

## **FINANCIAL CRISES: PAST LESSONS AND POLICY IMPLICATIONS**

by Davide Furceri and Annabelle Mourougane

**Abstract:** This overview paper examines the financial crisis in light of past country experience and economic theory and draws preliminary policy recommendations. A number of facets of the crisis are detailed, including its origins and spreading factors as well as crisis resolution policies and their associated gross and net fiscal costs. The implications of the crisis on key macro-economic variables are subsequently presented. Finally, preliminary policy recommendations for both addressing the economic downturn and enhancing the resilience of the economies over the medium to long-term are discussed.

**Résumé:** Cet article donne une vue d'ensemble de la crise financière à la lumière des expériences passées et de la théorie économique et tire des recommandations de politiques économiques tentatives. De nombreuses facettes de la crise sont détaillées, notamment ses origines et ses facteurs de propagation, de même que les politiques de résolution de crises et leur coût (brut et net). Les répercussions de la crise sur les variables macro-économiques clés sont ensuite présentées. Au final, des recommandations de politiques économiques préliminaires pour à la fois répondre au retournement économique et accroître la résilience des économies sur le moyen et le long-terme sont discutées.

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## FINANCIAL CRISES: PAST LESSONS AND POLICY IMPLICATIONS

by Davide Furceri and Annabelle Mourougane<sup>1</sup>

### I. Introduction

1. Financial market stress intensified and reached new heights in October 2008. The failure of Lehman Brother has been a turning point, moving the financial turmoil that started a year ago to the more serious financial crisis in the last century. Financial disruptions are likely to bear on growth perspectives over coming years, despite the implementation of world-wide crisis resolution policies.

2. Financial crises are generally characterised by a trust meltdown within the financial sector and between financial institutions and their creditors. Increased uncertainty materialised into increasing premium on short-term liabilities and a squeeze in available liquidity. When premia reach a very high level, the liquidity problem moves into a solvency problem, capital shortages and bankruptcy, unless public authorities intervene.

3. Financial crises have been a recurrent source of economic downturns for centuries. Frequently, they are associated with currency crises (so-called twin crises) and burst under a variety of different monetary and regulatory regimes. Cross-country estimates suggest that output losses associated to these crises are usually large (Bordo *et al.*, 2001; Caprio and Klingebiel, 2003). Recent banking crises include the Japanese lost decade, Spain in 1977 and the Nordic countries from late 1980s-early 1990s, in particular the Swedish crisis in 1991.

4. The objective of this overview paper is to analyse the current financial crisis, in light of what past country experience and economic theory suggest and draw policy recommendations. The first part examines the origins and the spreading factors that are common to past financial crises and those that are specific to the current episode. Crisis resolution policies are then discussed in a second section, before turning to estimates of gross and net fiscal costs of these policies. The implications of the financial crisis on key macro-economic variables are subsequently presented. The final section draws policy recommendations.

5. The main findings of this overview paper are as follows:

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1. OECD Economics Department, Office of the Chief Economist. The authors would like to thank K. Schmidt-Hebbel, J. Coppel, R. Ahrend, B. Cournède, J.L. Schneider, L. Willard and A. Wörgötter for helpful comments and discussions. We also thank Penny Elghadab for excellent editorial support. The opinions expressed herein are those of the authors and do not necessarily reflect those of the OECD or its member countries.

- The current financial crisis resembles past episodes in some dimensions. It is essentially an abrupt adjustment to past imbalances resulting from strong credit growth, rising in equity and housing prices. This crisis differs nonetheless from other episodes regarding the massive underpricing of risk and explosive lending to non-creditworthy economic agents (sub-prime mortgage debtors) prior to mid 2007. This was the combined result of the savings glut, agency problems and a number of regulatory failures.
- Conventional factors such as asymmetric information explain the rapid spreading of the crisis to other market segments and other countries. The complexity of the structured mortgage products may have amplified the propagation of the current crisis. New factors have also affected the propagation. The ability and willingness of financial institutions to issue equity to mitigate the consequence of subprime losses for bank credit supply is unique. Another unique element has been the activist role of the monetary authorities and governments, in particular in the United States. Finally, globalisation has certainly speeded up the contagion effects by deepening trade and financial integration.
- As in previous episodes, action to address the current financial turbulences has followed a two-step strategy. Most countries first adopted a piecemeal approach that combines monetary response, liquidity provision, and *ad hoc* interventions or rescues of individual institutions. As these measures failed to shore up confidence in the market, more comprehensive, system-wide rescue packages have been implemented. As in many past banking crises, the proposed solutions to current financial solvency crises have combined three main elements: guaranteeing liabilities; recapitalising the institutions; and separating out troubled assets.
- Identifying the best policy approach involves a trade-off. On the one hand, restructuring mechanisms can help to restart productive investment. On the other hand, financial assistance is costly. Rescue packages can also generate costs from misallocations of capital or distortion of incentives through moral hazard. Measures entail distributional effects as they usually transfer resources from taxpayers to shareholders.
- Associated gross fiscal costs are usually large, but net costs are expected to be smaller, as measures are expected to diminish expected output losses. Costs need to be assessed in relation to the very high costs of inaction.
- Current national plans have been useful to restore financial markets stability and the measures announced are well-suited to re-liquidify interbank markets and reduce banks capital shortage. But financial markets have not fully normalised yet.
- More international cooperation is warranted and urgent. First, European countries need to adopt pre-emptive measure to face large cross-borders bank failures. Second, small economies may face important sovereign risks and the international community needs to take decision in case emergency measures are needed.
- Policy response to the crisis will require both short-term and long-term measures. Fiscal and monetary actions can address immediate needs, but their use depends on the country's public finances and economic structure. The current episode has also underlined the necessity of increasing the resilience of the economies. This could be done by modifying the fiscal framework and strengthen the counter-cyclicity of fiscal policies and/or by considering the explicit integration of asset prices in the monetary policy framework. Finally, a number of changes in regulation and supervision could help reducing the pro-cyclicity of the financial sector and enhancing its stability.

- Beyond strengthening the counter-cyclicality of policy, reforms in the banking and non-banking sector are required to correct regulatory and market failures. In particular, there is a need to improve the disclosure of off-balance sheet items and the transparency of collateral pricing as well as to implement insolvency procedures adapted to banks. Increasing the harmonisation of deposit guarantee schemes will also be useful.

6. After a brief description of the different stages of the financial crisis, the paper identifies the main factors at the origins of the crisis and those that explained its spreading. The policy response and associated fiscal costs are then discussed. Subsequently the implications of the financial crisis on the real economy and inflation are described. The paper ends by drawing preliminary policy recommendations both to address the immediate needs and strengthen the resilience of the economies in the medium to long-term.

## II. A two-phased crisis

7. The current crisis was characterised by two distinct phases: a period of financial turmoil and limited spreading from July 2007 to 15 September 2008, followed by a panic phase with global and rapid spreading of the crisis. The policy response also differed between these two phases. Authorities started by adopting a piecemeal approach focused on conventional policy measures and ad hoc interventions, but given their failures to shore up confidence in the markets, rescue packages were subsequently introduced worldwide.

