initial phase, to the 1866 crisis in London (Bagehot, 1873) and the 1907 crisis in New York (Bruner & Carr, 2007).

Table 1. Leverage and short-term liabilities of selected financial institutions, 2007

Institution	Total assets/equity*	Deposits and short-term funding/total assets (%)
ABN Amro	33	78
Bank of America	12	73
Barclays	38	71
Bear Stearns	34	13
BNP Paribas	29	79
Citigroup	19	66
Credit Suisse	24	55
Deutsche Bank	53	80
Goldman Sachs	22	16
HSBC	17	74
JPMorgan Chase	13	68
Lehman Brothers	31	19
Merrill Lynch	32	29
Morgan Stanley	33	30
RBS	21	75
Société Générale	34	70
UBS	52	91
Avg. EU banks	33	75
Avg. US banks (excl. investment banks)	14	69
Avg. US investment banks	30	22

* Leverage is higher if goodwill is excluded in calculating the ratio.

Data source: Bankscope, 2008.

The build-up of excessive leverage was helped in the United States by regulatory changes in 2004, which while introducing a Basle-type capital requirement (10% of risk-weighted assets), removed pre-existing limits on leverage for broker dealers;[6] and in Europe by the Basle capital requirements that allowed substantial savings of regulatory capital through various risk-mitigation strategies, including purchases of structured products with high ratings and assets-insurance with CDSs. As may be seen from Table 1, the large American commercial banks, which were subject to a minimum total capital/assets ratio, normally showed lower leverage ratios, while large cross-border banks in Europe had leverage

[6] Following the introduction by the Securities and Exchange Commission (SEC) of the new Consolidated Supervised Entities programme in 2004.

ratios similar to those of Wall Street investment banks. Citigroup, the most troubled US commercial bank, had a leverage ratio close to 20, while Bank of America, with a much lower leverage, only got in trouble after it was cajoled by the authorities into taking over Merrill Lynch. Goldman Sachs, the Wall Street investment bank that weathered the storm better than others, was less leveraged than its competitors.

Rising leverage was the key to ever-growing returns. According to a Wall Street Journal comment,[7] between 2003 and 2007 the Standard & Poor's 500 companies spent $1.7 trillion to purchase their equity back – the most colossal stock market manipulation in history – generating enormous gains on management stock options. Share buy-backs by Citigroup, Lehman Brothers, Merrill Lynch and Morgan Stanley in 2006-07 amounted to $34 billion; when market conditions turned sour, they were unable to get the capital back from private investors and had to turn for support to the state.

Market research has shown over and over again that superior performance of private equity was often nothing more than a reflection of leveraging a small capital investment. In November 2006, Citibank published a research report highlighting how private equity returns could be achieved by just leveraging basic stock market indices by three to one; at that time leverage on private equity deals was in fact rising to four, five and even six to one unit of capital.[8] Chancellor (1999) and Morris (2008) describe quite a few famous leveraged buy-out deals that would not even ensure ex-ante payment of interest, which was to be covered by additional debt issues. So much for the superior quality of management generating ever-larger values for their shareholders.

The second constant ingredient of speculative bubbles is lending on collateral with tiny margins of own invested capital: these loans in the 1920s were referred to as 'call loans' since the bank may ask for their reimbursement at any time; hence, they swell and shrink strictly in line with the value of collaterals. When the price of assets placed with the bank or broker as collateral increases, credit is plentiful at declining interest rates

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[7] W. Lazonick, "Everyone is paying the price for share buy backs", *Wall Street Journal*, 26 September 2008.

[8] M. Gordon, "The private equity boom was a clumsy trick", *Financial Times*, 1 April 2008.

and the borrower can keep on placing new bets; but when asset prices start to fall and the credit is recalled, asset sales aggravate the plunge in asset prices and may lead to their market seizing and becoming totally illiquid. At that point the borrower is broken and the lender must take the losses. This mechanism was a major amplifier of asset price falls in every financial crisis, powerfully contributing to the perverse feed-back of asset sales leading to ever-growing asset sales. The snowball soon hits also the assets of the best quality, since these are precisely those that remain saleable when prices start to fall across the board (Cooper, 2008).

Both in the 1920s and earlier this decade, in the United States a major component of credit on collateral was represented by mortgage loans: homeowners were invited to continue to borrow against rising values of their homes well beyond their capacity to service the loans, in the belief that they could always resell the house at rising prices. Two government-sponsored enterprises, Fannie Mae and Freddie Mac, added powerful steam to the bubble by repurchasing or guaranteeing huge quantities of low-quality mortgages, in response to political pressure (Morris, 2008 and Shiller, 2008).

The third constant component of speculative bubbles is the creation of off-balance-sheet vehicles to raise money free of capital requirements and invest it in speculative assets: these vehicles were called trusts in the 1920s, Structured Investment Vehicles (SIVs) and conduits in modern times (Chancellor, 1999 and Galbraith, 1954). Their main feature is that they combine the marvels of leverage with those of borrowing on collateral; they were the essential vehicle for the new originate-to-distribute model, whereby loans would be instantly securitised by originating banks and passed on to their investment vehicles, who funded their purchases in the wholesale money market, typically by issuing short-maturity asset-backed commercial paper or other asset-backed securities.

Banks earned interest income while apparently getting rid of all risk and sparing regulatory capital, and obtained plentiful cheap funds by packaging their lending into asset-backed securities. Sponsoring banks were explicitly or implicitly committed to providing liquidity backing to conduits and SIVs, although these guarantees were not visible in their balance sheets thanks to accounting or other gimmicks. The most important implication was that, while securitisation was supposed to help disperse risk, in fact it was concentrating it with some major financial institutions, as became painfully clear as soon as wholesale money markets seized up. Furthermore, in this new arm's-length environment where loans became

like commodities, the quality of credit was no longer effectively monitored since incentives often tied originators' revenues to volume rather than quality. Credit enhancement by financial guarantors contributed to the perception of unlimited high-quality investment opportunities; credit default swaps and related index markets made credit risk easier to trade and hedge. The easy availability of credit and rising asset prices contributed to low default rates and credit risk premia (Financial Stability Forum, 2008a, International Monetary Fund, 2008a, HM Government, 2009 and Morris, 2008).

An especially brilliant contribution of financial technology was to turn securitisation into a factory of secure high returns, built on top of ever-shakier underlying loans. The miracle – equivalent to the biblical multiplication of loaves and fishes – was made possible by securitising pools of loans, slicing them into tranches representing different claims on the stream of return from the pool, the now-infamous CDOs, and then pooling again the tranches into structured products of structured products, or CDOs 'squared', and so on. The so-called 'toxic assets' were the 'equity' tranches, typically representing about 5% of the total CDOs, that would be paid after all other claims on the stream of returns had been satisfied; by purchasing these riskiest tranches, normally reserved for hedge funds, an investor would in effect take up all the residual risk of the CDOs and thus leverage his or her investment 20 times ('embedded' leverage).

The magic of pooling and tranching was that, in the process, the risk distribution became more benign, while the underlying loans were riskier and riskier, thus providing sought-after higher returns. In the absence of liquid markets for these instruments, which were custom-made to suit the different appetite for risk of specialised investors and were traded over the counter, the miracle was made possible by evaluation models developed by issuers and validated by rating agencies – which were paid for these ratings by the issuers. Thus it was that, while there were only 20 companies with a Triple-A rating on the New York stock exchanges, by 2007 there were 64,000 structured products with the top rating.[9]

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[9] This much has now been acknowledged by no less than Lloyd Blankfein, the head of Goldman Sachs, in his article "Do not destroy the essential catalyst of risk", *Financial Times*, 9 February 2009.

Subsequent analysis has clarified that the asset price variability implicit in those models was a fraction of the observed distribution and that it took no account of the effects of risk correlation and diversification on default probabilities (Cooper, 2008, The Economist, 2009 and International Monetary Fund, 2008a). Similarly, no allowance was made for liquidity risks: but after markets turned down from their peaks, liquidity for these products vanished and they became unsalable, as their markets collapsed in a matter of weeks. It should be stressed that the growing divergence of ratings from reality did not go unnoticed by market participants: International Monetary Fund (2008a, p. 62) reports that since August 2007 credit spreads on Triple-A rated residential mortgage-backed securities in the United States were priced by the market like Triple-B rated corporate bonds.

In sum, innovation played an important role in increasing the availability of credit and supporting the longest expansion in the world economy since World War II. Over time, however, finance turned inwards and started to pile up a paper pyramid that had little reference to underlying economic activities and apparently served the sole purpose of feeding speculation and enriching speculators. The huge costs eventually borne by societies now cast a long shadow over the future of financial systems that are likely to be severely constrained in their ability to provide credit and innovate.

A last question that must be addressed concerns the role of regulation in making all this happen: one wonders whether, even in the presence of over-lax monetary conditions, some of the excesses that have been described could have been avoided – or will be avoidable – by means of appropriate regulatory responses.

The short answer is that indeed lax regulation was a major permissive factor in letting lax macro-policies and abundant liquidity lead to unsustainable leverage and risk exposure by the financial system. The name of the game was regulatory competition – in a veritable race to the bottom – to let national financial centres and intermediaries gain the upper hand in the fierce battle for the most remunerative of businesses, i.e. finance. Calomiris (2000) is very explicit about it: "the [competitive] pressures of the 1980s [and 1990s] *that prompted efficient deregulation* (our italics) … mandated efficiency enhancing changes that would permit banks to survive" (see Introduction, p. xiv). Indeed, the Gramm-Leach-Bliley Act , which repealed Glass-Steagall and opened the field to a further wave of consolidation in US banking, was but the culmination of a long phase of

deregulation beginning in the 1980s, notably with the elimination by the Federal Reserve of restrictions on bank underwriting activities, and in the early 1990s, with the federal interstate branching law that removed branching and consolidation limits.

Also, the Federal Reserve systematically and successfully opposed all attempts to regulate the exploding derivatives market. Its strongly held view was that once retail depositors and investors are protected, all other agents and intermediaries can take care of themselves and do not need special prudential rules or oversight. Thus it was that between the early 1990s and the early 2000s, a basically unregulated 'shadow' banking system took up a major proportion of credit intermediation – according to Morris (2008), representing some 80% of the total in New York capital markets – providing liquidity instruments and undertaking massive liquidity transformation with little capital buffers and transparency about its operations. The Securities and Exchange Commission, for its parts, closed both eyes on unsound market practices and market manipulations – as the wave of financial scams now coming to light makes all too clear – while quite a few of its top officials continued to land high-paying jobs on Wall Street.

Aggressive de jure and de facto deregulation was not without consequences outside the United States, leading in Asia to waves of deregulation that promptly destabilised Asian capital markets, as has been described (Kindleberger & Aliber, 2005). The European Union had already removed all separation between commercial and investment banking at the beginning of the 1990s, following its Second Banking Directive.[10] But there was another important channel whereby European continental banks somehow acquired US liberal rules on investment banking: they purchased US and UK investment banks and brokerage houses operating under those rules. Table 2 summarises the main such takeover operations: as may be seen by the end of the decade, the major continental European banks had gained a significant presence in US markets.

These purchases also explain the large increase in the size of balance sheets and in leverage: for instance, Deutsche Bank was rapidly turned from a sleepy domestic universal bank into something like a hedge fund, with €1,600 billion of investment and brokerage activities built upon a slim

[10] Directive 89/646/EEC of 15 December 1989.

base of €400 billion of deposits and about €40 billion of regulatory capital. As was already mentioned, European supervisors didn't blink, in order to let their banks participate in the great game of Wall Street finance.

Table 2. Purchases of investment banking businesses by European banks, 1989-2001

Acquirer*	Year	Target	Target Nation
UBS	1995	Brinson Partners Inc	US
	1995	S.G. Warburg	UK
	1997	Dillon Read	US
	1999	Global Asset Management	Bermuda
	2000	PaineWebber Group Inc	US
Deutsche Bank	1989	Morgan Grenfell	UK
	1997	Alex Brown Inc	US
	1999	Bankers Trust New York Corp**	US
Credit Suisse	1990	CS First Boston Group Inc	US
	2000	Donaldson Lufkin & Jenrette	US
Dresdner	1995	Kleinwort Benson Group PLC	UK
	2001	Wasserstein Perella Group Inc	US

*Or predecessor bank. Alex Brown was acquired by Bankers Trust before the latter was acquired by Deutsche Bank.

** State commercial bank with significant investment banking activities.

Data source: Thomson Financial SDC 2007.

Also, the BIS (Bank for International Settlements) framework on regulatory capital helped a great deal by providing a standard for widespread risk-mitigation practices. It is sufficient to recall that under Basle I capital requirements, interbank exposures and credits insured with CDS have a very low weight. The problem is aggravated under Basle II capital standards – which entered into force on 1 January 2008, and therefore did not play a major role in the financial crisis – which entrust to the banks' internal models a detailed evaluation of risks and attendant capital requirements: it's like putting foxes to guard the chicken cage. Indeed, preliminary evidence indicates that under these new standards capital ratios have declined even further relative to those under Basle I, which had already proven wholly insufficient.

Supervisory standards were also inadequate. Suffice it to say that they grossly overlooked colossal flaws in risk management practices of major banks, which assumed massive amounts of risks that even they barely understood – as epitomised by the Swiss banking giant UBS, whose

CDO trading desk invested and lost billions without much internal oversight. Internal loss of control over enormously complex structures is indeed a common feature of all the major banking institutions experiencing gigantic losses (The Economist, 2009), raising big questions about the viability of the banking mammoths that have come to characterise the landscape of world finance. In addition, supervisors systematically overlooked massive conflicts of interest plaguing these large banking groups, notably in investment banking, where management interests in reaping the fees from gigantic leveraged operations and issuance of mountains of dubious paper overwhelmed all motivation of customer care.

3. Crisis management

The decision to let Lehman Brothers go bust on 15 September 2008 marked the shift from a Wall Street crisis to a global banking panic. Financial institutions tried to make up for mounting losses by raising capital from the market, but as the liquidity crisis deepened and the supply of private equity froze, governments stepped in to fill the gap. Despite enormous capital injections by governments, financial markets have not yet hit bottom, due to swiftly aggravating economic conditions. By the end of February 2009, the US government had injected $250 billion into its troubled financial institutions, including the two largest banks and a major insurance company; in Europe, financial support was of the same magnitude, with the largest disbursements in Germany (up to €133 billion), the Netherlands (up to €49 billion) and the United Kingdom (£37 billion).[11]

Both in the United States and the United Kingdom, the state now owns majority stakes in its main financial institutions, and has also provided extensive guarantees against potential losses on troubled assets, without however replacing management or asking for the needed restructuring of failed institutions. Thus taxpayers have been footing ballooning costs without yet seeing the end of the tunnel.

In general, governments worldwide have oscillated in their approach between capital injections and attempts to halt asset price falls with guarantees on potential losses or asset purchases,[12] while in most cases still

[11] Source: R&S – Mediobanca (2009).

[12] Already in the spring of 2008, Spaventa (2008) had warned that neither approach alone would suffice, and that a combination of both would be needed.

balking at outright nationalisation – with the notable exception of the Dutch government, which last fall took over the Dutch operations of Fortis in banking and insurance without hesitation. They have seemed unaware of the fact that "handouts without proper workouts" were the real cause of Japan's 'lost decade' in the 1990s.[13]

Meanwhile, central banks have been the first line of defence under fire: they have lent massively to crumbling financial institutions and have deployed all their weapons in order to restore liquidity in the interbank and securities markets. In this endeavour, the Federal Reserve and the Bank of England, and to an extent also the Bank of Japan, have extended their credit lines to virtually all segments of intermediation and have started outright purchases of corporate securities. In the process, they have lost their independence and their soul, and have been turned into government agencies. The European Central Bank, which operates under tight Treaty constraints, has avoided so far a similar fate, but its ability to intervene has been curtailed by the lack of an EU Treasury able to back with its ultimate guarantee the outstanding stock of monetary liabilities denominated in euro.