8. The first phase of the crisis started when a moderate correction of house prices in the United States triggered a modest increase in mortgage debt delinquencies and a few failures of financial institutions holding MBS or related instruments in 2007. High uncertainty on balance sheet risks coming from holding unknown amounts of toxic and complex derivatives based on subprime mortgages and from the distributions of losses led to a reaction in money-market liquidity and inter-bank lending premiums in US and European financial markets. Banks announced large write-downs both directly and indirectly linked to the subprime mortgage market, both in the United States and elsewhere.

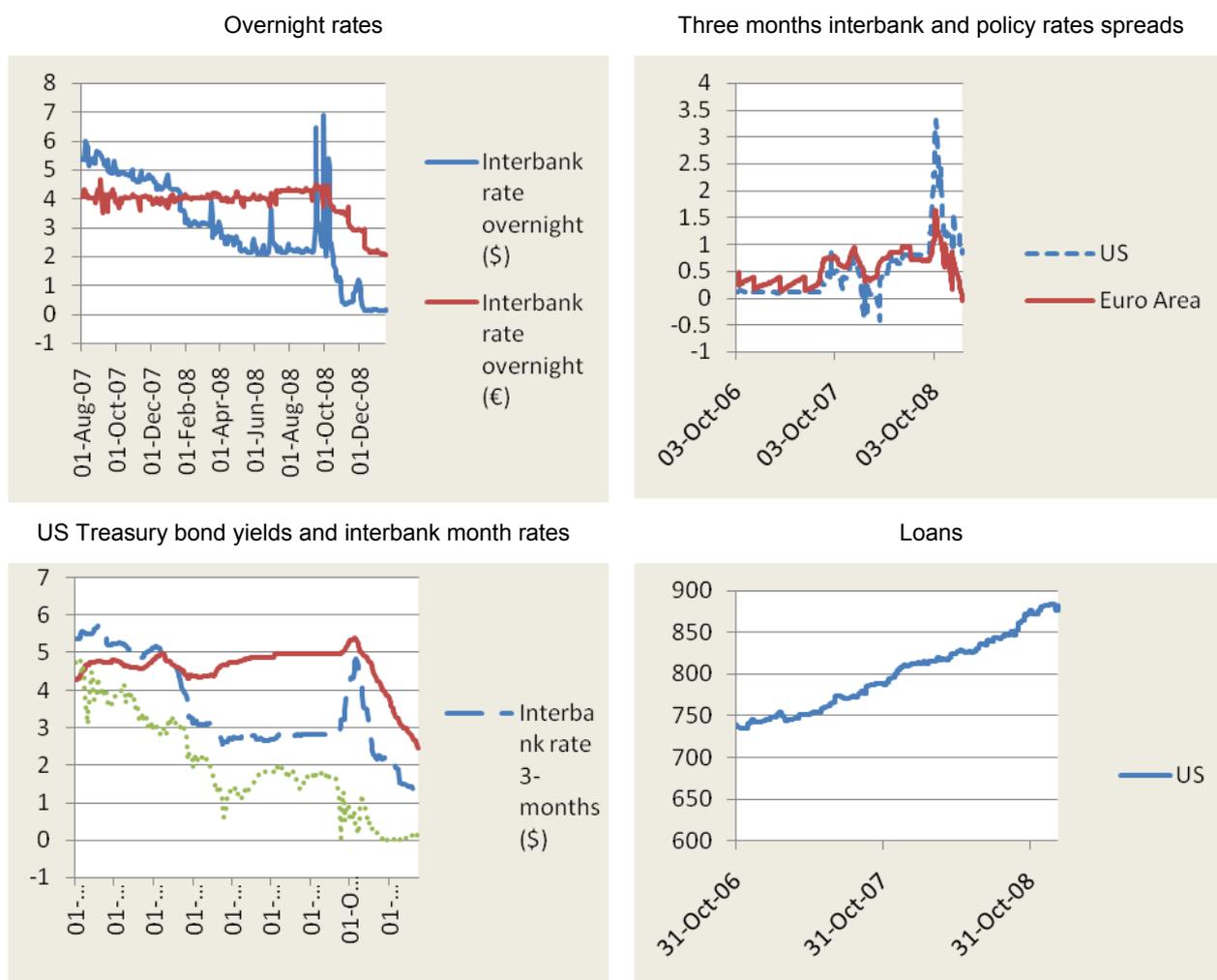
9. The Autumn 2008 witnessed a quantum shift in the spreading of the financial crisis with a succession of bank and financial institutions failures, in particular the bankruptcy of the well-established investment bank Lehman Brother in mid-September (see Table 1). These failures typically reflect fundamental weaknesses.<sup>2</sup> Banking turbulences led to a consolidation of the financial system as well as the end of the investment bank model in the United States.<sup>3</sup> European markets have witnessed crises in the banking system since the beginning of October 2008, with a number of large cross-border European banks that have had to be rescued by governments. It started at the beginning of 2008 in the United Kingdom with the nationalisation of Northern Rock.

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2. For instance, Bear Stearns was largely exposed to subprime risk and displayed extremely high leverage.

3. Merrill Lynch sold itself to Bank of America. Goldman Sachs and Morgan Stanley converted themselves into commercial banks.

**Figure 1. Recent financial developments**



Source: Datastream

10. The global money market crisis intensified substantially in the Autumn and quickly developed into a full-blown credit crunch in the United States and Europe. Bond and loan markets collapsed during the second week of September, both in the United States and major financial centres in the world and the costs of unsecured interbank borrowing for one day surged (Figure 1). Commercial paper funding contracted. Stock prices sharply fell and spreads to the three-month interbank rates climbed. Uncertainties led to a flight to quality and heightened default risk, as evidenced by long-term debt default risk spreads and falling Treasury bond yields. At the same time, volume data are difficult to reconcile with these developments in the United States. Indeed, US bank lending to non-financial firms expanded markedly in end September and the first week of October, and interbank lending volumes have held up well through September.<sup>4</sup> Strains have been rapidly spread outside the banking sector, in particular to pension funds and hedge funds.

4. One partial explanation for the rise in US commercial bank lending is that JP Morgan Chase has taken over the assets of Washington Mutual, which was previously a thrift and therefore not accounted for in the Federal Reserve dataset on commercial bank lending. The very last data suggest volumes have started to contract in the United States.

**Table 1: Selected financial institutions' failures**

Date and country	Event	Fiscal costs
7 February - United Kingdom	Northern Rock was nationalised	£ 88 bn
14 March - United States	Bear Stearns absorbed by a commercial bank following a significant Federal Reserve subsidy	USD 29 bn
7 September - United States	Freddy Mac and Fannie Mae were de facto nationalised	USD 200 bn
15 September - United States	Lehman Brothers filed for bankruptcy protection	-
17 September - United States	AIG was nationalised	USD 87 bn
29 September – Benelux	Fortis rescued	USB 16 bn
29 September – United States	Wachovia bought by Citibank	USD 12 bn
29 September – Germany	Hypo Real Estate rescued	USD 50 bn (raised to 71 on 6 October)
29 September – Iceland	Glitnir rescued	USD 850 millions
29 September – United Kingdom	Bradford & Bingley rescued	USD 32.5 bn
30 September – Belgium	Dexia rescued	USD 9.2 bn
30 September – Ireland	Irish Banks rescued	USD 572 bn
7 October – Iceland	Lansbanki nationalised	
9 October – Iceland	Kaupthing nationalised	USD 864 millions
16 October - Switzerland	UBS rescued	USD 59.2 bn
19 October – the Netherlands	ING	€ 10 bn
20 October – France	French government lend money to 6 large banks	€ 10.5 bn
27 October – Belgium	KBG	€ 3.5 bn
4 November - Austria	Nationalisation of Kommunalkredit Constantia Privatbank was nationalised and sold to five Austria banks for one euro	
January- Ireland	Anglo Irish Bank nationalised	

Source: Financial Times, UK Office for National Statistics and OECD

11. The ineffectiveness of conventional instruments and ad hoc interventions rapidly led policymakers to introduce rescue packages. Markets have reacted favourably to these measures, though they have still not fully normalised. The flight to quality has partly reversed in the United States and Europe. Bank credit default swap rates have eased considerably. Spreads in three-month interbank markets have come down markedly in the United States, though they remain close to their historical peaks in the euro area. Euro area economies with unfavourable public finances conditions experienced a significant rise in the long-term interest spread vis-à-vis Germany. The ratings agency Standard and Poor has downgraded its ratings of Greece, Spain and Portugal's sovereign debts.

12. Another major caveat is that shocks have been transmitted to emerging market economies, with risk-averse investors starting to pull funds from these countries. Equity and stock prices have sharply fallen and bond spreads now reach their highest level since 2004. They have particularly widened for countries where financing needs are large.

### III. Origins and spreading of the crisis<sup>5</sup>

#### *Origins of the crisis*

13. The current episode began in the summer of 2007 with deteriorating quality of US subprime mortgages. It had its origin in traditional factors that have led to past banking crises in the United States and other countries, and in non-traditional features that are specific to this crisis.

*A number of conventional factors have been at the origin of the crisis...*

14. Crises have been traditionally triggered by a build-up of imbalances. Typical examples are the Great Depression or the *dot-com* collapse. Herd behaviour and irrationality (excessive inference from recent price behaviour for risk valuations) have also compounded the housing price and credit boom in most previous manias and booms. Similar features can be observed in the current crisis.

15. The rapid expansion of credit before the occurrence of a crisis was observed both in the past and in the current crisis (Figure 2 and Box 1 for the empirical approach used throughout the paper). Accommodative monetary policy has been a key factor in past credit and asset pricing cycles historically (Bordo, 2007). Indeed, interest rates have been cut or maintained at low levels in the wake of episodes of financial market turmoil such as the LTCM crisis and the bursting of the *dot-com* bubble. The fact that in situations of systemic danger to the financial sector central bank action would be motivated by crisis management has been argued to create a moral hazard which stimulates future financial imbalances (Ahrend *et al.*, 2008).

16. In the current case, high growth and a lax monetary policy, particularly in the United States, greased the boom machinery. Moreover, changes to the regulatory environment as well as technological developments supported strong trends towards securitisation, globalisation and consolidation in the financial industry have contributed to the easing of credit conditions. While the run-up of credit expansion in episodes of mild crises only decreased during the first year of the crisis, credit growth on average decreased for four years during deep financial crises. This suggests credit is likely to markedly decline in the years to come.

17. Banking crises often follow a burst in an asset price bubble, usually due to an excessive expansion of credit (Figure 2). One example of this was the rise in commercial real estate and stock prices in Japan in the late 1980s and the subsequent collapse in the early 1990s. The next few years were characterised by defaults in the banking sector and barely positive or negative economic growth during the 1990s. This suggests a relationship between asset prices and the provision of liquidity. Banks that hold stocks and real estate or that have made loans to the owners of these assets, often come under severe pressure from withdrawals because their liabilities are fixed and falling prices have reduced the value of their assets. Banks in this situation are forced to call in loans and liquidate assets, which in turn may exacerbate the problem of falling asset prices.

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5. This section draws and expands on Calomiris (2008).

**Box 1. Identifying and dating crises**

Throughout this paper, the current financial turmoil is compared with previous episodes of banking and financial crises following the approach proposed by Reinhart and Rogoff (2008a). Crises dating have been identified by Kaminsky and Reinhart (1999) and Caprio *et al.* (2005). Starting dates are provided in brackets. Two types of episodes are distinguished according to the severity of the crisis:

- *The Big Five Crises*: Spain (1977), Norway (1987), Finland (1991), Sweden (1991) and Japan (1992)
- *Other Bank and Financial Crises*: Australia (1989), Canada (1983), Denmark (1987), France (1994), Germany (1977), Greece (1991), Iceland (1985), Italy (1990), New Zealand (1987) United Kingdom (1974,1991,1995) and United States (1984).

The current and other crises are compared by plotting the pattern of key economic and financial variables (e.g. housing prices, equity prices, GDP growth, current account and public deficit) from time T-4 to time T+4, where T is the starting date of the crisis. T is et to 2007 for the current episode.

The Reinhart and Rogoff (2008a) analysis is extended in two ways: i) A broader set of economic and financial variables is considered; ii) Most recent data for the United States and for the euro area for the current year (up to the second quarter of 2008 for most variables) are incorporated. These extensions allow a better understanding of the current crisis, its specificity and its similarities with previous crises.

18. Past and present episodes of crises were preceded by a sharp rise in equity prices. The timing of the turning however differs significantly. In the current crisis, equity prices started to decline in 2007 in the United States and in the euro area. Recent events point to a further fall in the course of 2008.

19. Housing prices in the United States show a pattern closer to the deep crisis experiences than others banking crises (Figure 4). The euro area experiences a similar increase, and prices have started to decline more recently in some individual economies. The boom in real estate investment was often driven in past crises by large government homeownership subsidies, which have encouraged banks and households to take too much risk. In the current episode, the US financial policy has promoted homeownership in several ways, but at the same time has increased financial fragility in the real estate market.<sup>6</sup> Homeownership is also subsidised in other countries.

*... complemented by new features*

20. The current financial crisis is almost unprecedented in the massive underpricing of risk and explosive lending to non-creditworthy economic agents (in this case, sub-prime mortgage debtors) prior to mid 2007. This was the result of a combination of several factors.