The public discussion has been plagued by confusion and incompetence, with political leaders too often seeking the limelight with simplistic formulas rather than trying to develop serious analysis and taking into consideration joint initiatives. Whereas the central requirement clearly is to build institutions and procedures to underpin cooperative responses, they have deluded themselves that one or another half-baked bright idea bandied about as a banner of national initiative could offer a way out, exposing dramatic inadequacies of collective action.

3.1 Central banks on the firing line

In the early stages of the financial crisis, two events revealed what was to come: the bank run on Northern Rock in September 2007, the first bank run in the United Kingdom since 1866 (Overend, Gurney and Company),[14] and the bailout of Bear Stearns by the Federal Reserve in March 2008 – which was the first case of central bank support to a non-depository financial

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[13] "A ghoulish prospect", *The Economist*, 28 February 2009.

[14] Llewellyn (2008) notes that Northern Rock was not legally insolvent but it was economically insolvent, since it was borrowing from the Bank of England at the penalty rate of at least 6.36%, while its rate of return on assets was around 6%.

institution since the 1930s.[15] Northern Rock and Bear Stearns were initially deemed to suffer from a liquidity crisis while remaining solvent.[16] However, on the basis of total, rather than risk-weighted, exposure, Northern Rock and Bear Stearns were grossly undercapitalised, both showing leverage ratios around 34. As noted by Morris (2008), it was a tulip-mania style story of insolvency, not of illiquidity.

Central banks reacted swiftly and energetically to the unfolding financial crisis. Intervention rates were reduced in rapid steps to a target range of 0-0.25% level in the United States (December 2008), 0.5% in the United Kingdom (March 2009), also the lowest level ever reached in the Bank of England's 315 years history, 1.5% in the euro area (March 2009), the lowest level in the ECB's history. The main central banks also arranged large swap lines with other central banks and acted in concert to make refinancing in their currencies plentiful on all main markets.

When normal refinancing instruments proved insufficient, they quickly expanded the list of eligible collateral and eligible institutions for refinancing operations (see Table 3 for a chronology and description of the multitude of liquidity operations undertaken by the Federal Reserve, Bank of England and European Central Bank from 2007 to the present).

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[15] The legal basis for the Bear Stearns bailout, as well as AIG, was section 13(3) of the Federal Reserve Act regulating discounts for individuals, partnerships and corporations "in unusual and exigent circumstances". This provision was added to the Federal Reserve Act in 1932, but had never been used since the 1930s.

[16] Christopher Cox, Chairman of the SEC, stated publicly that reputational issues and loss of liquidity were at the root of the crisis: "The fate of Bear Stearns was the result of a lack of confidence, not a lack of capital. […] the firm had a capital cushion well above what is required to meet supervisory standards calculated using the Basle II standard. Specifically, even at the time of its sale […], Bear Stearns' capital, and its broker-dealers' capital, exceeded supervisory standards. Counterparty withdrawals and credit denials, resulting in a loss of liquidity – not inadequate capital – caused Bear's demise" (Cox, 2008). Similarly, in the Tripartite Statement released by HM Treasury, the Bank of England and the Financial Services Authority on 14 September 2007, the latter judged that "Northern Rock is solvent, exceeds its regulatory capital requirement and has a good quality loan book. The decision to provide a liquidity support facility to Northern Rock reflects the difficulties that it has had in accessing longer-term funding and the mortgage securitisation market, on which Northern Rock is particularly reliant."

Table 3. The explosion of central bank liquidity operations, 2007-09

	Federal Reserve
12/10/07	Term Auction Facility: available to all depository institutions in sound financial conditions and eligible to borrow under the primary credit discount window programme
11/03/08	Term Securities Lending Facility (TSLF): up to $200 bn of Treasury securities to primary dealers guaranteed by other securities including residential mortgage-backed securities
16/03/08	Primary Dealer Credit Facility (PDCF): secured loans to primary dealers, making a discount window available to non-depository institutions for the first time since the 1930s
14/09/08	Extension of eligible collateral under PDCF and TSLF: increase in the frequency and size of TSLF
19/09/08	Asset-Backed Commercial Paper Money Market Mutual Funds Liquidity Facility: loans to depository institutions and bank holding companies to finance purchases of commercial paper from money market mutual funds
06/10/08	Payment of interest on required and excess reserve balances of depository institutions
07/10/08	Commercial Paper Funding Facility: new liquidity backstop to US issuers of commercial paper to purchase 3 mos unsecured and asset-backed commercial paper
21/10/08	Money Market Investor Funding Facility: senior secured funding to finance the purchase of money market instruments
25/11/08	Term Asset-Backed Securities Loan Facility: up to $1 trillion loans to holders of Triple-A rated asset-backed securities (ABS) to support key securitisation markets. Purchase of up to $100 bn of direct obligations of Fannie Mae, Freddie Mac and the Federal Home Loan Banks and up to $500 bn of mortgage-backed securities backed by Fannie Mae, Freddie Mac and Ginnie Mae; amounts raised respectively to $200 bn and $1.25 trillion on 18 March 2009
18/03/09	Purchase of up to $300 bn of long-term Treasury securities
	Bank of England
21/04/08	Special Liquidity Scheme (SLS) – up to £50 bn – for banks to swap mortgage-backed and other securities for UK Treasury bills; later raised to £200 bn
03/10/08	Extension of eligible collateral in weekly sterling 3-mos repo operations to include Triple-A rated ABS and commercial paper
08/10/08	Bank debt guaranteed by the UK government eligible as collateral in: a) sterling long-term repo open market operations; b) US dollar repo operations; c) the SLS

16/10/08	Operational Standing Facilities: banks allowed to borrow overnight from and deposit with the BoE in unlimited amounts at 25 bps above and below BoE rate Discount Window Facility (DWF): commercial banks allowed to swap eligible collateral for UK government securities; price increasing with the scale of access and riskiness of collateral posted; 30-day term maturity
19/01/09	Asset Purchase Facility (APS): (authorised by Treasury) initially up to £50 bn purchase by BoE of corporate bonds, commercial paper and paper issued under the UK credit guarantee scheme DWF maturity increase from 30 days to 1 year for an incremental fee of 25 bps
05/03/09	APS capacity increased to £75 bn and to be used for monetary policy purposes through purchase of gilts by BoE
	European Central Bank
03/10/08	Expansion of eligible institutions that can participate in Euro-system open market operations
15/10/08	Expansion of the list of assets eligible as collateral in Euro-system credit operations. Lower threshold for marketable and non-marketable assets, with the exception of ABS. Enhancement of the provision of longer-term refinancing and US dollar liquidity through EUR/USD foreign exchange swaps.

Sources: Federal Reserve, Bank of England and European Central Bank.

In its attempt to restore the clogged circulation of liquidity, the Federal Reserve created three sets of new tools[17] for:

i) providing short-term liquidity to sound non-bank financial institutions, e.g. the Term Securities Lending Facility and the Primary Dealer Credit Facility;

ii) supporting loans to consumers and small businesses, with direct purchases of commercial paper and other money market instruments as well as asset-backed securitised products; and

iii) purchasing debt of housing-related government-sponsored enterprises, mortgage-backed securities guaranteed by Fannie Mae, Freddie Mac and Ginnie Mae, and long-term Treasury securities.

[17] For a full description, see Bernanke (2009).

As a result, between August 2008 and February 2009, the size of its balance sheet more than doubled, from $869 billion to nearly $2 trillion. More important, all distinctions between liquidity support and rescue operations for insolvent institutions vanished and the Federal Reserve not only was asked to intervene directly in large bailouts ($100 billion for Bear Stearns and AIG alone), but has de facto become the residual contributor of capital to insolvent institutions, as is manifest in the latest assets guarantee schemes for Citigroup and Bank of America. In both these cases, the Treasury and the Federal Deposit Insurance Corporation (FDIC) are committed to cover losses up to defined amounts while the Federal Reserve will cover losses exceeding that limit, by printing money with the ultimate backing of the US taxpayer. In sum, the Federal Reserve has forfeited its independence and become a government agency.

The Bank of England was similarly aggressive in its liquidity measures. In April 2008, it created a Special Liquidity Scheme to allow banks to swap high-quality mortgage-backed and other securities against UK Treasury bills; it also launched the Operational Standing Facilities and the Discount Window Facility designed to help access of banks to central bank liquidity. In January 2009, it opened a new asset purchase facility under which it may purchase a range of high-quality corporate bonds, commercial paper and paper issued under the UK credit guarantee scheme. In March 2009, it moved to a quantitative easing strategy entailing direct purchases of Treasury bills.

The major changes introduced in operating procedures by the European Central Bank, outlined in Table 3, were less radical, for two reasons. First, its rules were already more flexible than those of its sister central banks and in October 2008 its list of eligible collateral and institutions that can participate in euro-system open market operations was further broadened. Second, and more important, the ECB statute of independence and operational goals are set by the EC Treaty, which can only be modified by a unanimous decision by the member states.

Bank rescue operations, or a possible bailout of one of the member states, fall within the exclusive competence of the member states; in any event the European Central Bank could not count on the support of a Union Treasury for such hypothetical operations, since such a body does not exist. The absence of such a body raises the question of how to proceed, and with what resources, in case of failure of a major cross-border bank or

a member state default on its sovereign debt (Bini Smaghi, 2008).[18] To this issue we will revert in section 6, where we argue that a substantial European Financial Stabilisation Fund should be set up for all the purposes indicated above and that it should be empowered to tap capital markets through the issuance of Union bonds.

3.2 Enter the state

As the crisis deepened, governments stepped in with their budgets. On 3 October 2008, the US Congress approved the Emergency Economic Stabilization Act (EESA), centred on a programme of troubled asset purchases – the Troubled Assets Relief Program or TARP – up to $700 billion. Price discovery was entrusted to an ingenious system of 'reverse' auctions whereby banks would compete to sell their assets to the Treasury by lowering their offer price. The plan was never implemented, not least because the technical hurdles created by the extreme heterogeneity of the assets involved.

Two weeks later, the Treasury changed tack and started deploying TARP resources for recapitalising financial institutions, following the model just chosen by the United Kingdom and the European Union in early October: the Treasury launched the Capital Purchase Program (CPP), based on capital injections in the form of senior preferred shares and warrants. On 13 October the chief executives of nine large financial institutions were summoned to a meeting with Treasury secretary Paulson where they were basically told how much capital each would have to take, and they obliged.[19] As of 20 February 2009, the total amount of capital made

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[18] Bini Smaghi explains that 'the European monetary framework makes a clear distinction between the respective competences of the ECB, the national central banks, the supervisory authorities, and the governments which are ultimately responsible for the use of taxpayers' money. This framework protects against the use of the inflation tax, which is largely paid by the poorest, to save banks in difficult situation by socializing the losses. This is a strength of the current system.' (pp. 141-142, our translation).

[19] The first banks to benefit from the CPP were: Bank of America Corporation ($15 billion), Bank of New York Mellon Corporation ($3 billion), Citigroup Inc. ($25 billion), Goldman Sachs Group, Inc. ($10 billion), JPMorgan Chase & Co. ($25 billion), Merrill Lynch & Co., Inc ($10 billion), Morgan Stanley ($10 billion), State Street Corporation ($2 billion) and Wells Fargo & Company ($25 billion).

available under the CPP has reached $196 billion, benefiting some 441 institutions.[20] The Treasury also established two additional facilities, the Systemically Significant Failing Institutions (SSFIs) and the Targeted Investment (TIP) Programmes (Table 4), both entailing high discretion in the identification of beneficiary institutions and the choice of the terms of support.[21]

In early 2009, the Treasury revived plans for the purchase of troubled assets of financial institutions, to be implemented side by side with capital injections. A new fund will be established, with an endowment between $500 billion and $1 trillion raised from the public budget as well as private investors, so as to liberate financial institutions of their troubled assets. The involvement of the private sector is apparently meant not only to minimise the use of public capital, but especially to ensure a sound basis for the valuation of troubled assets. The precise role of public investors is not yet clear.

Capital injections will come from the newly created Capital Assistance Program (CAP): banks will have to initially undergo a 'stress test', which will be used to assess their continuing viability; the stress test is mandatory for the 19 banks with total assets exceeding $100 billion, whether or not they apply to the CAP.[22] A weakness in this scheme may be associated with the stress test itself, to the extent that rumours and leaks on its outcome could unsettle the markets and precipitate events while the bank is still considering the best line of action.

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[20] With regard to dividend policy, the general TARP provisions indicated a 5% yearly dividend on preferred shares, with a step-up clause after the first 5 years, up to 9%. A step-up clause has been set up as an incentive instrument for recapitalised institutions to raise private capital and reimburse public funds as soon as feasible.

[21] $40 billion in preferred shares have been already allocated to AIG under the SSFIs Program, and $20 billion to Bank of America and Citigroup under TIP.

[22] CAP recapitalisations would take place through 'contingent equity', that is preferred shares convertible into common equity in case of need, to restore investors' confidence or meet supervisory capital requirements. Banks were allowed to exchange their existing TARP preferred stock with the new preferred shares and the management of the government's investments was assigned to a Financial Stability Trust. These 19 banks are also allowed to delay public funding for six months to raise as much private capital as possible (incentive for private capital participation).

Table 4. Government measures in support of financial institutions

Country	Capital injection	State guarantee on banks assets and liabilities[a]
UK	At least £50 bn in preferred and ordinary shares available to 8 major institutions Capital injections to be managed by a new company, wholly owned by the government (UK Financial Investments Limited) Various accessory conditions[b]	Deposit insurance: raised to £50,000 Up to £250 bn on certificates of deposit, commercial paper and senior unsecured bonds and notes Guarantee schemes on triple-A asset-backed securities (ABS) and on asset classes "most affected by current economic conditions" (e.g. commercial and residential property loans, structured credit assets, leveraged loans)
France	Up to €40 bn in hybrid capital instruments (non-core Tier 1 capital, non-voting, non-dilutive) Capital to be managed by a state agency, the Société de Prise de Participation de l'Etat (SPPE) €10.5 bn capital injection into 6 private banks Various accessory conditions[b]	Deposit insurance: €70,000 to be raised if necessary New refinancing institution (SRAEC) will issue state-guaranteed securities to make loans to credit institutions against collateral, at above-market rates (up to €320 bn, including the guarantee on Dexia)
Germany	New financial market stabilization fund (SoFFin) €80 bn in equity or hybrid instruments (Tier 1 capital); preferential dividends or interest rights Various accessory conditions[b]	Deposit insurance: unlimited (political declaration) Up to €400 bn on new debt issues with maturity up to 36 months (through SoFFin)
Italy	Subscription or guarantee on new issues of non-voting privileged shares and hybrid financial instruments computable as core Tier 1 capital Case-by-case intervention, with need of recapitalisation verified by the Bank of Italy Various accessory conditions[b]	Deposit insurance: integration of the existing guarantee (€103,291) On new bank liabilities with maturity up to 5 years; on loans granted by the Bank of Italy for emergency liquidity assistance to banks; on banks' transactions to obtain securities eligible as collateral for refinancing
Spain		Deposit insurance: raised to €100,000 Up to €100 bn on new debt issued through commercial paper and senior bonds with maturity up to 5 years. The guarantee might be extended to interbank deposits

Country	Capital injection	State guarantee on banks assets and liabilities[a]
Sweden	Up to €1.5 bn to a new stabilisation fund for capital injection into banks in exchange for voting preferred shares Various accessory conditions[b]	Deposit insurance: raised to kronor 500,000 (€50,000) Up to €150 bn on new issues of short- and medium-term non-subordinated debt, with maturity up to 3 years, exceptionally 5 years for covered bonds. Available only to institutions with at least 6% Tier 1 capital and at least 9% combined Tier 1 and Tier 2 capital
Ireland	€5.5 bn capital injection into the three largest banks in core Tier 1, voting, non-convertible preference shares Various accessory conditions[b]	Deposit insurance: unlimited On retail and corporate deposits, inter-bank deposits, senior unsecured debt, asset covered securities and dated subordinated debt; initially seven domestic banks involved, subsequently guarantee extended to six foreign banks' subsidiaries
US	Capital Purchase Program: up to $250 bn in non-voting senior preferred shares and warrants; $196 bn allocated to 441 financial institutions (as of 20 February 2009) Systemically Significant Failing Institutions Program and Targeted Investment Program: any financial instrument, including debt, equity, or warrants, that the Secretary of the Treasury determines to be a troubled asset Capital Assistance Program: preferred shares convertible into common equity; Stress test, mandatory for the 19 banks with total assets exceeding $100 bn. Various accessory conditions[b]	Deposit insurance: raised to $250,000 On all senior unsecured debt and non-interest bearing deposit transaction accounts

[a] Cost of debt guarantees schemes often based on CDS spread. See Table 5 for ECB guidelines.

[b] Typically including limits on executive pay and dividend distribution, and commitments to maintain or expand lending to private sector.

Overall, the second wave of US schemes in support of the banking sector has seen the Treasury taking up increasing stakes in troubled institutions, as well as unlimited responsibility for potential losses, while continuing to rule out outright nationalisation. It remains to be seen how long the US taxpayer will accept to make good the bankers' losses without full control of the failing banks and adequate restructuring plans.

The legitimacy of the case-by-case approach to rescue operations was weakened by financial institutions and their creditors being treated differently without clear reasons. For example, Bear Stearns' creditors and banks bearing the CDSs of AIG were repaid in full, while Washington Mutual's shareholders and creditors saw their claims wiped out.

In Europe the wave of bank recapitalisations began on 8 October 2008, when the UK government announced a £50 billion plan to inject capital into banks and building societies, together with measures to strengthen bank liquidity and guarantee their medium-term funding. Eight UK institutions were indicated as eligible for capital injections, but only three of them (RBS, HBOS and Lloyds TSB) accepted the public funds. One main problem of selective bailouts without straight nationalisation that clearly emerged at that time is the stigma associated with state aid, since financial markets take it as a sign of weakness and therefore cover their bets by selling their stakes.

The UK model was followed in a matter of days by the euro area, even though the precise choice of instruments varied (see again Table 4). On 12 October the first-ever gathering of the Heads of State and Government of the euro area agreed a concerted action plan comprising strengthened deposit insurance, government guarantees on new security issues by banks and capital injections; the plan was subsequently endorsed by the European Council meeting on 15-16 October.

In France six financial banking groups were indicated as eligible to issue to the government subordinated debt computable as regulatory capital for €10.5 billion. The German government allotted €80 billion for capital injections and €20 billion for asset purchases. In Germany, France and the United Kingdom, the management of public investments for recapitalisations was entrusted to new public agencies, in order to limit political interferences in the management of financial institutions. The Italian government made support available to listed Italian banking groups through hybrid financial instruments computable as core Tier 1 capital.

Spain, on the other hand, focused on assets purchases, creating a specialised fund charged with the task.

National guarantee schemes cover a wide range of non-deposit liabilities, e.g. senior bonds, subordinated debt and commercial paper, with significant cross-country variations (Table 4).[23]

However, the combination of national liquidity and guarantee schemes has failed to address satisfactorily the question of who takes responsibility for foreign subsidiaries of financial institutions of systemic relevance. The Irish government even tried initially to limit its support to Irish-owned banking institutions, but was soon forced to extend it to all subsidiaries of foreign banks operating in its territory. As a result, there has been an air of uncertainty as to what would happen to depositors and creditors in case of insolvency, further depressing the battered currencies of EU member states that do not participate in the euro and neighbouring countries whose banking systems are largely controlled by Western European banks.

3.3 Toxic assets, bad banks and nationalisation

As has been seen, the question of how best to restore financial viability to troubled banks and confidence is far from resolved. Initially, notably in the United States, asset purchases were seen as a substitute for capital injections, in a socio-political environment strongly opposed to state intervention in private capital. However, the beneficial effects on capital and leverage of asset purchases are indirect and proportionately smaller than direct capital injections, entailing much higher costs for the government. At the same time, capital injections are an insufficient cure to the extent that asset price falls destroy capital more rapidly than it can be shored up: therefore, asset purchases are considered as a tool to halt asset price falls and interrupt the vicious circle of losses engendering further asset sales engendering further losses.

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[23] The European Commission published in October 2008 its recommendations on the pricing of government debt guarantee, while the European Central Bank made public its recommendations in December 2008; see European Commission (2008a), European Central Bank (2008a). The pricing method recommended by the European Central Bank is based on CDS spread for debt with maturity exceeding one year, (CDS spread plus add-on fee of 0.5%), while a flat fee of 0.5% applies to debt with maturity not exceeding one year.

No matter what goal one wishes to pursue, asset purchases pose the fundamental dilemma that if the price paid for toxic assets is high enough to stabilise banks' balance sheets, then the taxpayer is likely to foot much of the losses for bankers' mistakes; but if taxpayers' interests are preserved, then the price paid to banks will reveal that they are bankrupt. For this reason, the appeals periodically issued by various authorities to the banks to fully expose their losses sound hollow: they miss the fundamental point that banks don't know their losses, in a context of continuously falling asset prices and economic activity and, worse, if they were able to quantify them, their disclosure could entail immediate bankruptcy.

As for 'bad banks', they are only one tool to remove troubled assets from banks' balance sheets, a tool that cannot eliminate the need for a fundamental decision on who should pay for the losses. In this regard, the public debate sometimes seems less than fully aware of the full implications of historical experience, notably when the successful Swedish experiment in the early 1990s is compared with the failure to act in Japan, to argue that setting up a bad bank for all toxic assets in the banking system would be a panacea.

In reality, the Swedish model entailed the creation of separate asset management companies – heftily capitalised and charged with the orderly workout of troubled assets – only for each of the two largest banks, Nordbanken and Gota. More importantly, troubled assets were transferred to these companies only after the state had seized ownership of both banks, so that the question of asset evaluation was treated as an internal affair in a receivership procedure, with bankers and their shareholders fully removed from the picture. The two companies were provided with highly professional management and were granted full independence from political interference and favourable legal rules, showing the real benefit in combining public ownership with efficient management (Calomiris, 2000, Ergungor, 2007 and Calomiris et al., 2005).[24] As for Japan's 'lost decade', subsequent analysis has made it clear that the real mistake was to continue to prop up the banks, without introducing proper changes in management or restructuring.

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[24] The process took a few years and liquidations were concluded by 1997. Securum, the management company created for Nordbanken, lost about 40% of its capital endowment.

All in all, the discussion on toxic assets and bad banks should be seen for what it really is: a standoff between governments who are loathe to foot the bill for bankers' mistakes, and bankers who are trying to offload onto taxpayers their potential losses in order to survive. This impasse is why the question of nationalisation cannot be escaped and must be confronted outright.[25]

Indeed, by March 2009, governments had a dominant equity interest in Fortis, Citigroup, AIG, Royal Bank of Scotland, Lloyds, but only in a limited number of cases, e.g. Northern Rock, the Anglo-Irish Bank and the Dutch assets of Fortis, was there a straight nationalisation. Otherwise, public money was used to keep bankers afloat with their banks. It is easy to see that the critical difference is whether or not the injection of public capital is followed by radical restructuring, or whether the old boys are allowed to keep on managing the bank in effective continuity with the past.

Of course, nationalisations present problems of their own, notably including the choice of new management, avoidance of improper political interference and the timing and procedures for returning the bank to private hands. But in all likelihood the cost to governments would in all cases be lower than under the alternative of continuing to prop up failed institutions and their management.[26]

In fact, to all practical purposes, nationalisation should be seen as the effective substitute for bankruptcy procedures, which in the case of banks cannot be used due to the likely disruptive effects on public confidence. The period of public ownership could also be used to break up financial firms that have grown too large not only to fail, but also to be effectively managed. It may be noted in this context that the government-assisted private purchases of Merrill Lynch and Wachovia,[27] respectively by Bank of America and Wells Fargo, have damaged the acquiring institutions and created even bigger and more complex banking behemoths.

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[25] In February 2009, the European Commission published its guidelines on the treatment of impaired assets, supporting the adoption of a common European approach, but leaving to member states discretion for the choice of instruments to adopt (e.g. bad bank, guarantee on toxic assets).

[26] See Elliott (2009) for a review of the pros and cons of nationalisation.

[27] See the appendix for a chronology of the main events.

3.4 Strengthened tools for crisis management

A number of flaws in the approach to crisis management so far are readily apparent and can be corrected. First, as inevitable as it may have been, despite grand announcements of coherent and coordinated strategies, de facto public authorities in the United States and the main European countries, which still are in the eye of the storm, are responding to the events as they unfold, case-by-case, and in each case differently. This has created not only arbitrary differences of treatment but damaging uncertainty as to the real direction of policy, further unsettling markets and investors. Most damaging of all has been the discussion in the United States about toxic asset disposal, bad banks and nationalisation: to the extent that a bank can no longer stand up by itself, it is much better for the state to take it over, restructure and resell to private investors, than to go on quibbling about the right price of impaired assets.

On the other hand, there are quite a few financial institutions out there that have manageable losses but need to bring their capital to a much higher level, so as to reassure depositors and investors; they cannot raise it under the present taxing conditions in capital markets and should be helped generously and across the board by governments, based on clear and uniform criteria. Support could appropriately be subject to an assessment by supervisory authorities on their viability – barring all political interference in the process, since politicians are all too willing to interfere to help their friends and hit at their enemies. On this score, the European Commission and the European Central Bank have managed eventually to develop clear guidelines, after some initial confusion (Table 5). They were held up by reference to traditional doctrines of lending of last resort, based on the distinction between illiquidity and insolvency (Bagehot, 1873 and Rochet, 2008), where the former should be helped and the latter let go bust. The problem is that a general liquidity crisis can throw banks into insolvency that are perfectly viable under orderly market conditions; the real distinction is that between banks that should immediately nationalised since they cannot continue to operate under any circumstances, and those that can continue, albeit with a substantial capital injection.

A related question concerns the remuneration of public support, which has been controversial especially in Europe, due to the need on the one hand to respect common state aid rules in unprecedented circumstances, and on the other hand not to unduly penalise EU banks, in

particular relative to their US competitors. In their guidelines, the Commission and the European Central Bank have indicated a 'corridor' for remuneration that depends on the financial instrument (Table 5), whose choice was left to the discretion of national governments and may include any instrument computable as regulatory capital, from subordinated debt to ordinary shares.[28] The result has been a wide variety of solutions, far from the level playing field that one would have hoped for. To the extent that public injections of capital by EU governments are likely to mount, some greater uniformity will no doubt be necessary, both in the instruments and the remuneration, with national discretion strictly limited to what is necessary to respect different institutional and legal settings.

Finally, as has been seen, the European Central Bank is bound by very strict limits in its ability to support liquidity compared with the Federal Reserve and the Bank of England, which have already moved into the unchartered waters of quantitative easing – that is the direct purchase of financial instruments issued by end-users of funds, such as commercial paper of portfolios of securitised loans. To leave things as they are seems utterly unsafe, in view of the possible aggravation of the credit crunch that seems already under way also in Europe.

The key issue in this regard is that the ECB's powers to act are strictly limited by the EC Treaty and, furthermore, unlike the Federal Reserve and the Bank of England, the European Central Bank is not backed by a fiscal authority.[29] A way to tackle this weakness without endangering the ECB's independence might be the establishment of a European Fund that would issue Eurobonds and make the proceeds available to the European Central Bank for its operations, as proposed by Gros & Micossi (2008). We will revert to this issue later, also in connection with wider financial support operations that EU governments should be capable of managing jointly.

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[28] See European Central Bank (2008b) and European Commission (2008b).

[29] The Federal Reserve and the European Central Bank are remarkably different also in other respects, with the former managing monetary policy also in view of growth goals, and in addition banking supervision and lending of last resort, while the latter only is charged with monetary policy strictly geared to maintaining price stability. The Bank of England stands somehow in between the Federal Reserve and the European Central Bank, since it is in charge of monetary policy and lending of last resort, but lost banking supervision functions with the establishment of the FSA in the late 1990s.

Table 5. European Commission and ECB guidelines on state aid to banks

	Recapitalisation	
	Cost	**Terms and conditions**
COM	As close as possible to market rates. Minimum remuneration based on ECB methodology. Different for 'fundamentally sound' banks and weaker banks, with higher rates mandated for the latter. Remuneration to be differentiated on the basis of capital instrument used and risk profile, evaluated on capital adequacy, size of recapitalisation, current and pre-crisis credit default swaps (CDS) spread, rating. Presumption of adequacy of the remuneration in case of significant participation (at least 30%) of private investors on equal terms.	Temporary and limited to minimum necessary. Behavioural restrictions: need to avoid competitive distortions; restrained dividend policies; evaluation report after 6 mos. Stricter requirements for banks not 'fundamentally sound'. Clawback/better fortune clause and incentives for early capital redemption (e.g. add-on to the entry price, step-up clauses), with case-by-case evaluation of exit mechanisms.
ECB	Subordinated debt: government bonds yield + 5 yrs CDS spread on subordinated debt + 2% annual add-on fee (estimated average: 6%). Ordinary shares: government bonds yield + 5% annual equity risk premium + 1% annual add-on fee (estimated average: 9.3%). Preferred shares and hybrid instruments: market return between ordinary shares (upper bound) and subordinated debt (lower bound); when similar to subordinated debt, 1% add-on fee.	a) Reference to market situation of each institution and level of subordination and risk of instruments chosen for recapitalisation; b) Maintaining credit flow to the economy, avoiding increase of pressures on financial system, negative impact on beneficiaries' attractiveness to investors and stigma on beneficiary institutions; c) Minimising potential loss for the government; d) Ensuring level-playing field; e) Setting terms so as to ensure temporary nature of public intervention.