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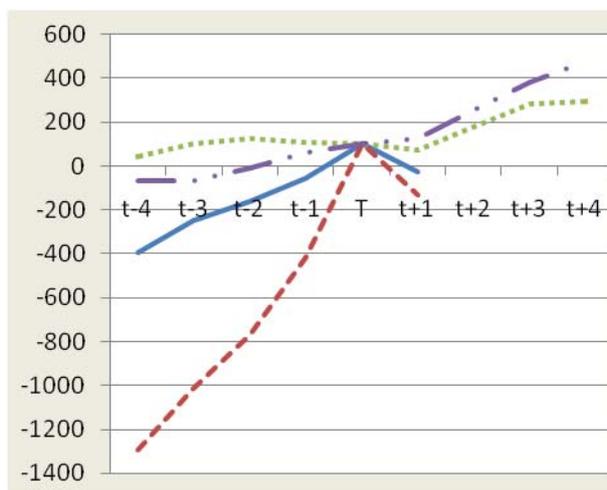
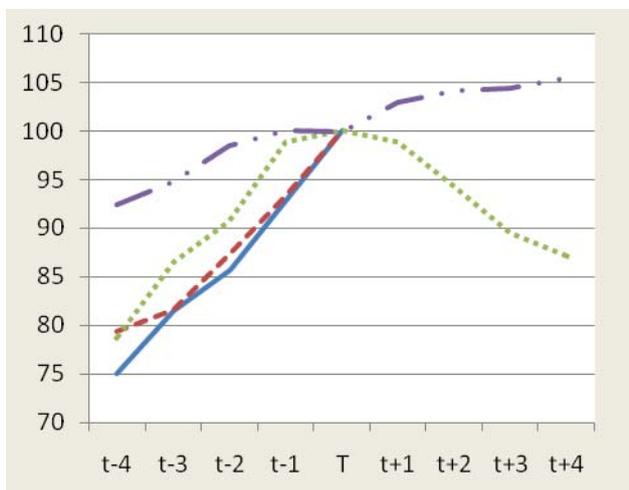
6. Five initiatives either encourage creditworthy borrowers to increase their mortgage leverage or expand access to borrowing for people who would not otherwise be able to secure or retain mortgage loans: the primary subsidies are the deductibility of mortgage interest on home; FHA programmes to provide credit to buyer; government funding subsidies via Federal Home Loan Bank lending; government initiatives that have pressured banks to increase the access of low income and minority individuals to credit and default mitigation protocols which have required banks that originate loans held by Fannie, Freddie and FHA to adopt standardised practices for renegotiating delinquent loans to avoid foreclosure.

**Figure 2. Asset prices and credit growth**

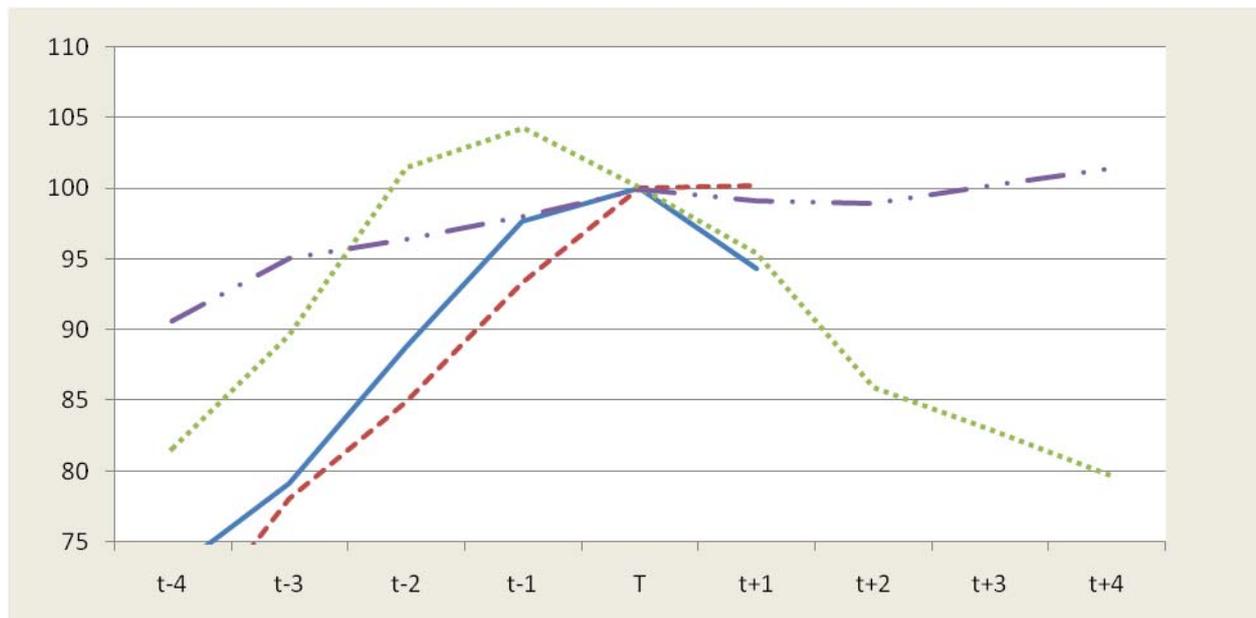
(Index at time T=100)

**Private credit (as percentage of GDP)**

**Equity prices**



**Real housing prices (first quarter of each year)**



Source: WDI, World Bank, OECD Analytical database.

— United States — Euro area  
 ··· Big Five ··· Others

21. First, agency problems led asset managers to deploy an increasing proportion of funds in investments that were not cost-effective. There is evidence that rating agencies assumed unrealistically low expected losses on subprime pools prior to the crisis and failed to revise them upward, despite worrying

signs such as high growth of the subprime market.<sup>7</sup> The underpricing of risks stems from several factors. The historical accident of a very low loss rate during the early history of subprime mortgage foreclosures in 2001 and 2002 served as a benchmark to assess risks and losses. Regulatory limits on profit sharing by asset managers may also have influenced excessive risk taking by institutional investors. Moreover, Basel capital requirements place a high weight on agency ratings and may have biased incentives of agencies. Agency problems were exacerbated by changes in bank capital regulations in 2001 and 2004, which reduce sponsors' loss exposure.<sup>8</sup>

22. Second, the global saving glut may have encouraged excessive risk taking by providing a vast pool of resources for investment. These unusually accommodative global credit conditions reflected the interaction of monetary policy, the choice of exchange rate regime in a number of countries (particularly emerging market economies) and structural changes in financial sectors. Large savings and current account surpluses in emerging economies have in particular been a source of credit to US financial institutions.

23. Third, a number of regulatory failures may also have deepened the extent of the boom and the subsequent bust. Indeed, insurance companies, pension and mutual funds, and banks all face regulations that limit their ability to hold low-rated debts through the Basel I and II requirements. Moreover, regulations of banks were too narrow and exempted commercial bank's off-balance sheet vehicles and investment banks from regulatory oversight. This has allowed banks to increase their leverage despite regulatory capital requirements. The effect of leveraging-up was exacerbated by the increasing importance of institutions that tend to rely heavily on leveraging such as private equity and most hedge funds. In addition, comprehensive regulations of financial holding companies were inexistent (in the United States) or inadequate (e.g. in the United Kingdom). Liquidity creations outside the banking sector were also important and escape the regulatory oversight (Ahrend *et al.*, 2008).

24. Finally, recent financial events have underlined the lack of transparency of the originate-and-distribute model of transferring risk, at least as currently implemented (Knight, 2008). In particular, the decline in "due diligence" in making loans resulted in higher leveraged positions when the quality of mortgage credits deteriorated.<sup>9</sup>

### ***Spreading of the crisis to other capital-market segments and countries***

#### *Conventional propagation channels*

25. The transmission mechanisms of crisis have been studied at length in the economic literature (Box 2). Asymmetric information is one of the main conventional factors explaining the rapid spreading of

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7. It has been argued that there were also signs of deterioration of the quality of borrowers (Ellis, 2008). Both investors and sponsors were aware of the ratings being inflated, as they were aware that the ratings given to debts issued by securitisation conduits (MBS subprime or CDO) exaggerated the quality of those debts. However recent evidence suggests that lending standards have not markedly deteriorated (Bhardwaj and Sengupta, 2008).

8. These reforms raised minimum capital requirements for originator retaining junior stakes in securitisations. Sponsors thus switched from retaining junior stakes to supporting conduits through external credit enhancement which necessitate lower capital requirements.

9. Those at the beginning of the subprime chain received fees to originate mortgages, and felt secure in the knowledge that someone else would buy them. Banks at the centre of the securitisation process focused on the profits associated with distributing these instruments, rather than on possible threats to their reputations and their capacity to provide liquidity. Those closer to the end of the securitisation chain probably placed too much trust in the due diligence of originators and packagers, the judgments of the credit rating agencies, and the capacity of modern technology and diversification to manage financial risks.

the crisis. Adverse selection premia affect credit spreads and money market instruments experience quantity rationing. These patterns were observed in the past, for instance during the Great Depression or panic episodes such as in 1893 and 1907 (Calomiris, 2008).

### **Box 2. Causes and spreading of financial crises?**

#### **What causes financial crisis?**

Financial crisis can be triggered by a number of factors. The first view is that crises are an intrinsic part of the business cycle and result from shocks to economic fundamentals (Mitchell, 1941). However, severe credit events do not happen every cycle.

Crisis may also be generated by ill-designed institutions or regulations that worsen asymmetric information and moral hazard and encourage risk-taking behaviour. Recent innovations in banking markets may have accentuated this instability risks. Incomplete financial markets can also be a source of crisis (Alan and Carletti, 2008) by leading to inefficient liquidity provision and asset price volatility.

An alternative view is that crises stem from self-fulfilling prophecies (Kindleberger, 1978). The financial crisis would then lead to economic depression.

Past country experience suggests that there is a striking correlation between freer capital mobility and the incidence of banking crises (Reinhart and Rogoff, 2008b). With greater financial liberalisation currency crises and banking crisis have become more closely related. Usually a banking crisis is followed by a currency crisis which in turn exacerbates the banking crisis.

#### **What are the main factors of financial contagion?**

Financial markets often behave in a non-linear way.

##### *Traditional contagion channels*

Despite recent financial innovations, banking distress continues to affect non-bank sources of financing as banks continue to have a strong relationship with securities markets (in particular through their leverage management). A shock in one part of the financial market can spread to other parts through a number of channels:

- interbank claims: if a bank fails, the financial institutions holding claims on the bank will be weakened.
- information: a fall in price on one market may be interpreted as a negative signal about fundamentals. If these fundamentals are common to other markets, expected returns and prices will fall in these markets.
- payment systems: in a net payment system, banks extend credit to each other within the day and settle their net position at the end of the day. A failure of one institution can trigger a chain reaction.

##### *Change of regime*

Under extreme cases arising from a generalised breakdown of short-term lending, money markets, inter-bank lending, the market dries up, prices decline sharply to a low level (the so-called fire-sale price) and yields skyrocket. Given the risks that the system could break down, investors prefer to buy in foreign markets. At the limit, all transactions can stop and no more corporate bonds are issued. The payment system could break down. Firms no longer have access to capital and many go bankrupt.

#### **Factors influencing the propagation of shocks**

Past country evidence suggests that the speed of increase of the credit to GDP ratio and house prices as well as the financial situation of financial intermediaries, households and firms preceding the crisis influence the economic impact of the financial shock (IMF, 2008; Meh and Moran, 2008). Bank capital increases an economy's ability to absorb shocks. Financial stress episodes are more likely to be followed by severe economic downturns when they occur in the context of a rapid build up in credits by firms and households. Countries with larger financial imbalances and balance sheet vulnerabilities at the onset of an episode experienced more severe output contractions.

26. The complexity of the structured mortgage products may have exacerbated the effects of asymmetric information and amplified the propagation of the current crisis (Gonzalez-Hermosillo, 2008). Indeed, many of the structured products created in recent years bundled together traditional asset-backed securities and new products based on subprime mortgages. As a result, uncertainty about where the risks were concentrated and how sensitive they might be to the economic cycle were very large. This reflects

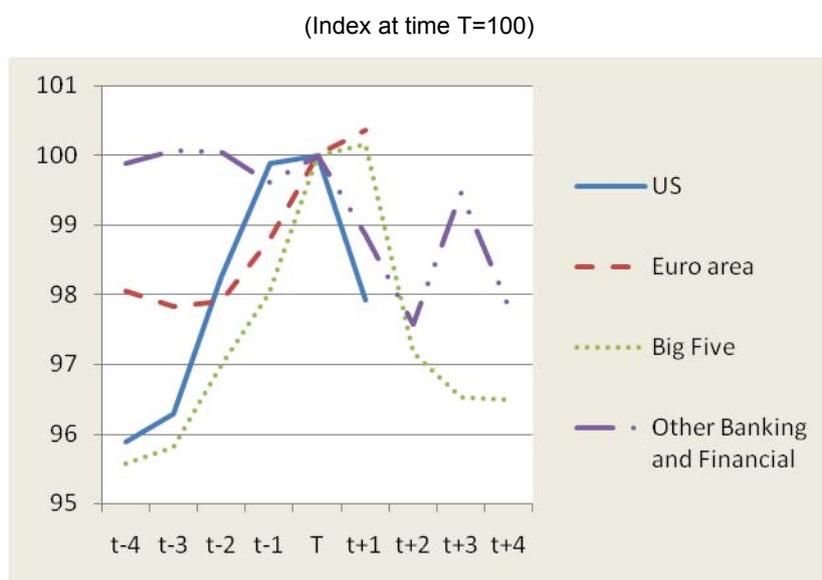
massive ignorance of complex instruments and associated risks by markets and supervisory authorities, but also the difficulty of forecasting defaults in the absence of a relevant benchmark.

#### *Unconventional propagation factors*

27. New factors have also contributed to the propagation of the shocks. The consequences of subprime losses for bank credit supply have at the start of the crisis been mitigated by the ability and willingness of financial institutions to issue equities. It has occurred despite huge adverse selection problems.<sup>10</sup> It starkly contrasts with bank capital crunches of the 1930s and 1989-1991, when financial institutions suffering from large losses raised virtually no new equity capital (Calomiris and Wilson, 2004). The apparently favourable condition of banks balance sheets at the time the shock hit has helped this unprecedented recapitalisation. However, raising new capital has become extremely difficult when share prices started to rapidly fall and investors to suffer from losses. In addition, the deleveraging process has been amplified by the dramatic fall in mortgage-linked asset prices, stemming from a lack of liquidity and risk aversion in the market.