	Debt guarantee	
	Cost	**Terms and conditions**
COM	As close as possible to market price, reflecting beneficiaries' credit profile and risk profile.	Amount and duration limited to minimum necessary. No discrimination or competitive distortions. Blanket coverage of all liabilities forbidden. Clawback/better fortune clause. Behavioural restrictions on commercial conduct, including prohibition of conduct irreconcilable with the purpose of the guarantee (e.g. share repurchase and issuance of new stock options for managers). Enforcement by member states, including removal of guarantee in case of non-compliance.
ECB	Based on banks' CDS spread: - maturity less than or equal to 1 year: flat fee of 0.5%. - maturity exceeding 1 year: CDS spread + add-on fee of 0.5%. Lower add-on fee in member states where government guarantees may be collateralised.	a) Support to liquidity by improving the functioning of market for long term bank debt; b) Preservation of level-playing field among financial institutions and avoidance of market distortions; c) Liquidity support in individual cases to be compatible with aggregate liquidity management.
	Impaired assets	
	Cost	**Terms and conditions**
COM	Valuation based on underlying risks. Adequate burden-sharing of the costs related to impaired assets between the shareholders, the creditors and the state. Adequate remuneration for the state, at least equivalent to the remuneration of state capital.	No undue discrimination as to the sellers; temporary and limited to the strictly necessary, no undue distortions of competition. Full *ex ante* transparency and disclosure of impairments; six months enrolment window to prevent delay in disclosure. Clear functional and organisational separation between the beneficiary bank and its impaired assets, to restore viability and prevent conflicts of interest. Appropriate restructuring, following case by case assessment.

ECB	Risk-sharing, to limit cost for governments, provide right incentives and maintain a level playing field. Risk-sharing mechanisms best decided on a case-by-case basis.	Voluntary participation recommended: if compulsory, priority to institutions with large concentrations of impaired assets. Broad definition of assets eligible for support. Common valuation criteria across member states. Sufficiently long duration, possibly matching the maturity structure of eligible assets. Conditionality to measurable yardsticks (e.g. commitments to credit provision), but no mechanical application of conditions.

Sources: European Commission (2008a and b, 2009a) and European Central Bank (2008a and b, 2009).

4. Regulatory architecture

The nature of financial intermediation has evolved in recent years and a series of economic and legal developments has significantly changed the financial markets' morphology (Allen & Santomero 1998). The barriers between banking, insurance and securities market activities have fallen together with geographic and legal restrictions, and the model of the universal bank has not only spread worldwide, but increasingly has evolved into complex financial conglomerates operating worldwide.

A related development concerns the composition of banks' balance sheets. As early as the 1980s, banks had started to manage jointly their asset and liability side, with their total scale of operation becoming independent of their retail deposit base. A main source of funds, in this new environment, has come to be represented by interbank relations; banks have also become major providers of funds to the commercial paper market and to non-bank intermediaries, leading to the explosion of the wholesale money market and of mutual links between intermediaries. Indirectly, non-bank intermediaries were given virtually unlimited access to the benefits of a large deposit base and attendant public guarantees on the banking system, since an increasing share of their funding was provided by the commercial banks themselves, rather than by investors in capital markets.

As a result of becoming thus intimately intertwined with non-bank intermediaries, to which they provided ultimate liquidity backing, banks have become fully exposed to capital markets risk that they did not manage, did not understand and were unable to assess independently. Therefore, the nature of systemic risk – traditionally limited to the banking sector changed: it was no longer solely related to the possibility of deposit withdrawals with illiquid loans, but became dependent on the behaviour and stability of a host of non-bank intermediaries, including investment banks, insurance firms writing derivative contracts and hedge funds providing liquidity to banks' borrowing in the capital market.

A main factor precipitating the financial crisis was the leveraged exposure of financial organisations to large holdings of securities that were very hard to value and for which there were no liquid markets. Later on, the deteriorating economic landscape has added virulence to banks' difficulties, due to their exposure to clients engulfed by the recession. Financial derivatives amplified the shocks between markets and intermediaries.

Against this background, the debate has flared up once again on the desirability of going back to a legal separation between commercial and investment banking or, in other versions, between 'narrow' banking and all other commercial and investment banking activities. Similarly, there have been proposals to segregate security market activity and entrust them to specialised intermediaries.

In this vein, De Grauwe (2008) has proposed a return to a Glass-Steagall-type system "in which banks are excluded from investing in equities, derivatives and complex structured products. Investment in such products can only be performed by financial institutions, investment banks, which are forbidden from funding these investments by deposits (either obtained from the public or from other commercial banks)".

Kay (2009) has suggested the adoption of an even narrower definition of banking, strictly circumscribed to supplying means of payments and investing in self-liquidating commercial loans and safe assets ('banks as utilities'). "The primary objective of the regulation of financial services looking forward is that the casino should never again jeopardise the utility" (p. 223).

How precisely these proposals would be implemented is not entirely clear. In its pure version, narrow banking consists of the obligation to invest all or most retail deposits in safe assets, thus removing all maturity mismatch and liquidity risk from depository banks. Such a system would

of course make regulation and safety nets unnecessary; depositors would only be exposed to the risk of fraud. Of course, all benefits from liquidity and maturity transformation would be lost; narrow banks would abandon their key function of analysing the quality of commercial loans, which would need to be performed by specialised intermediaries; they could exploit neither economies of scope nor the synergy effects offered by the joint production of lending and deposit-taking. Credit growth would in all likelihood be severely curtailed.

In their recent report on financial reform, the G-30 (2009) have proposed, among other things, that large, systemically important banking institutions should be restricted in undertaking proprietary activities that present particularly high risk and serious conflict of interest, and that the management of hedge and private equity funds should be prohibited in cases where the banking institution's own capital is commingled with client funds.[30] In general, they have considered that government-insured deposit-taking institutions should never be owned or controlled by unregulated non-financial organisations. Finally, in their view, limits on deposit concentration should be established at a level appropriate to individual countries – in a sort of generalisation of the ancient US prohibition of interstate banking (see their Core Recommendation 1).

Our view is that these radical solutions are neither necessary nor feasible. They are not necessary because the stability of the system can be brought about by simple, although quite radical, changes to the key prudential rules that do not entail a redesign of financial markets. And not feasible, since the disruptions and dislocation required to implement such massive reorganisation of the financial system would be enormous, and in all likelihood would eventually prove unacceptable for legislators and regulators in the main financial centres.

As we argue below, prudential regulation and supervision should remain centred on depository banks, while for other intermediaries, notably those of systemic relevance, the main requirement would be one of enhanced transparency, under close monitoring by supervisory authorities. While it is desirable that deposit banks concentrate their investments in lending to commercial customers, this result can be achieved without

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[30] See also J. Gapper, "The case for a Glass-Steagall 'lite'", *Financial Times*, 11 March 2009.

legally binding rules, by imposing penalties on other activities. Finally, the traditional tasks of micro-prudential regulation should be complemented by appropriate arrangements for macro-prudential supervision, capable of monitoring financial system stability as a whole and recognising at an early stage destabilising credit and asset price developments that may endanger systemic stability.

4.1 Banks and non-banks in a sound regulatory system

The special feature of banks that have traditionally justified regulation, deposit insurance and state backing is that deposits are the only financial product that can be withdrawn on demand at par value. Traditional theories of financial intermediation underlined the important role of banks in underpinning the payment system. Subsequent theories have stressed their role in reducing uncertainty and information asymmetries both on the asset and liability sides (Diamond, 1984 and Diamond & Dybvig, 1983).

In order to make money, banks must lend at longer maturities to customers who may default on their loans. Since depositors' money is on-lent, banks do not have sufficient liquidity to pay back all depositors at the same time, which exposes them to the risk of a bank run when confidence on the solidity of their loans fades away (Cooper, 2008 and Rochet, 2008). Deposit insurance has thus come to life to avoid bank runs and panics.

Regulation originally tried to protect the stability of banking by limiting their activities with geographical, functional and size restrictions,[31] or by favouring nationalisation. The drawback was that in this way the room for scale and scope economies and innovation was reduced and the system was fairly inefficient and costly.[32] Over time, asymmetric information theories emphasised the need of risk-based capital requirements and deposit insurance schemes.

The wave of deregulation that began in the 1980s was basically motivated by the need to make banks able to compete with non-bank intermediaries, which were eroding their commercial base by offering

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[31] In the US the McFadden Act restrictions on interstate banking (1927) started to fall in 1978 and were completely removed by the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994. In 1999, the Gramm-Leach-Bliley Act (GLBA) removed the functional restrictions imposed by the Glass-Steagall Act.

[32] There is a wide academic literature on the potential economies of scale and scope in the banking activity, but no unanimous results are reached.

substitutes for their deposits and loans that were paying higher interest rates or costing less (Calomiris, 2000).

Non-bank intermediaries were not equally regulated basically because they do not pose an equal threat to financial stability, since their liabilities do not possess the twin features of being redeemable on demand and at par. For example, money market and other investment funds can be withdrawn nearly on demand but the value is uncertain, depending on the value of the assets. Investors giving money to an investment fund receive a number of quotas or shares at the moment of investment and, when they disinvest, they can only claim the money that can be raised from selling their quotas in the fund, which have a price determined daily in the market.

That is why, unlike commercial banks, non-bank intermediaries like investment or hedge funds, are not exposed to the risk of a customer run to the extent that their assets and liabilities are market priced. Basically, they do not even need capital from a strictly systemic-stability viewpoint. A capital requirement is needed solely for reputational reasons, to entice investors; since they have capital, they can also leverage it, thus increasing the riskiness of their operations.

An intermediate case is represented by investment banks, that typically raise money by issuing securities, rather than deposits, in order to invest in other securities and undertake proprietary trading activities. Thus, in this simple form, they are not exposed to liquidity risks, only to market and counterparty risks. If the value of securities owned is insufficient to repay outstanding debt, leading to the failure of the intermediary, only bondholders and shareholders will be affected. To the extent that investors were aware of the risks they were taking, there is no issue of liquidity, lending of last resort and moral hazard.

In bank-centred models, separate investment banking intermediaries may or may not exist, but in all cases they grant medium- and long-term loans, in principle raising money in capital markets through medium- and long-term security issues. Thus, even here there is no liquidity risk, although they typically have access to central bank lending.

Finally, insurance firms provide 'reverse' maturity transformation and adequate reserves are set aside to guarantee their commitments to their retail policy holders. They do not pose problems of systemic stability unless they start using their reserves to take positions in risky assets of dubious value – as happened with AIG and US monoline insurers.

Thus, in general, systemic stability issues can only arise to the extent that depositors' money is used to take capital market risks – which is precisely what happened in the financial excesses of the last decade. The entire paper pyramid underpinning the speculative bubble was built on a narrower and narrower deposit base, until confidence in the banking system collapsed. Then, the only way to stop depositors from fleeing was for the state to step in and guarantee bank liabilities, not only to retailers but also between the banks themselves.

Therefore, in order to avoid a repetition of recent disasters, it appears that it would be sufficient to strengthen prudential rules on banks, so as to prevent them from leveraging their capital excessively and using depositors' money again to take capital market risks, rather than making boring, but safer commercial loans. The rest of the financial system should be made fully transparent so as to ensure that risks are visible and correctly assessed by investors and regulators alike.

This approach doesn't require the legal separation of commercial and investment banking activities, or the prohibition of particular activities. It is sufficient to place high penalties on proprietary trading and lending to highly leveraged financial organisations by government-insured deposit institutions, as will be described in section 5. Once excessive leverage and liquidity risks are ruled out, deposit insurance should make it possible to let banks fail, safeguarding retail depositors but letting shareholders, bondholders and management take the full brunt of their mistakes.

Once banks are made to behave with appropriate capital penalties, and depositors' money is no longer used to cheaply finance capital market risks via bank lending to non-bank intermediaries, the other intermediaries are not in need of capital requirements, lending of last resort and prudential supervision;[33] when they make mistakes and lose all their capital, they can go bust without endangering systemic stability.

To the extent that financial intermediation may still globally lead to excessive leverage and threaten systemic stability, due to the build-up of excessive assets and liability positions by countries and national banking systems under conditions of lax aggregate policy management, collective macro-prudential surveillance mechanisms should be able to sound an

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[33] This view was eloquently argued by Andrew Large, former Deputy Governor of the Bank of England and Chairman of the SIB, the FSA predecessor, in his editorial comment "Central banks must be debt watchdogs", *Financial Times*, 5 January 2009.

early warning by calling attention to destabilising policies as well as unbalanced positions of systemically relevant financial institutions.

4.2 Supervision by objectives

The second paramount issue in designing an adequate regulatory architecture concerns the structure and organisation of financial markets supervision in a globalised context.

While there is a consensus on the need for closer cooperation at the international level, clearly the creation of a world supervisory authority endowed with far-reaching legal powers over national financial markets is a chimera. In practice, the Financial Stability Forum (FSF) has already emerged as the leading forum for cooperation and concerted decisions by national governments and regulators.

The FSF was established by the G-7 finance ministers and central bank governors in 1999, following the Asian crisis of the late 1990s, in order to promote international financial stability through enhanced information exchange and cooperation in financial market supervision. Currently, it comprises national financial authorities (central banks, supervisory authorities and finance ministries) from the G-7 countries plus Australia, Hong Kong, the Netherlands, Singapore, Switzerland and the European Central Bank. At its plenary meeting in London, on 11-12 March 2009, the FSF decided to invite as new members the G-20 countries not present in its membership: Argentina, Brazil, China, India, Indonesia, Korea, Mexico, Russia, Saudi Arabia, South Africa and Turkey. Spain and the European Commission have also been asked to join.[34]

The crisis has exposed the weakness of present arrangements for the supervision of financial markets, both regarding the 'horizontal' fragmentation of competencies among a host of different authorities within countries, and the 'vertical' distribution of competencies, where national entities are solely in charge of supervision of supra-national financial

[34] Brunnermeier et al. (2009) proposed not only to enlarge the FSF as it has happened, but also to designate a single representative at its meetings for each country, and to commit its members to implement FSF recommendations faithfully. This proposal obviously is very much influenced by the FSA model of a single regulator, which as will be shown isn't the only feasible model.

conglomerates.[35] As has been argued, national authorities have closed both eyes to the accumulated imbalances in their own banks and security houses, in order to let them compete successfully in the world stage. See Table 6 for an overview of the regulatory structure of selected industrialised countries.

The patchy system of regulation inevitably has kept financial markets fragmented, created loopholes and opportunities for regulatory arbitrage and entailed a costly multiplication of regulatory requirements and controls. National and international coordination among authorities is slow and cumbersome, with hundreds of bilateral and multilateral memoranda of understanding; colleges of supervisors on financial conglomerates have been inefficient and national participants have often not even effectively shared information among themselves. In this messy system, no regulator ever gets a unitary overall picture of financial markets, weakening investor (and taxpayer) protection, while transnational financial organisations must live with a multiplicity of rules and inordinate regulatory burdens. A realistic approach would be to start by centralising the organisation of regulation and supervision within large geographical areas – i.e. the United States, the European Union and the Pacific – and then establishing close coordination of these macro-area regulators at global level.

In the United States, the Paulson blueprint (US Treasury, 2008) proposed a drastic simplification of present rules, in favour of a system of regulation by objective in which the Federal Reserve would oversee long-term macro-stability for all financial entities, irrespective of their legal status, and there would be side by side a micro-prudential regulator and a conduct of business regulator.

Within the EU, a coordinating role for implementing regulation was entrusted to the so-called 'Level Three Committees'[36] – CEBS for banks, CEIOPS for insurance and pension funds and CESR for securities markets – which however have no legal powers and depend wholly on their

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[35] C. Di Noia, "A proposal on financial regulation in Europe for the next European Council", *Vox*, 20 October 2008.

[36] According to the so-called Lamfalussy procedure, Level Three Committees composed by national regulators should issue guidelines for coordinating national implementation of directives (Level One) and implementing measures issued by the European Commission (Level Two).

constituent authorities, with their competences determined according to an obsolescent institution-based framework.

Table 6. Regulatory structure of selected industrial countries

	Banks	Securities	Insurance	Establish-ment of integrated or unified supervisors (year)	Organisa-tional model	Central bank with primary responsibility for micro-prudential supervision
Australia		P/C		1998	By objectives	no
Austria	U	U	U	2002	Unified	yes[a]
Belgium	U	U	U	2004	Unified	no
Demark	U	U	U	1988	Unified	no
Finland	BS	BS	I	1993	Integrated	no[b]
France	B	B/S	I		Sectoral/ by objective	no
Germany	U	U	U	2002	Unified	yes[a]
Greece	CB	S	I		Sectoral	yes
Ireland	U(CB)	U(CB)	U(CB)	2003	Unified	yes
Italy	CB/S	CB/S	I		Sectoral/ by objective	yes
Japan	U	U	U	2000	Unified	no
Luxembourg	BS	BS	I	1999	Integrated	no
Netherlands		P(CB)/C		2004	By objectives	yes
Portugal	CB	CB/S	I		Sectoral/ by objective	yes
Spain	CB	S	I		Sectoral	yes
Sweden	U	U	U	1991	Unified	no
UK	U	U	U	1997	Unified	no
US	CB/B	S	I		Sectoral/by objective/ functional	no

B = One or more authorities specialised in banking oversight.
BS = Authority specialised in oversight of the banking sector and securities markets.
C = Authority in charge of conduct of business supervision for all sectors.
CB = Central bank.
I = One or more authorities specialised in oversight of the insurance sector.
P = Authority in charge of prudential supervision for all sectors.
P (CB) = Central bank in charge of macro- and micro-prudential supervision for all sectors.
S = One or more authorities specialised in oversight of securities markets.
U = Single authority for all sectors.
U (CB) = Unified regulator is an agency of the central bank.
[a] Central bank is entrusted by law to conduct only specific supervisory tasks.
[b] The integrated regulator is an independent agency of the central bank.

Source: Herring & Carmassi (2008).

It is too early to aim for one central regulator and supervisor at the European level. Lacking a political union, there are still too many different rules: legal and institutional differences exist in commercial codes, company law, bankruptcy procedures and corporate governance, while policy-makers and taxpayers remain national. But is certainly too dangerous to keep the present situation with only national authorities.

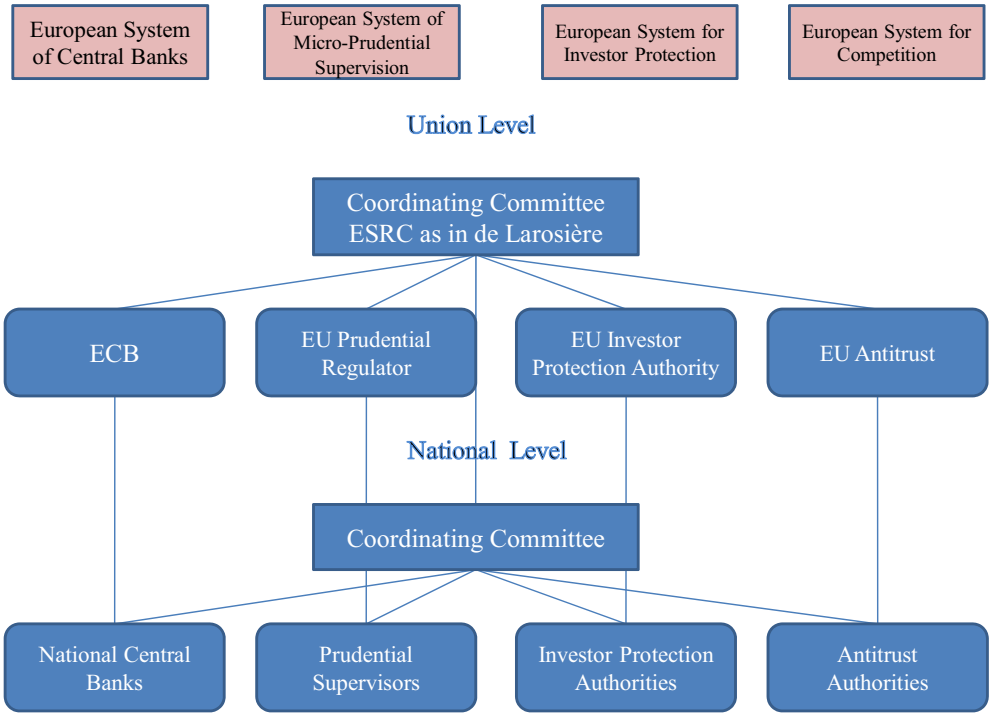
Lannoo (2008) has suggested a roadmap leading to the creation of a European Financial Institute laying the groundwork for the establishment of a European System of Financial Supervisors.[37] Following up along the same lines, the de Larosière Group (2009) has proposed to transform the existing level three committees into three European authorities: a European Banking Authority, a European Insurance Authority and a European Securities Authority. Later on, CEBS and CEIOPS would be merged into one authority responsible for all micro-prudential supervision, thus converging on the US model described above. A new European Systemic Risk Council (ESRC), comprising the ECB General Council, the chairs of the authorities and the European Commission, would ensure overall coordination and oversight of aggregate developments.

This proposal looks sensible and realistic; the only shortcoming is that the Group was not sufficiently daring to go further in its proposals on the timing of implementation.

A more general framework of regulation and supervision by objectives could be designed as follows (Figure 5). Regulation and supervision would be arranged horizontally, at the European level, by objective – with separate agencies in charge of macroeconomic stability, microeconomic stability and investor protection for all intermediaries including insurers. A fourth 'pillar' would be represented by antitrust. Each of these authorities would have a federal structure, similar to that established for the European System of Central Banks (ESCB), with a central body and national supervisors active in the same field. The same structure of regulators by objectives could in due course be established also at national level.

[37] See Di Giorgio, Di Noia & Piatti (2000).

Figure 5. An EU system of financial regulation



However – and this is a distinct merit of the approach of regulation by objectives – the set of European authorities as described above can be built upon the base of existing networks of regulators, without immediately calling into question national regulatory structures. The only requirement for the member states – besides relinquishing legal powers for implementing regulations – would be to identify a leading regulator in charge of participating in the three EU authorities and implementing their decisions nationally.

An ingenious solution to turn present Level Three guidelines into binding decisions has been suggested by Wymeersch,[38] chairman of CESR (Committee of European Securities Supervisors). Under his proposal, the

[38] E. Wymeersch, "Preparing for the Future", speech at the CESR Conference, 23 February 2009.

EU Commission could make use of its interpretive powers to homologate Level Three guidelines through an endorsement procedure similar to the one followed for the endorsement of the International Financial Reporting Standards (IFRS).

In this system, the European Central Bank would not be responsible for micro-prudential supervision, but would be given real powers to conduct macro-prudential supervision, together with lending of last resort. As suggested by President Trichet,[39] this task would include the monitoring and analysis of financial stability, which the European Central Bank is already undertaking; developing early warning systems to detect risks in the financial system; conducting macro stress-testing exercises; and an advisory role on financial regulation and supervision from a financial stability perspective. The ESCB would have to be given full access to the supervisory information that is essential for their financial stability assessments.

Finally, the credibility and independence of regulators remains a fundamental issue. Independent regulators had been one of the great advances in institutional design of the late 1970s and 1980s, but it now appears that they were freed of political meddling only to fall prey to their regulated entities, with enormous damage to their reputation. In the United States and the United Kingdom, central banks have lost their independence. The question will not go away: we will again one day need a strong system of regulation, independent from politicians but also from market actors.

5. The regulator's tool box

It is quite obvious that the systemic tendency of financial intermediaries to over-leverage their capital and undertake excessive risks was not countered by regulation, and in fact was favoured by loopholes generated by the existence of different rules in different jurisdictions. Over the recent past, quite a few policy reports were issued by influential academic circles, private policy institutes and official expert groups analysing where the problems arose and outlining more or less radical overhauls of financial markets rules (G-30, 2009, Brunnermeier et al., 2009 and de Larosière

[39] J.C. Trichet, "Remarks on the future of European financial regulation and supervision", Keynote address at the CESR Conference, Paris, 23 February 2009.

Group, 2009). Each of them contains useful analysis and recommendations that should receive due consideration, although the list of measures collectively proposed would surely amount to a regulatory overshoot that we may come to repent.

It may also be recalled that already in April 2008 the Financial Stability Forum issued a report on "Enhancing Market and Institutional Resilience" (Financial Stability Forum, 2008a) with many sensible recommendations addressing five areas where rules needed tightening: prudential oversight of capital and of liquidity and risk management; transparency and asset valuation; changes in the role and uses of credit ratings; the authorities' responsiveness to risks; and arrangements for dealing with stress in the financial system.

A main focus in those recommendations is precisely on closing loopholes that create opportunities for regulatory arbitrage. Advocates of new rules should not overlook the fact that many of the recommendations have been already implemented (as described in Financial Stability Forum, 2008b) or will be implemented soon: therefore, one should not try to fix what has already been fixed.

Rather than trying to describe in full a new regulatory set-up, we have therefore concentrated our attention on the adaptation of a few main rules that already exist: they notably concern capital requirements, management incentives and governance of financial intermediaries, and the transparency of balance sheets and financial products.

5.1 Capital requirements

The fundamental function of regulatory capital is to avoid excessive risk-taking by banks, thus compensating for moral hazard stemming from state support in case of failure, lending of last resort and deposit insurance.

The first global rules for capital requirements were agreed in Basle in 1988 and entered into force in Europe with the Own Funds and Solvency Ratio Directives[40] in 1989: they were based on a simple rule linking capital to be set aside in relation to assets, according to parameters dealing with the nature of the counterparty – governments, banks and other

[40] Directives 89/299/EEC and 89/647/EEC.

counterparties.[41] The Basle I Accord represented an important step in strengthening bank capital, but created an incentive to buy riskier assets belonging to the same type of counterparty, in order to obtain greater returns. Therefore, after some minor modifications in 1996, the accord was completely revised in 2004, leading to the so-called Basle II Accord. Basle II tried to overcome the weaknesses of the previous system by shifting to a capital formula calculated on the basis of risk-weighted assets; the result has been in practice to reduce capital requirements.[42]

Basle II only entered into force in Europe at the beginning of 2008 and was not even applied in the US: so it cannot be held responsible for the financial crisis (Cannata & Quagliariello, 2009). However, there is little doubt that it would have aggravated, and not addressed, the massive increase in leverage that accumulated in the five years before the crisis. In fact, Basle II entails a strong delegation of responsibilities from supervisors to bank management and external entities, i.e. rating agencies called to validate 'standardised' risk assessment models, and the supervised entities themselves when they choose to develop their own risk-assessment 'internal models'.

More importantly, capital requirements came to be wholly misinterpreted by bank management during the long upswing in stock prices: keeping a buffer of capital over the minimum was seen as a waste of resources, so that the floor became in fact a ceiling. CDSs (credit default swaps) or Triple-A securitised assets were purchased in large amounts to minimize capital requirements.[43] It is interesting to note that banks were

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[41] Further distinction related to the location of banks (exposures to banks located in OECD countries needed less capital than those to banks in non-OECD countries) and possible guarantees on exposures.

[42] The quantitative impact studies (QIS) conducted by the Basle Committee on banking supervision prior to implementation of the accord clearly showed that there would be a reduction in capital requirements. Between December 2007 and June 2008, the first period of application of the accord, there was a 9.6% reduction in total risk-weighted assets in the 12 leading European banks (R&S – Mediobanca, 2008).

[43] See for example the annual report of AIG for 2007 (p. 122): "Approximately $379 billion (consisting of the corporate loans and prime residential mortgages) of the $527 billion in notional exposure of AIGFP's super senior credit default swap portfolio as of December 31, 2007 represents derivatives written for financial

not only the largest buyers of protection through CDSs, but also their main sellers, even if on balance their demand exceeded supply (Table 7); hedge funds ranked second; insurance providers were only third, and large net suppliers of CDSs. Finally, both Basle I and Basle II encouraged the explosion of the interbank market, which later turned out to be a major source of instability, because it tends to assign a very low ranking to assets, e.g. interbank deposits and bonds, held vis-à-vis other banks.

Table 7. Market share of financial intermediaries in credit derivatives (%)

	Protection buyers		**Protection sellers**	
	2004	**2006**	**2004**	**2006**
Banks	67	59	54	43
Hedge funds	16	28	15	31
Pension funds	3	2	4	4
Insurance	7	6	20	17
Corporations	3	2	2	1
Mutual funds	3	2	4	3
Other	1	1	1	1

Source: IMF (2008a).

With hindsight, it is apparent that the Basle approach to regulatory capital is fundamentally flawed since it creates incentives for risk mitigation strategies, and hence cannot adequately protect depositors and systemic financial stability. In practice, this was the device that made it possible for European banks – under the sympathetic eyes of their national regulators – to increase their leverage up to the irresponsible levels comparable to Wall Street investment banks, so as to let them cut their slice of juicy profits, but also inevitably massive and ill-understood risks.

In October 2008, the European Commission presented proposals entailing some tightening of the capital requirements directive, so as to limit the most obvious circumventions of the substance of the rules.[44] But

institutions, principally in Europe, for the purpose of providing them with regulatory capital relief rather than risk mitigation."

[44] Among the main changes proposed are: improving the management of large exposures (banks will be restricted in lending beyond a certain limit to any one party, including other banks); improving supervision of cross-border banking groups; improving the quality of banks' capital (there will be clear EU-wide criteria for assessing whether hybrid capital, is eligible to be counted as part of a bank's

they missed the basic point: we must scrap risk weighting and move to a capital requirement refereed to total assets, regardless of composition. In other words, under no circumstances should banks be allowed to exceed a total leverage ratio, which should be set reasonably low, no larger than ten, with no room for risk mitigation or exemption clauses. Clearly, there should be no special treatment or exemption for interbank operations, which should pay the normal capital charge.

Moreover, there is a need to restore simplicity in the writing of rules: capital rules did not work properly and have been circumvented for two technical reasons.

The first one is excessive complexity of the definition of capital: Tier 1 capital consisting of equity capital, including non-cumulative preferred shares, and disclosed reserves; Tier 2 capital, further comprising supplementary capital, i.e. undisclosed reserves, revaluation reserves, general provisions, hybrid instruments and subordinated term debt; Tier 3 capital, consisting of short-term subordinated debt covering market risk. In sum, there are many items with little resemblance to equity, whose actual utility in case of illiquidity or insolvency is unclear. This fog should be cleared by reverting to the simplest possible definition of capital, namely equity and cash reserves.

The second reason for the failure of capital rules is that each country has implemented capital requirements differently, most often through secondary legislation issued by the banking supervisor. In these domains it is high time to move to full harmonisation, either by using regulations rather than directives when writing legislation or by entrusting implementing powers to Level Three Committees, notably in this case.

Two further refinements are in order. First, the standard capital requirement should apply to standard banking businesses, such as commercial and investment lending, but an extra capital requirement should be imposed on activities that go further. These may include risky

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overall capital); improving liquidity risk management; and improving risk management for securitised products (rules on securitised debt will be tightened: originators will be required to retain some risk exposure). Cf. European Commission, Proposal for a directive of the European Parliament and of the Council amending Directives 2006/48/EC and 2006/49/EC as regards banks affiliated to central institutions, certain own funds items, large exposures, supervisory arrangements, and crisis management, COM(2008) 602 final.

activities such as brokers' loans, lending to highly leveraged institutions and leveraged lending in general. A general way of looking at this penalty is that whenever money is lent to non-bank intermediaries which then on-lend it again, the bank is less able to assess the risk associated with the final claim and therefore a presumption arises that risk is higher. Those non-bank intermediaries, being confronted with a penalty rate on their bank borrowing, would be encouraged to seek cheaper funding in capital markets, where sophisticated investors would decide by themselves whether they want to take those risks, and at what price, given their estimate of potential losses.