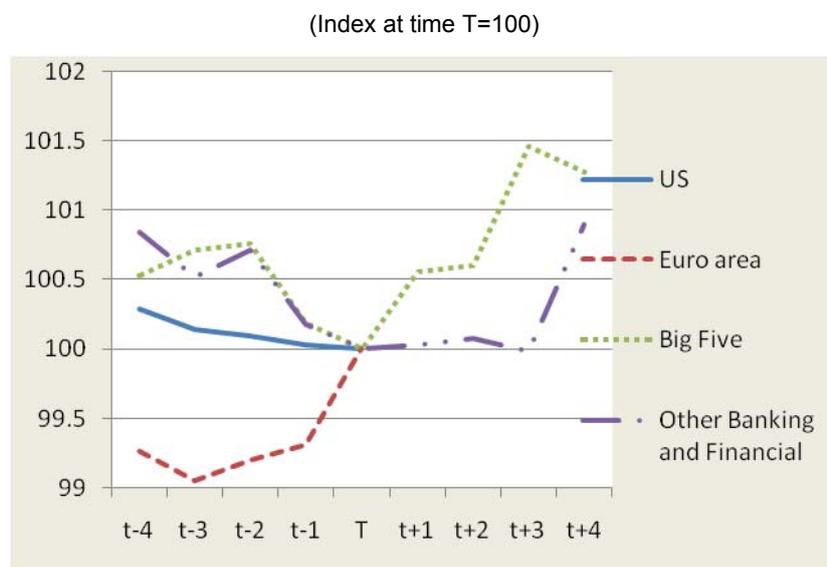
28. The activist role of the monetary authorities and governments has been unique. The Federal Reserve and the Treasury have tried to ease liquidity constraints, via discount window operations and other assistance programmes targeted to particular financial institutions. The US Federal Reserve has dramatically cut the Federal Fund target rates since mid 2007, leading to marked fall in the 3-month interest rate (Figure 3). Bank liquidity reserves (as percentage of total bank assets) have deteriorated markedly in all episodes of crises, but the decline has been particularly marked in the current crisis (Figure 4). There is also evidence that a remarkable injection of liquidity occurred during severe crises as an instrument to relax the financial stress. Massive injection of liquidity by the Federal Reserve suggests a similar pattern is also taking place in the United States.

**Figure 3. Short-term interest rates**



Source: OECD Analytical database.

10. Any bank trying to issue equity at a time where large losses remain unidentified will experience a large decline in its stock price, as the market may infer the offering institution may have unusually high losses. This will dilute stocks of existing shareholders.

**Figure 4. Bank liquidity reserves (as percentage of total bank assets)**

Source: WDI, World Bank.

### *International contagion effects*

29. With globalisation, the speed of propagation of crisis is likely to have increased. Intensified financial or trade linkages between countries will also be a major factor of international spillovers. Globalisation also increases the risk of contagion where there is a change in expectations unrelated to fundamentals.

30. Historical experience suggests nonetheless that not all financial crises spread to other countries but in general shocks in centre countries can lead to global financial crises (Reinhart and Rogoff, 2008b). Examples include the German and Austrian stock market collapse in 1873 and the 1929 Wall Street crash. Susceptibility to contagion is highly non-linear and the probability of other countries experiencing crises rises sharply if a core group of countries are already infected (Kaminsky and Reinhart, 2000). An abrupt reversal in capital flows, a surprise announcement and a leveraged common creditor all appears to explain contagion effects (Kaminsky, Reinhart and Vegh, 2003).

### *A combination of market, regulatory and policy failures*

31. Overall, the main conclusion is that it is impossible to identify one or even a small number of factors that have caused or contributed to the crisis. The latter stems from the interactions of several markets, regulatory and macro-economic policy failures (Table 2).

**Table 2: Main failures explaining the origins and the spreading of the crisis**

	<b>Policy failures</b>	<b>Regulatory failures</b>	<b>Market failures</b>
ORIGINS	<ul style="list-style-type: none"> <li>- Overly accommodative monetary policy</li> <li>- Exchange rate pegging system in some emerging economies</li> </ul>	<ul style="list-style-type: none"> <li>- Homeownership subsidies</li> <li>- Basel capital requirements</li> <li>- Exemptions of commercial banks' off-balance sheet and investment banks of regulatory oversight</li> <li>-Lack of coverage by regulators of systematically important sectors of the financial system.</li> <li>- Lack of transparency of the originate-to-distribute model</li> </ul>	<ul style="list-style-type: none"> <li>- Herd behaviour and irrationality</li> <li>- Agency problems</li> </ul>
SPREADING	<ul style="list-style-type: none"> <li>- Activist fiscal and monetary policies</li> </ul>		<ul style="list-style-type: none"> <li>- Asymmetric information and uncertainties due to the complexity of the instruments</li> </ul>

#### **IV. Containing the financial crisis: the policy response**

##### ***The very high risks of inaction***

32. The severity of the current crisis points to very high costs of inaction. The cost so far is immense, close to USD 450 billion in the subprime market according to OECD estimates. The loss on mark-to-market securities is maybe around that amount. In October, the IMF revised its estimate of losses from the global financial crisis to the US banking system to about USD1.4 trillion (IMF, 2008). But the downturn could be more pronounced and prolonged. Recent developments have cast doubt on the solvency of financial institutions, raising uncertainties and lowering confidence. The recapitalisation of banks has become more difficult, as new capital raised can be neutralised through mark-to-market losses.

33. Had the underlying causes of the crisis not being addressed, the United States and the world economy could entail significant damages. Loss of confidence, insufficient inter-bank lending and deleveraging can undermine developments in the real economy through their effects on consumption and investment. Moreover, day-to-day business functions such a leasing, inventory management and trade credit are also affected. The government deficit worsens as loss-making institutions no longer pay tax. Risks of deep economic depression and of a major feedback loop between financial markets and the real economy would significantly increase. A further weakening of the real economy would put more loans at risk and create a vicious cycle of falling asset prices, deteriorating ability to repay loans and diminishing credit flows and bank runs. The more these difficulties persist, the higher the cost of inaction. Contagion could gradually spread to other countries, raising the global costs of inaction.

34. At the same time government interventions also entail costs, including fiscal costs. Rescue packages can also generate costs from misallocations of capital or distortion of incentives through moral hazard. If the protection provided to banks in a crisis is greater than they expected, this could increase their risk-taking in the future by making future assistance appear more likely. Hence, in a widespread crisis the authorities face a likely trade-off between maintaining financial stability today – through offering

protection to failing banks – and jeopardising future financial stability through increasing moral hazard later on. Conditions for moral hazard could be reduced by imposing real costs on all responsible parties and getting the resources back in productive use as soon as possible. Intervention usually has also redistribution effects. Overall, the benefits of preventing a deep recession should be balanced against the costs of intervention.

### *A typology of policy responses to financial distress*

#### *A two-phased approach*

35. Traditionally policy responses to financial shocks have followed a two-staged approach. Policymakers first respond to a crisis through emergency measures. This often entails using traditional monetary instruments such as a cut in the policy interest rate or a massive injection of liquidity. Debt moratoria or regulatory forbearance (i.e. the relaxation of financial sector regulations to lower bank compliance costs) have also been used in the past, as well as blanket guarantees. Governments can also bail-out institutions in financial distress on a "case-by-case" basis. However, the latter type of intervention can create confusion in the markets if the criteria of action or inaction are not fully spelt out. Moreover, some of these measures are only beneficial in the short-term but can be counterproductive over the long-run. If the shock is caused by fundamental flaws in the system, a comprehensive policy response in the form of rescued plan is required. Although time is needed to design appropriately the rescue package, postponing the move to a comprehensive approach can entail large systemic, fiscal, and real costs. In particular, such a plan is vital to prevent erosion of confidence in credit markets.

#### *Systemic rescues plan can encompass several types of instruments*

36. A large number of instruments are available to address financial crises. But because of the high costs involved in bank restructuring, it is important to use the more cost-effective tools. Identifying the best policy approach involves trade-offs. In this section the effects of the different instruments, their relative advantages and drawbacks are discussed. As the use of non-market instruments was found to be very costly and has been progressively abandoned since the 1930s, the focus is on market-based instruments.

37. Following Dziobek (1998), crisis resolution policy can be classified into one of three types (Table 3): Financial instruments that address immediate problems and generally involve a direct transfer to banks; operational instruments that focus on improving governance, bank efficiency and profitability; and finally, structural instruments that address underlying problems and focus on restoring competition and stability.

**Table 3: Typology of instruments for systemic bank restructuring**

	<b>Advantages</b>	<b>Limits</b>
<b>Financial instruments</b>	Improve banks balance sheets and help banks return to solvency.	Do not address the underlying causes of weakness of the sectors and of individual banks.  They need to be complemented with other instruments.
Central bank liquidity support		When problems are systemic the distinction between illiquidity and insolvency is difficult.
State guarantees (extend guarantees to deposits or to other liabilities e.g. debt)	Can stop bank runs or panic	Have significant moral hazard effects, but those can be mitigated through appropriate terms and conditions  Can distort competition

		Guarantees can fail to end a bank run (e.g. Bulgaria, Indonesia) May not be credible in a context of economic stability and tight fiscal conditions
State support through bonds	Bank assets quality improves Income improve to the extent an interest rate is paid on bonds	
Equity injection	The government has the right to realise gains once the bank has return to profitability, by selling its equity stake or collecting dividends  Rapid	The government has to exercise ownership rights which may be politically undesirable
Private equity and bond injections	Restore confidence as the government assure markets of the bank's viability	Assume that owner or new owners have sufficient funds and confidence in the bank's future profitability
<b>Operational instruments</b>		
New management and staff consolidation	Restore confidence	Can be difficult and expensive Can be prevented by legal barriers
Improve internal governance	Restore confidence	Takes time
Facilitate entry of foreign banks or twinning	Bring skill and banking expertise	Foreign banks not aware of domestic regulation and can have too high expectations
<b>Structural instruments</b>		
	Address the underlying problems of the sector and focus on strengthening competition and soundness	
Regulatory forbearance	Lower bank compliance costs	Can distort incentives if done for a long period Difficult to end the measure
Implementing a firm closure/exit policy	Provides incentive for all banks to cooperate actively in the restructuring efforts	Complicated task which requires legislative action and the establishment of appropriate court procedure. Can disrupt the payment system and erode public confidence Implies potentially arbitrary application
Restructuration and downsizing	Can lead to efficiency gains	Economies of scale for banks are limited Can be associated with high costs Can weaken the stronger bank when the merger is done to avoid the closure of a bank
Handling bad assets and loan restructuring	Permit banks to refocus on core activities  Can have multiplier effects and lower spreads	Complicated tasks which required skilled staff and resources Takes time Effect on capital depends on transfer price (relative to market value) Require good regulatory environment (bankruptcy law, low corruption etc...)

		Need to monitor progress of the asset management activities
Privatisation	Level the playing field between private and previous state-owned companies	Takes times and requires prior restructuring Presuppose available buyers
Enterprise restructuring	Complement the banking sector restructuring	Not always easy to identify insolvent firms

Source: Partly based on Dziobeck (1998)

38. Although each situation is country and time-specific, lessons can be drawn from past resolution mechanisms (Calomiris *et al.*, 2003; OECD, 2002):

- First, successful resolution policies usually imply working with market participants' incentives (e.g. the RFC in the United States or the Punto Final Programme in Mexico);
- Second, the legal, regulatory and political institutions as well as the industrial structure of the economy matter in the choice of the instruments. For instance, a pre-requisite to successfully establish a government-managed asset management is to have a sound institutional framework. In this context, any weaknesses in the regulatory and supervisory and accounting frameworks must be addressed as a matter of priority; and
- Third, once the causes and magnitude of the problem are identified, authorities must act promptly to resolve the difficulties. Well-designed policies implemented at the early stages of crises tend to be less costly. In addition to promptness, efforts must be made to avoid moral hazard and limit fiscal costs. In this regard, clarity and transparency over restructuring programmes may speed up the resolution process and reduce both present costs and future risks.<sup>11</sup> Measures used must be comprehensive and credible, capable of addressing the immediate financial problems of weak and insolvent financial institutions and corporations as well as any longer term structural weaknesses.

39. The speed and scope of government intervention are affected by political economy factors (Keefer, 2007). While countries with competitive elections are no less likely to experience financial crises than the rest, in the event of a crisis they usually intervene more rapidly in insolvent institutions. The fiscal transfers they make to resolve a crisis typically are less than those made by countries lacking competitive elections. They also suffer smaller growth collapses.

40. Historically, the solutions to financial solvency crises have usually combined three main elements: guaranteeing liabilities; recapitalising the institutions affected; and separating out the bad assets. In particular, blank guarantees have often been introduced to contain financial crises while regulatory forbearances have been a common feature of crisis management along with bank restructuring (Laeven and Valencia, 2008). Bank restructuring agencies have been set to restructure companies and asset management companies to manage distressed assets. Another important policy used in the resolution phase of crises is recapitalisation of banks, usually through programmes with conditionality.<sup>12</sup>

11. The Mexican crisis of the mid-1990 and the Japanese lost decade suggest that insufficient disclosure can delayed bank restructuring.

12. In their sample of 42 episodes of crises, Laeven and Valencia (2008) reported that recapitalisation was done in the form of cash (12 crises), of government bonds (14 crises), of subordinated debt (11 crises), of preferred shares (6 crises), by purchasing bad loans (7 crises), by extension of government credit line to banks (2 crises), through bank liabilities (3 crises) or by purchasing ordinary shares (4 crises). A combination of these methods was sometimes used.