Capital penalties also seem in order on the banks' open positions in their proprietary trading portfolio, notably when it includes securities or contracts that are not standardised and whose value is difficult to determine, e.g. because they are not traded through a clearinghouse and regular settlement system.

Finally, recent events have made it painfully clear that size matters perversely in generating systemic risks, since behemoth banking institutions are at the same times too large to fail and too large to be effectively managed and controlled. The implicit incentives to undertake excessive risks to raise returns, potentially at the expense of taxpayers, again seems to justify an extra capital penalty, with maximum permitted leverage decreasing with size beyond passing size threshold.

The purpose of all these penalties is clear: whenever a depositor's money is used outside the typical domain of banking business, there is a presumption that the bank is using the banking franchise to take inordinate risks, on the assumption that the taxpayer will bear exceptional losses. By placing an extra capital charge on all these activities, and on the systemic risk implicit in size, the distortion in incentives created by deposit insurance and state backing in case of failure is compensated by reducing expected returns.

Capital requirements could also be used anti-cyclically, as has been prominently proposed by Charles Goodhart (2008) and, lately, Brunnermeier et al. (2009). The simple idea behind this proposal is that all rapid accelerations in bank lending should be discouraged by raising capital charges, thus putting a break on the inherent instability of banking. The proposal has in fact already been tested by the Bank of Spain, which since 2000 has adopted a 'dynamic provisioning' system that increases capital charges on banks in response to past credit accelerations; provisions

are also required for expected losses on the non-impaired portfolio, in order to build up a fund during upswings which may be drawn upon in downswings.

In assessing this proposal, one should not overlook that, to the extent that credit booms are generated by lax monetary and financial policies, the introduction of specific 'brakes' on banks may still prove insufficient in countering instability due to destabilising macroeconomic policies.

5.2 Fixing management incentives

As been discussed, the events leading to the financial crisis have exposed a tendency of management in financial intermediaries to take excessive risks. Two issues seem prominent here: the possible distortions in the design of compensation packages, in particular for listed companies; and the balancing of competing interests in governance arrangements of financial institutions.

During the run-up to the speculative bubble, many large intermediaries designed pay packages so as to attract the best traders and investment bankers and to keep them in face of stiff competition; this became a main factor pushing intermediaries to seek ever-larger returns. To this end, the salary structure was heavily skewed in favour not only of the variable component, but also of short-term returns that were readily cashed in. Profit estimates in quarterly reports were increasingly bent to show fast-rising profits, which were immediately distributed in the form of stock options, not infrequently backdated. In practice stock prices were pushed up by immediately writing future profits in the books, with no provisions for potential losses at the time of liquidating the operation. Thus, it was one way bets all over the place – with the taxpayer playing the residual loss-taker.

This dramatic distortion in incentive was enhanced, first, by the transformation of investment and brokerage house from unlimited partnerships into limited-liability companies, therefore only responsible for losses up to invested capital;[45] and, second, by listing investment banking houses on the stock exchange, which facilitated the immediate liquidation of management gains while the risk stayed with shareholders. In turn, shareholders, lured by seemingly unending stock appreciation, increasingly overlooked their responsibilities to monitor management and

[45] See Hans-Werner Sinn quoted in The Economist (2009, p. 18).

risk-taking, precisely when further increases in their stock should have been seen with concern.

Redesigning management incentive requires some caution in order not to stifle the incentive to innovate, and also not to bring about new distortions and perverse incentives. In this regard, absolute limits on pay, as have been introduced in many financial organisations that have fallen into government hands, may seem attractive to soothe an enraged public opinion, but do not seem to provide a very good solution in the long run – at least unless they can be uniformly imposed across all jurisdictions – since they are likely to keep away good management and attract lower-quality staff. Another aspect that should be borne in mind is that a reduction in the share of variable pay is likely to lead to demands for higher fixed remuneration, thus increasing fixed costs and depressing profitability for all shareholders.

Thus the question basically remains one of good design of variable compensations, and how best to align them with the creation of long-term value for shareholders. This fundamental point is not contradicted by the events leading to the financial crisis. However, some radical changes in past practices are in order.

First of all, while it is important that the variable part of compensation remains dominant, according to the CEO at Goldman Sachs, "an individual's performance should be evaluated over time so as to avoid excessive risk taking. To ensure this, all equity awards need to be subject to future delivery and or deferred action".[46] In this context, some have proposed to go one step further and use 'claw back' clauses, whereby a manager's pay can be claimed back in order to cover subsequent losses from his or her actions and operations, even after leaving the company; however, how to implement such a clause remains controversial.

In any event, the variable part of compensation should be paid in shares in order to eliminate perverse incentives linked to stock options. Stock grants – never free under any circumstance, but against payment at a discount with respect to the market price of company shares – should only be assigned after positive results materialise in the medium term. Furthermore, the sale of shares thus obtained should be restricted with long

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[46] L. Blankfein, "Do not destroy the essential catalyst of risk", *Financial Times*, 8 February 2009.

vesting periods, e.g. a minimum of 5-7 years or retirement, and be subject to other conditions. An example is provided by the conditions attached by Warren Buffett to his $5 billion investment in Goldman Sachs: Chief Executive Lloyd Blankfein and three other top executives agreed that they won't part with more than 10% of their common-stock holdings until October 2011, unless the company first redeems Mr. Buffett's perpetual preferred shares.[47]

Option plans should have long vesting periods, years rather than months. More importantly, maximum transparency should be given to the remuneration process. The voice of the general meeting of shareholders on remuneration policy should be strengthened, together with board responsibilities in setting the compensation, which should be based on expert advice by independent consultants not chosen by the management.

Changing the pay mechanism will not suffice. There is also a need to restore an appropriate balance in the governance arrangement, notably by strengthening the weight of risk control vis-à-vis profit centres. As we have argued, the distribution of returns in financial markets creates favourable conditions for 'disaster myopia' by those who are engaged in generating returns by taking risk – something completely overlooked by mainstream efficient market economics.

This tendency must be kept in check by giving more weight in management decisions to those charged with controlling risks and preserving the organisation's viability. There is plenty of evidence that often the dangers of excessive risk-taking were spotted perfectly well by risk-control managers, but their opinion was promptly swept under the carpet. In quite a few instances, those who insisted in raising objections were side-lined or even fired. In general, their position in the organisations did not allow them to impose their view; and even when they were able to expose the situation to the board, they were not understood, given the low level of technical knowledge of many board members of financial institutions.

This problem can be fixed by appropriate organisational changes. Risk management and control need to be made fully independent of profit centres and directly accountable to an independent audit committee and, eventually, to the board. Executives should in no way be allowed to influence the performance assessments nor the pay and career of risk

[47] Y. Patel, "Commitment to Goldman", *Wall Street Journal*, 8 October 2008.

managers, whose pay and ranking in the organisational structure should be adequate. And, "if there is a question about the value of a position or a disagreement about a risk limit, the risk manager's view should always prevail" (Blankfein, *Financial Times*, 8 February 2008).

In managing risk, the size of the organisation matters too. The past decade has seen not only the widespread adoption of the universal banking model but also the emergence of unwieldy large financial conglomerates, defined as "any group of companies under common control whose exclusive or predominant activities consist of providing significant services in at least two different financial sectors – banking, securities, insurance …" (Bank for International Settlements, 1995). In practice, all large international financial organisations are financial conglomerates in this definition. Already in 2000, over 80% of the assets of the largest 500 banking organisations were controlled by financial conglomerates, and among the largest 50 banking groups the proportion reached 94% (Huertas, 2006).

The organisational structure of conglomerates differs across countries, depending in part on legal constraints on the organisation of cross-border or cross-sector businesses – e.g. by requiring the creation of a separate subsidiary to perform certain activities or operate in particular jurisdictions. Most large conglomerates may be subject to multiple bankruptcy procedures and to multiple schemes of depositors, policyholders and investor protection, as well as having access to multiple lenders of last resort.

Due to their sheer size, and also to this multiplicity of business and regulatory environments, large financial conglomerates pose extraordinarily complex challenges in risk management and control. They have hundreds of subsidiaries and affiliates, sometimes with different accounting principles, different auditors, if any, different geographical areas, including tax havens. It is not clear how to solve these obstacles: at a minimum, a way must be found so as to make them subject to one overarching supervisor, capable of imposing sound risk-management oversight over the entire range of operations of the conglomerate worldwide. The imposition of appropriate regulatory disincentives would compel them to reduce size and complexity.

5.3 About transparency and market integrity

A specific area where risk management and control by financial organisations proved especially weak concerned derivatives and

securitised assets, instruments that by and large were traded over the counter. Trading over the counter had reached astounding dimensions: between June 2006 and June 2008, their notional amount almost doubled (Table 8).

Table 8. Amounts outstanding of OTC derivatives, by risk category and instrument ($ trillions)

Risk category/ instrument	**Notional amounts outstanding**				
	Jun 06	Dec 06	Jun 07	Dec 07	Jun 08
Total contracts	**370.2**	**414.8**	**516.4**	**595.3**	**683.7**
Foreign exchange contracts	38.1	40.3	48.6	56.2	63.0
Interest rate contracts	262.5	291.6	347.3	393.1	458.3
Equity-linked contracts	6.8	7.5	8.6	8.5	10.2
Commodity contracts	6.4	7.1	7.6	8.4	13.2
Credit default swaps	20.3	28.6	42.6	57.9	57.3
Unallocated	36.0	39.7	61.7	71.1	81.7

Source: BIS, Semi-annual OTC derivatives statistics 2008.

Over-the-counter (OTC) products were especially liked since were typically tailor-made to suit the specific risk characteristics demanded by investors. The other side of the coin is their lack of liquidity and direct exposure to counterparty risk, which investors thought would be overcome by model valuation, either internal or by rating agencies. It is now well known that this part of the game did not work out satisfactorily.

The obvious solution to the liquidity and counterparty risk problems would be to channel these trades through organised clearing platforms, as originally proposed by Cecchetti,[48] with two positive effects: the standardisation of the financial instruments, facilitating transparency and liquidity, and the imposition of margins on the holders, so that the counterparty risk would be spread over all participants in the clearinghouse. Furthermore, adequate capital requirements on the clearinghouses and monitoring by market supervisors would make available effective and timely information on potential systemic risks. Schemes for the centralisation of CDS trades have already been tabled by

[48] S. Cecchetti, "A better way to organize securities markets", *Financial Times*, 4 October 2007.

the European Commission (2009b), with agreement by the industry. Similar proposals are under discussion in the United States.

Creating organised clearing and settlement platforms for these products does not imply that their use should be made compulsory. A better solution would be to create appropriate incentives and disincentives, for instance by applying taxing capital penalties to OTC products in banks' portfolios and requiring full separate disclosure of OTC positions.

Then we must deal with rating agencies. As well understood by the de Larosière Group Report (2009), both in the United States and in the European Union rating agencies have come to play a "quasi-regulatory role", as a consequence in the former case of registration,[49] and in the latter of the role attributed to their ratings by a number of EU directives.

In particular, Basle II strongly encourages recourse to rating agencies both for the evaluation of standardised valuation models and risk exposure. At the same time, their 'quasi public' nature has induced regulators to lift regulatory requirements: for instance, in the market abuse directive all recommendations on financial instruments – including analyst reports or newspaper articles – are subject to an obligation of fair representation and disclosure of interest conflicts, while rating agencies' reports were explicitly exempted from those rules.[50]

These rules have created a misguided perception of reliability of ratings, whereby investors and intermediaries have abdicated their responsibility to independently assess the quality of their assets. Moreover, they have strengthened the market power of a few incumbents under a regulatory franchise.

Looking forward, at the very moment when investors are asked to take back their full responsibilities in assessing assets quality and

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[49] In the United States, rating agencies are registered in a list of Nationally Recognized statistical rating organisations, and they are supervised by the SEC. With typically blurred thinking, the EU Commission has now proposed that a similar system be adopted in the European Union, with no serious discussion of the pros and cons.

[50] Directive 2003/125/EC (recital n. 10) states that: "Credit rating agencies issue opinions on the creditworthiness of a particular issuer or financial instrument as of a given date. As such, these opinions do not constitute a recommendation within the meaning of this directive."

counterparty risk, a more consistent approach would have been to strip rating agencies of all regulatory privileges, making them irrelevant and letting them compete for customers as private entities.

A fundamental pillar of financial markets is trust built on informational transparency. A critical requirement in this regard is that periodical reporting documents must fully represent all risks, including those that may derive to the organisation from controlled entities, which must be fully identified and consolidated when appropriate. The substance of this principle has been systematically and massively evaded; therefore, an overhaul of accounting principles, auditing practices and supervision is urgent, and the revised rules must apply to all the main financial markets.

In this regard, it would be a bad mistake to limit or eliminate international accounting standards, which have now been adopted widely around the world – while even the US regulators are considering their recognition. True, mark-to-market valuations have amplified the cyclical swelling and contraction of balance sheets, compounding instability. But this was by no means required under proper application of the IFRS (International Financial Regulatory System). It was a degeneration that made it possible for intermediaries to book immediately short-term gains on their assets during the upswing, but came to haunt them in the downswing. And at that time they started screaming for the suspension of the accounting principles; national authorities, desperate to stop the downward spiral, promptly obliged, without much understanding of the implications.

In reality, the IFRS fair value principles are fine, their application was rotten. Auditors and supervisors should have resisted complacent interpretations designed to swell balance sheets beyond reason. Sensible estimates of fair value based on longer time horizons and considered evaluation of underlying fundamental variables would have led to much less destabilising results.

Transparency may also provide much of the solution to the question of how best to regulate private pools of capital such as hedge funds and private equity. This is needed by intermediaries that may be relevant for the functioning of the financial market. Proposals are on the table from the industry and from the regulators on private equity and hedge funds.[51] It is

[51] On this, see the results of the public consultation launched by the European Commission in December 2008 on hedge funds, the position taken by the Hedge

far from clear that these intermediaries, albeit highly leveraged, have contributed much to recent instability; rather, they have taken their losses in earnest and have in many cases shown adequate capital and reserves. Clearly, the lesson of the LTCM failure in the late 1990s was learned. As we have argued, there is no solid argument to extend prudential regulation to these intermediaries. Enhanced transparency on their exposure and risks will suffice, and should be made available to investors, supervisors and the market at large.

6. Coping with an unstable macro-financial environment

As has been argued, the principal cause of financial instability has not been lax regulation, hedge and private equity funds, and exotic financial products – although all these played a role in permitting reckless behaviour by bankers and financiers and spreading its consequences worldwide. Nor was there a major role of the offshore tax and financial havens, which are now branded by politicians as chief culprits: obviously, the main misdeeds took place at the very centre of financial capitalism, in New York and London, Tokyo, Frankfurt and Paris, Amsterdam, Brussels, Dublin, Madrid and Zurich.

Financial instability has been first and foremost generated by unstable macro-financial policies in the United States and by international monetary arrangements, since the breakdown of Bretton Woods in the early 1970s, which rather than promoting adjustment of payments imbalance, have permitted their explosion and the unsustainable accumulation of assets and liabilities going with it. Therefore, as important as they are, tightening the screws of regulation and improving market discipline for financial organisations will not suffice to bring about a more stable global environment: reform of international monetary arrangements is also needed.

A complete blueprint of reform is beyond the scope of this study, but we describe some basic ingredients of a reformed system that cannot be left out. A main premise is that a return to fixed exchange rates between the main economic areas of the world is neither feasible nor desirable, given the enormous differences in their economic and social systems.

Fund Standards Board and the Report of the Private Equity Monitoring Group on Transparency and Disclosure (2009).

The first ingredient of reform is restoring some shared rules of the game for international adjustment, since financing current payment imbalances without adjustment would lead us again onto an unstable financial path. These rules must include symmetric external discipline on domestic policies for all countries – including the United States, which has dramatically abused its status as main reserve currency country – and appropriate arrangements to let exchange rates move to help correct current payment imbalances, under strengthened International Monetary Fund surveillance.

The new system should provide early warnings of the build-up of systemic risks and sanctions for divergent countries following unstable policies, as already envisaged under the EU internal policy surveillance apparatus. It should also have effective tools for the International Monetary Fund to manage international liquidity crises – as a true world lender of last resort – and provide effective assistance to countries confronted by destabilising capital outflows (Eichengreen, 1999).[52] A crucial condition to ensure effective surveillance of global imbalances and global systemic risk by the International Monetary Fund is its independence in performing this function. With this aim in mind, Gros has proposed that the IMF Executive Board, currently composed only of representatives of member countries, be enlarged to include three to five independent members.

Agreement on these rules and their subsequent political monitoring could usefully be entrusted to the G-20, which is emerging as the prominent candidate to run world economic and monetary affairs in the new hoped-for era of cooperation. The G-20 ministers of finance and central bank governors could conceivably take over the steering role of the International Monetary and Financial Committee (IMFC) and become the locus for the coordination of macroeconomic policies between the major economic areas of the world, through binding rules managed by a permanent secretariat staffed by top officials from its member states, as well as guide the IMF's surveillance over the policies of its members; the IMFC could be transformed into a Council to oversee the International

[52] There is not much new to this: it is sufficient to go back and re-read the report on "The functioning of the International Monetary System", endorsed by the ministers of finance and central bank governors of Group of Ten at their meeting in Tokyo in June 1985, and give concrete content of policy commitment to those principles, precisely designed to underpin the floating exchange rate regime – after the dramatic instability generated by the lack of common rules in the 1970s.

Monetary Fund, as already envisaged by the Articles of Agreement.[53] The IMF (and World Bank) quotas and governing structure should be adjusted to reflect the new equilibria in the world economic and financial community: the savings imbalances will not be remedied as long as the largest creditor states are kept on the fringe of the governing bodies of global institutions and IMF polices are decided by the United States together with a small clique of advanced countries.

Of course, all this is easier said than done: but the overall goal should be clear to the G-20 representatives who will meet in London on April 2nd and subsequently in other fora charged with restoring stability and vitality to the global financial system.

Managing world payment imbalances may require more than improved coordination of national macroeconomic policies. Payment imbalances have structural causes that must be squarely confronted.

The past two decades have been characterised by low-wage growth in advanced countries, reflecting the forces of globalisation and technical change. We deluded ourselves that the problem would be resolved by investing in human capital and moving workers in advanced countries up the skill curve. In practice, this has not happened: large layers of advanced societies have been living with declining real wages, leading to a permanently lower *sustainable* increase in domestic consumption (Turner, 2008). Some countries made up for this shortfall in domestic demand by engineering a credit-driven consumption spree and housing price bubble: from the United States, to the United Kingdom and Ireland, Spain, the Baltic region and Eastern Europe, households piled up enormous debt using their inflated paper wealth as collateral.

The United States emerged as the residual absorber of everybody else's exports, building an enormous current account deficit. In other advanced countries, low growth of domestic demand resulted in large external surpluses and an export-oriented economic structure, the prominent examples being Japan and Germany. Meanwhile, China and other Asian exporters have built massive excess capacity for the production of cheap manufacturing exports, while their domestic absorption capacity, as a share of GDP, has remained constant or declined. Meanwhile large

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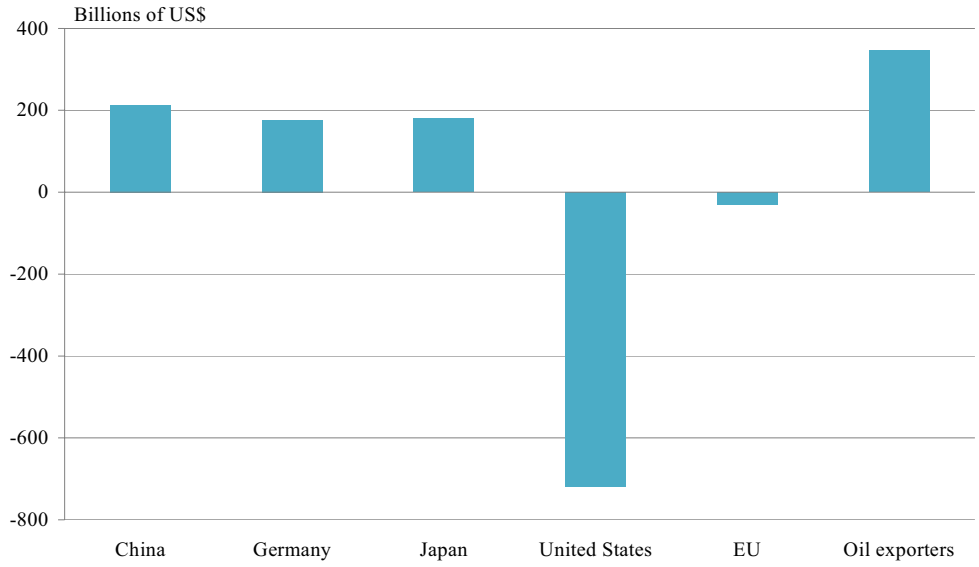
[53] B. Eichengreen, "The G-20 and the crisis", *Vox*, 2 March 2009.

surpluses have also re-emerged in oil-exporting countries. Figure 6 summarises the resulting structure of world current external payments.

Figure 6. World payment imbalances, average 2004-07



Sources: IMF, 2008 and World Economic Outlook database, 2009.

On closer inspection, it appears that there are two main subsystems (Wolf, 2009). One comprises the United States and the Asian surplus countries, linked by managed dollar exchange rates and massive transfers of capital from Asia to the US capital markets; substantial undervaluation of Asian currencies exerts strong downward pressure on US real wages. The other subsystem is the euro area, which has roughly balanced external payments with the rest of the world, but large imbalances inside, with Germany in large surplus and the others in deficit, and imperfectly integrated capital markets limiting offsetting direct investment. Here too exchange rates cannot move to eliminate payment imbalances; Germany's superior productivity and wage moderation maintain constant pressure on real wage growth in euro-area partners, slowing domestic demand and GDP growth through the entire area, while 'corporatist' economic structures retard needed changes in the patterns of industrial specialisation. Both subsystems have seen their internal imbalances growing over time, thank also to divergent macroeconomic policies; low growth of domestic demand is likely to characterise both of them, with the return of American consumers to normal savings patterns.

Clearly, payment imbalances cannot be eliminated unless the real exchange rates of emerging countries in Asia appreciate substantially, and domestic wages and income accelerate throughout the region; these countries must turn inwards and deploy their gigantic savings for housing, social welfare and the environment. Only with substantial real appreciation of their currencies and higher growth of domestic income will there be sufficient room for more rapid wage and income growth in advanced countries.

Within the euro area, adjustment requires that relative prices and wages in Germany move in favour of services and domestic consumption and output composition changes accordingly. Substantial direct investment should flow from the strong to the weak economies to correct for competitive imbalances. Without this extra stimulus and much extra-flexibility to adapt economic structures to changing relative wages, the internal market and even the euro might not survive a protracted period of high unemployment and low growth. Orthodox nation-based polices repeated as a litany by German policy-makers cannot fix the problem; macroeconomic policies must be effectively coordinated within the area to bring about the required changes in real exchange rates and the composition of aggregate demand.

For the time being, these issues have not gained the attention they deserve on the international reform agenda. And yet, failure to address them might permanently depress economic growth worldwide and lead to the breakdown of international cooperation and a return to protectionism, as in the 1930s.

The last bit of international reform that must be mentioned concerns the role of the euro and the issue of Union bonds. Clearly, international monetary discipline would be strengthened by the existence of a fully-fledged alternative to the US dollar as a reserve currency. What is missing for the euro to play this role is a large and liquid market of Union bonds denominated in euro. Ample demand for these bonds is certain to come from large sovereign investors that would be more than happy to diversify their reserve holdings in favour of non-dollar assets.

The resources thus raised could be deployed in Europe to foster structural adjustment, improve the environment, and create world-class transport, communication and energy networks, thus imparting a strong stimulus to domestic demand. They could also be used to strengthen banks' capital and provide credible support to the currencies and balance

of payments of EU members not using the euro, as well as nearby neighbours with similar difficulties, who are experiencing severe strains in their external positions.

There has been, in this regard, insufficient awareness among policy-makers that Eastern Europe, the Balkans, Russia and the neighbouring countries are the areas under acutest strain outside the advanced countries: as is manifest from Table 9, most countries in the area show the highest value of risk exposure. Their difficulties tend to be mutually reinforcing, raising the spectre of a regional currency and sovereign debt crisis, which would severely impact the banking system of the European Union. The Union would in all likelihood end up spending less and sparing much trouble if it were to launch a large-scale preventive support operation designed to stabilise all of their currencies and financial systems, rather than by meeting individual crises one by one, as they unfold.

Table 9. Vulnerability of selected economies to the global credit crunch

Country	Current account as % of GDP	Short-term debt as % of reserves*	Banks' loan/ deposit ratio	Overall risk ranking**
South Africa	-10.4	81	1.09	17
Hungary	-4.3	79	1.30	16
Poland	-8.0	38	1.03	14=
South Korea	1.3	102	1.30	14=
Mexico	-2.5	39	0.93	12=
Pakistan	-7.8	27	0.99	12=
Brazil	-1.5	22	1.36	10=
Turkey	-2.3	70	0.83	10=
Russia	1.5	28	1.51	9
Argentina	0.2	63	0.74	8
Venezuela	0.8	58	0.75	7
Indonesia	1.2	88	0.6 2	6
Thailand	0.3	17	0.88	5
India	-2.4	9	0.74	4
Taiwan	7.9	26	0.87	3
Malaysia	11.3	15	0.72	2
China	5.2	7	0.68	1

* 2009 forecast.

** Higher score implies higher risk.

Source: The Economist, 28 February 2009.

In general, the surreal discussion of this issue between European leaders has entirely overlooked the likelihood that capital spending for the purposes mentioned above will be necessary anyway, with or without

Union bonds; and that without Union bonds the cost will be borne by national budgets. Germany might have to pay a disproportionate share, since its banks are the most exposed to faltering neighbouring economies in the East and the other member states are in much weaker economic and financial conditions.

The objections based on burden-sharing can be handled to everyone's satisfaction by means of appropriate keys reflecting use of the funds. Even the objection that Union bonds would raise the cost of public borrowing by the member states with the highest credit standing sounds unconvincing for the very reason just mentioned: failure to intervene collectively might leave the strongest among them to carry much of the burden, and therefore the credit rating of Germany and France might suffer more from inaction than action, to the extent that a clear coordinated economic strategy might well reassure markets and increase the demand for both sovereign national and Union bonds.

A practical scheme for a European Stabilisation Fund that would manage the funds thus raised has been proposed by Gros and Micossi (2008). The Fund could be set up quickly at the European Investment Bank (EIB), which is a Union agency already possessing the necessary expertise and comprising in its governing board the ministers of finance of the member states. Minor changes in the statutes of the EIB would give it the room of action needed to invest its funds for the purposes outlined above – including equity stakes in infrastructural projects or large banks in difficulty.

7. Our main proposals

Our main conclusion on the origins of financial instability and our key policy recommendation draw directly on the insights expressed by a wise economist: a strong monetary anchor needs to be restored to the international monetary system, and regulators must effectively constrain the levels of leverage that financial organisations are able to accumulate (Leijonhufvud, 2009).

Indeed, the primary source of instability must be seen in the repeated bouts of destabilising macroeconomic policies in the United States since the breakdown of the Bretton Woods system of fixed exchange rates; international monetary arrangements amplified the effects of lax US polices by maintaining large exchange misalignments and financing, rather than correcting, international payment imbalances. The resulting massive

accumulation of net asset and liability positions generated enormous flows of capital to United States and other main financial centres, and a sequence of booms and bust in financial markets worldwide until the final implosion of the centre of the system.

The urgent task at this juncture is to stabilise financial markets and halt the poisonous spiral of lower asset prices depressing economic activity, which in turn pushes asset prices even lower. The central issue is how to restore confidence in the banking system. To this end, the deployment of government money into insolvent banks should be accompanied by a straight takeover by the state, a restructuring phase and resale to private investors as soon as possible. A continuation of the policy of 'handouts without proper workouts', notably in the United States, cannot restore confidence and might lead us into a repetition of Japan's 'lost decade' in the 1990s.

The crisis management tools available to the European Central Bank are narrower than those of other major central banks because, unlike the Federal Reserve and the Bank of England, the European Central Bank is not backed by a fiscal authority. A way to tackle this weakness without compromising the ECB's independence would be to create a European Fund which would issue Eurobonds and make the proceeds available to European institutions for their financial rescue operations.

Once the crisis subsides, the world will need new monetary arrangements whereby payment imbalances are corrected by appropriate domestic policies in all the main countries and currency areas, and exchange rates can vary consistently with the requirements of international adjustment. In this sense, the quest for a monetary anchor must be answered by restoring external discipline on the policies of the main countries, rather than a new regime of fixed exchange rates that would not be viable. Agreement on such discipline will not come about unless the main emerging countries can take their proper place in international institutions, notably the International Monetary Fund and the World Bank. The Group of Twenty appears as the best candidate to instigate and manage international policy cooperation at political level.

Lax financial market regulation wasn't the main culprit in the excesses that led to the speculative bubble, but it played an important permissive role in letting the leverage of financial organisations to build up to unsustainable levels. As asset prices accelerated, the incentive to create financial innovations to circumvent regulatory and prudential constraints became overwhelming, up to the eventual general crash.

In our view, there is no need to fundamentally change the regulatory architecture whereby prudential regulation basically concerns banking institutions, which are open to moral hazard because of deposit insurance, lending of last resort and the implicit state backing of the liabilities of large banks. We should also be aware that many important changes remedying past failures have already been implemented under the able stewardship of the Financial Stability Forum, which is emerging as the dominant forum for global governance of financial markets.

Non-bank intermediaries, including private pools of capital, do not pose systemic stability risks unless they are financed cheaply by banks with depositors' money; to the extent that this is avoided, it is not necessary to extend prudential regulation beyond the banking system. There is also no need to return to a system of legal separation between commercial and investment banking, provided there are sufficient disincentives and penalties for banks to engage in capital markets activities on their own account.

Our main recipe for banking capital requirements is that Basle II rules should be scrapped and be substituted by a flat capital requirement calculated with reference to total assets, with no exemptions: the maximum permitted leverage ratio should never again be allowed to exceed a ceiling of ten. In addition, following the analysis above, special capital charges should be imposed on risky activities not belonging to normal banking business and possibly on excessive size.

We also suggest a number of measures designed to strengthen risk management within financial organisations as well as transparency of information on all market participants and financial instruments. Appropriate incentives should push OTC instruments to migrate to organised clearing platforms.

In Europe, a drastic simplification of the regulatory structure is in order to concentrate at EU level not only rule-making, which in the main has already been accomplished, but also rule implementation, as extensively discussed in the recent Report by the de Larosière Group (2009). In this context, it is high time that Level Three Committees be given legal powers in coordinating the implementation of EU directives.

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Appendix. Chronology of main events, 2007-09 (up to 15 March 2009)

Date		Description
United States		
31/07/07	Bear Stearns	Two Bear Stearns hedge funds largely exposed to subprime mortgage-backed securities file for bankruptcy.
14/03/08	Bear Stearns	Bear Stearns gripped by liquidity crisis. The Federal Reserve and JPMorgan Chase provide secured funding to Bear Stearns, as necessary, for an initial period of 28 days.
16/03/08	Bear Stearns	JPMorgan Chase announces the acquisition of Bear Stearns.
24/03/08	Bear Stearns	The Fed lends $29 bn to facilitate the acquisition of Bear Stearns by JPMorgan Chase.
13/07/08	Fannie Mae Freddie Mac	The Fed is authorised to lend to Fannie Mae and Freddie Mac in case of necessity. Temporary increase in the line of credit made available by the US Treasury to Government Sponsored Enterprises (GSEs); temporary authority for the Treasury to purchase GSEs equity.
07/09/08	Fannie Mae Freddie Mac	Fannie Mae and Freddie Mac are placed into conservatorship. Senior preferred stocks purchase agreement between GSEs and Treasury (up to $100 bn). In return, $1 bn of senior preferred stock in each GSE and warrants on 79.9% of the common stock of each GSE. Treasury plan to purchase mortgage-backed securities of GSEs. New Treasury secured lending credit facilities to Freddie Mac, Fannie Mae and the Federal Home Loan Banks.
15/09/08	Lehman Brothers	Lehman Brothers files for Chapter 11. It is the largest bankruptcy in the US history.
15/09/08	Merrill Lynch Bank of America	Bank of America acquires Merrill Lynch in a $50 bn all-stock transaction.
16/09/08	AIG	Up to $85 bn loan granted by the Fed to AIG; the loan is collateralised by the assets of AIG. The US government receives a 79.9% equity interest.
18/09/08	Federal Reserve	$180 bn increase (up to $247 bn) of currency swap lines with the Bank of England, the European Central Bank, the Bank of Japan, the Swiss National Bank and the Bank of Canada.
21/09/08	Goldman Sachs, Morgan Stanley	Goldman Sachs and Morgan Stanley become bank holding companies.
24/09/08	Federal Reserve	The Fed establishes new currency swap lines (up to $30 bn) with the central banks of Australia, Denmark, Norway and Sweden.
25/09/08	Washington Mutual	Washington Mutual is placed into the receivership of the Federal Deposit Insurance Corporation (FDIC). JPMorgan Chase acquires all deposits, assets and certain liabilities of Washington Mutual's banking operations from the FDIC for $1.9 bn.

Date		Description
29/09/08	Federal Reserve	Increase to $620 bn of total size of currency swap lines with other central banks. Tripling (up to $225 bn) of supply of 84-day maturity Term Auction Facility (TAF) credit. Introduction of forward TAF.
29/09/08 03/10/08	Wachovia	Citigroup to acquire the banking operations of Wachovia in a transaction facilitated by a loss-sharing agreement with the FDIC. The bank is later taken over by Wells Fargo, which outbids Citi's offer.
08/10/08	AIG	Fed to borrow up to $37.8 bn in investment-grade, fixed-income securities from AIG in return for cash collateral.
08/10/08	Federal Reserve	Target federal funds rate cut from 2% to 1.5%.
13/10/08	Federal Reserve	Unlimited amount of US dollars made available through currency swap lines with the Bank of England, the European Central Bank, the Bank of Japan and the Swiss National Bank.
28- 29/10/08	Federal Reserve	The Fed establishes new currency swap lines with the central banks of New Zealand (up to $15 bn), Brazil, Korea, Mexico and Singapore (up to $30 bn).
29/10/08	Federal Reserve	Target federal funds rate cut from 1.5% to 1%.
10/11/08	AIG	The US Treasury announces the purchase of $40 bn of newly issued AIG preferred shares under TARP. Fed credit facility consequently reduced from $85 to $60 bn. The Fed creates for AIG a residential mortgage-backed securities (RMBS) facility (up to $22.5 bn) and a collateralised debt obligations facility (up to $30 bn). The RMBS facility will lead to repayment and termination of the $37.8 bn facility established by the Fed on 08/10/08.
23/11/08	Citigroup	Government guarantee on a Citigroup asset pool of approximately $306 billion of loans and securities backed by commercial and residential real estate and other similar assets. Losses to be absorbed by Citi up to $29 bn; further losses to be borne by the US Treasury (up to $5 bn), the FDIC (up to $10 bn) and Citi with a loss-sharing agreement. In exchange, Citi issues $4 bn and $3 bn in preferred stock respectively to the US Treasury and the FDIC. Further residual losses to be absorbed by Citi and the Federal Reserve with a loss-sharing agreement (Citi 10%, Fed 90%). $20 bn in senior preferred shares issued to the US Treasury.
16/12/08	Federal Reserve	Target federal funds rate cut from 1% to a range of 0%-0.25%.
16/01/09	Bank of America	Government guarantee on a pool of assets of Bank of America of approximately $118 bn, composed of loans, securities backed by residential and commercial real estate loans, and other similar assets. The assets, largely assumed through the acquisition of Merrill Lynch, will remain on Bank of America's balance sheet. In exchange, Bank of America will issue to the Treasury and the FDIC $4 bn of preferred shares. Bank of America will absorb losses up to $10 bn; 90% of further losses will be sustained by the

Date		Description
		Treasury and the FDIC, up to $10 bn. The Fed will absorb residual further losses through a non-recourse loan, subject to institution's 10% loss sharing. Bank of America will issue to the Treasury $20 bn in preferred stock under the Targeted Investment Program.
27/02/09	Citigroup	US Treasury to convert into common equity up to $25 bn of Citi's preferred shares issued under the Capital Purchase Program. After the transaction the US government will own approximately 36% of Citi's common stock.
02/03/09	AIG	Restructuring of the Treasury's and Fed's assistance. Treasury will exchange its existing $40 bn of cumulative perpetual preferred shares for new non-cumulative preferred shares with features closer to common equity. New equity capital facility: up to $30 bn by issuance of non-cumulative preferred stock to the Treasury. Restructuring of the Fed $60 bn credit facility: 1) up to $26 bn of preferred stock of two AIG insurance subsidiaries to be transferred to the Fed; 2) Fed loans, up to approximately $8.5 bn, to special purpose vehicles created by domestic life insurance subsidiaries of AIG. In return, the outstanding balance of the credit facility will be reduced to no less than $25 bn.
Europe		
30/07/07	IKB	The German bank IKB is provided a €8.1 bn liquidity facility by its main shareholder, the German public bank KfW.
09/08/07	BNP Paribas	BNP Paribas suspends subscriptions and redemptions of three funds exposed to US asset-backed securities.
26/08/07	Sachsen LB	The state of Saxony sells Sachsen LB to Landesbank Baden-Württemberg (LBBW). Sachsen LB had been granted a liquidity facility (up to €17.1 bn) by other Landesbanken and receives a €2.75 bn guarantee by the state of Saxony in the context of the sale to LBBW.
14/09/07	Northern Rock	The Bank of England provides liquidity support to Northern Rock. The company suffers the first bank run in the UK since 1866.
17/09/07	Northern Rock	Government guarantee on Northern Rock's existing deposits.
17/02/08	Northern Rock	The government takes Northern Rock into temporary public ownership.
11/07/08	Roskilde Bank	Unlimited liquidity facility granted by the Danish central bank to Roskilde Bank. Up to DKK 750 mln guarantee by a private association set up by the Danish Bankers' Association, to cover any potential losses on the central bank liquidity facility; the Danish state provides unlimited guarantee on further losses.
24/08/08	Roskilde Bank	The Danish central bank and the Danish Bankers' Association take over all assets and liabilities of Roskilde Bank to facilitate its orderly winding-up.
29/09/08	Roskilde Bank	Large part of Roskilde Bank branches sold to Nordea, Spar Nord Bank and Arbejdernes Landesbank.

Date		Description
29/09/08	Fortis	€11.2 bn capital injection into Fortis bank institutions by Belgium (€4.7 bn), the Netherlands (€4 bn) and Luxembourg (€2.5 bn).
29/09/08	Bradford & Bingley	Bradford & Bingley's business taken into public ownership. Bradford & Bingley's retail deposit business and its branch network transferred to Abbey National plc.
30/09/08	Dexia	The governments of Belgium and France and existing shareholders of Dexia subscribe a capital increase of €3 bn each. The government of Luxembourg invests €376 mln in convertible bonds of Dexia Banque Internationale à Luxembourg S.A.
03/10/08	Fortis	The Netherlands take over the Dutch Fortis division assets, including Fortis' interests in ABN Amro (€16.8 bn). This transaction substitutes the €4 bn investment in Fortis Bank Nederland Holding N.V. previously announced.
06/10/08	Fortis	The Belgian state raises to 100% its shareholding of Fortis Banque Belgium with a second €4.7 bn capital injection; it also transfers 75% of Fortis Banque Belgium to BNP Paribas in exchange for new shares in BNP. BNP will also acquire 100% of Fortis Insurance Belgium and 16% of Fortis Banque Luxembourg from the Luxembourg State, taking its controlling interest in the bank to 67%. A Fortis portfolio of structured products (€ 10.4 bn) to be transferred to a vehicle held by Belgium (24%), BNP Paribas (10%) Fortis Group (66%).
06/10/08	Hypo Real Estate	The German authorities and the finance sector agree to provide financial support to Hypo Real Estate (€50 bn liquidity facility; €35 bn guaranteed by the German government).
07/10/08	Glitnir, Landsbanki	The Icelandic Financial Supervisory Authority takes control of Glitnir and Landsbanki.
08/10/08	Central banks	Coordinated interest rate cut of 50 b.p. by the Bank of England, European Central Bank, Swedish Riksbank, Swiss National Bank, Federal Reserve, Bank of Canada.
09/10/08	Kaupthing	The Icelandic Financial Supervisory Authority takes control of Kaupthing.
13/10/08	RBS, HBOS, Lloyds TSB	£37 bn Tier 1 capital investment by the UK government in RBS and, upon successful merger, HBOS and Lloyds TSB.
16/10/08	European Central Bank	€5 bn credit line to Hungary to cover Hungarian banks' acute shortage of euro.
16/10/08	UBS	Transfer of up to $60 bn of illiquid assets of UBS to an SPV owned by the Swiss central bank and funded by UBS (up to $6 bn) and the central bank (up to $54 bn). UBS to raise CHF6 bn of new capital in the form of mandatory convertible notes, fully placed with the Swiss Confederation.
19/10/08	ING	The Dutch government subscribes €10 bn in non-voting core Tier 1 capital.
20/10/08	Ethias	The Belgian government announces a €1.5 bn capital injection into

Date		Description
		the insurance and banking group Ethias.
26/10/08	Carnegie	The Swedish investment bank Carnegie obtains a SEK1 bn loan from Swedish central bank.
27/10/08	KBC	The Belgian bancassurance group KBC to issue €3.5 bn of non-transferable, non-voting core-capital securities to the Belgian State.
28/10/08	Carnegie	Further SEK1.4 bn loan and SEK5 bn credit facility provided to Carnegie by the Swedish central bank.
28/10/08	Aegon	The Dutch government injects €3 bn of core capital into the insurance group Aegon.
06/11/08	European Central Bank	Interest rate on the main refinancing operations cut from 3.75% to 3.25%.
06/11/08	Bank of England	Official Bank Rate cut from 4.5% to 3%.
10/11/08	Carnegie	The Swedish government takes control of Carnegie, granting a loan of SEK2.4 bn, with an optional increase to SEK5 bn. The agreement substitutes the previous loan offered by the central bank.
10/11/08	Parex Banka	The Latvian government nationalises Parex Banka, the largest independent Latvian Bank.
13/11/08	SNS REAAL	The Dutch bancassurance group SNS REAAL issues €750 mln of non-voting core Tier 1 securities to the Dutch State.
04/12/08	European Central Bank	Interest rate on the main refinancing operations cut from 3.25% to 2.5%.
04/12/08	Bank of England	Official Bank Rate cut from 3% to 2%.
22/12/08	IKB	SoFFin places an up to €5 bn guarantee on new bonds issued by IKB.
08/01/09	Bank of England	Official Bank Rate cut from 2% to 1.5%.
08/01/09	Commerzbank	De facto nationalisation of Commerzbank: the government injects €10 bn of capital and becomes the major shareholder with a stake of 25% + 1 share.
14/01/09	Deutsche Bank	Deutsche Post, part-owned by the German state, is announced to acquire a shareholding of approximately 8% in Deutsche Bank.
15/01/09	European Central Bank	Interest rate on the main refinancing operations cut from 2.5% to 2%.
15/01/09	Anglo Irish Bank	The Irish government nationalises Anglo Irish Bank.
19/01/09	RBS	Conversion of the government's preference shares investment in RBS into ordinary shares.
26/01/09	ING	Government guarantee on an ING €27.7 bn portfolio of residential mortgage-backed securities.
02/02/09	Fortis	BNP Paribas, the Belgian state and Fortis Holding amend the agreements of 06/10/2008: BNP Paribas will take a 10% stake, as

Date		Description
		opposed to the planned 100%, in Fortis Insurance Belgium. The BNP stake in the structured products vehicle is raised to 11.6% (58.8% for the Belgian government and 29.6% for Fortis Holding).
05/02/09	Bank of England	Official Bank Rate cut from 1.5% to 1%.
11/02/09	Hypo Real Estate	Total amount of guarantees provided to Hypo Re by SoFFin reaches €52 bn. Total amount of government support to the group rises to €102 bn.
26/02/09	RBS	UK Treasury to subscribe £13 bn of Core Tier 1 capital of RBS. RBS participates to the government asset protection scheme for £325 bn of assets and will absorb first losses up to £19.5 bn; further losses will be borne 90% by the Treasury and 10% by RBS.
05/03/09	European Central Bank	Interest rate on the main refinancing operations cut from 2% to 1.5%.
05/03/09	Bank of England	Official Bank Rate cut from 1% to 0.5%.
07/03/09	Lloyds Banking Group	The UK Treasury nationalises the Lloyds Banking Group through the conversion into new ordinary shares of the £4 bn of preference shares that it holds. The Group will also place £260bn of assets into the government's Asset Protection Scheme, paying a £15.6 bn fee; the fee's proceeds will be used by the Treasury to subscribe core Tier 1 capital of the Group. Overall, Treasury's ordinary shareholding could reach 77%.

What needs to be done to avoid a repetition of the catastrophic financial instability that is plaguing the world economy? With the aim of restoring a strong global framework for economic governance, this study proposes new rules of the game – imposed through the Group of 20 and the IMF – for the macroeconomic and exchange rate policies of the main players, including the United States. It also advocates stricter prudential rules for banks, centred around the introduction of a simple leverage ratio calculated with reference to total assets, with no exemptions or risk mitigation. The authors warn against the risk of a massive wave of new regulation, which is not needed and might cripple capital markets for years, and call instead for a simplification and a better enforcement of rules. In short, their message, as reflected in the title, is: *"Keep it simple"*.