41. Each instrument presents advantage but also entails costs and their use will depend on the objectives pursued (e.g. increasing the supply of credit, enhancing competition or limiting the tax burden). Still, a number of conclusions on specific instruments can be drawn from past experience (OECD, 2002; Bank of England, 2003; Lumpkin, 2008):

- Regulatory forbearance appears to be costly and ineffective.
- Financial support measures are often necessary, but these measures should not undermine incentives for private-sector equity injections.
- Equity injections have been helpful to restore banks' balance sheet but are insufficient to increase bank profitability. They remain however an important element of successful crisis resolutions. Capitalisation should be limited to under-capitalised but viable institutions.
- In cases of widespread distress, blanket guarantees may be needed early on, but must be properly administered to avoid increased moral hazard and risks of excessive risk taking on the part of troubled institutions. Moreover, the credibility of these guarantees will depend on the government's ability to pay.
- Deposit insurance schemes also must be incentive compatible. Moral hazard can be reduced through the adoption of schemes with a limited coverage so that depositors face some risk of losses. These limits may relate to the maximum value insured, the types of depositors included in the scheme or some form of co-insurance. It may be especially important to impose losses on large depositors, such as other banks or non-bank companies, since they may be better able to monitor banks' behaviour.
- Exit policies and procedures need to be enforced to facilitate the exit of insolvent financial institutions. Managers may need to be replaced and shareholder equity exhausted before public funds are injected. If domestic managerial talent is lacking, it may be necessary to "import" it. Measures to accelerate the operational restructuring of corporations, including effective loan workouts and properly structured arrangements to absorb losses, are often necessary to return financial institutions to profitability.

42. Capital injections and the purchase of toxic assets can be considered as complement rather than substitutes, and in practise both have been combined to restore bank's financial health. Capital injections are easier and quicker to implement than the purchase of toxic assets, but may be neutralised by continuing asset price falls. They thus need to be complemented by measures that address the liquidity issue. Moreover, both recapitalisation and asset management mechanisms imply a degree of arbitrariness and can encourage excessive risk taking from banks. The purchase of toxic assets is a structural instrument and presents a number of merits. It can generate important externalities and reduce risk spreads in different markets. By removing uncertainties, this could also encourage private injection of capital. But this option face important implementation challenges, the main important being the identification and the pricing of toxic assets. In addition, overall quantity of trouble assets should be limited and manageable for this measure to be successful.

43. In most cases, the measures have sizable distributional effects as they reallocate losses from bank or firms to taxpayers. Injecting capital through preference shares will for instance put the burden on shareholder, while the cost of imposing a blanket guarantee on interbank lending will ultimately be borne by taxpayers (unless a fee is imposed). The amplitude of these reallocations depends on the specific design of the measures and their ex-post effects.

*How have countries reacted to the current crisis?*

44. In the current financial crisis, three core issues needed to be addressed: the lack of liquidity in markets, uncertainty about the value of troubled assets and a shortage of capital. Countries have first adopted emergency measures to react to the financial shocks. Deposit insurance ceilings have preemptively been raised in most jurisdictions, though not in a consistent way.<sup>13</sup> Bans or limits to short-selling have also been introduced.

45. However, these emergency measures have failed to restore trust in financial markets and market conditions have continued to deteriorate. In this context, it has been recommended that countries adopt a comprehensive pro-active package including measure to re-establish interbank lending and help recapitalise banks (Table 4). Such a plan was likely to be less costly and more effective than a piecemeal approach. In addition more international cooperation has been called for.

46. The United States have been leader in announcing a comprehensive rescue package. It originally focuses on buying trouble mortgage-related assets, but was complemented few weeks later by capital injections. The United Kingdom leads the way in the nature of the intervention, concentrating it on capital injections and easier liquidity access to banks (Box 3). Subsequently, the euro group set up guidelines that served as a basis for national policy crisis resolutions on 12 October. The main elements are the reference to a temporary state guarantee for inter-bank financing activities and capital injection on request from institutions. In addition, mark-to-market accounting rules were to be suspended or amended and the ECB had to enlarge its system of guarantees though not going as far as buying commercial papers, like in the United States. Subsequently rescued plans have been announced in a number of European economies. Although financial caps to rescued packages vary across countries, all the plans share features similar to the UK package. Measures adopted in Japan have so far been less extensive than in other OECD countries.

**Table 4: Selected recommendations to stabilise the banking system**

Recommendations	Objective	
	Improve inter-bank lending	Recapitalise banks
Inject capital (often through preference shares)		X
Guarantee bank loans (for a limited time and against a fee)	X	
Provide harmonised insurance for bank deposits		
Temporary bank nationalisation		X
Facilitate the creation of a long-term liquidity pools to purchase assets (by issuing 10-year government bonds)	X	
Absorb significant amount of toxic assets	X	X
Create a joint recapitalisation scheme		X
Set up common rules to recapitalise banks		X
Coordinated monetary expansion across the globe		X

Source: VOX (2008)

13. Deposit insurances have been created in Australia and New Zealand where they did not exist before.

**Box 3. Main elements of the UK rescue package**

The UK government has offered to inject equity through preference shares into a wide range of eligible institutions. Eligible institutions are UK incorporated banks (including UK subsidiaries of foreign institutions) which have a substantial business in the United Kingdom. The use of preference shares allow tax payers to gain if rescued banks finally recover. In addition, there will be specific conditionality in regard to dividend policies, executive compensation and lending policies. Injection will amount to up to £ 50 bn (USD 87 billion).

Subsequently the Government announced it will make capital investments to RBS and upon successful merger HBOS and Lloyds TSB for a total of £ 37 bn.

The Bank of England special liquidity scheme will double in size, making at least £200 billion of readily cashable Treasury bills available for banks to swap for their less liquid assets. Until markets stabilise, the Bank will continue to conduct auctions to lend sterling for three months, and US dollars for one week, against extended collateral.

The Treasury will guarantee on commercial terms as much as £ 250 billion of new wholesale funding obtained by banks. The guarantee will be made available against a fee.

This package was complemented by a second rescue package on 19 January 2009 to spur bank lending. Lenders would have to identify their riskiest assets which they can insure with the government for a fee. The Treasury also extended the window for its Credit Guarantee Scheme which underwrites debt for banks that were capitalised by the government to the end of 2009. It created a guarantee scheme for asset-backed securities. The Bank of England extended its discount window facility and set up a programme to buy assets such as corporate bonds and commercial paper. The MPC was also allowed to use asset purchases for monetary policy purposes.

47. Intervention in most countries has focused on targeting specific parts of the bank balance sheets through financial or structural instruments (Table 5). Deposit guarantees have an effect on the liability side, while interbank lending guarantees impact both borrowing and loans. Capital injections can affect in theory both assets through cash or securities and liabilities through shareholder equity. In general, countries have announced they will buy equity stakes, in return for non-voting preference shares. In some countries, governments have encouraged mergers and acquisitions of weakened financial institutions.

**Table 5: A typical bank balance sheet**

Assets	Liabilities
Cash	Deposit
Securities	Borrowing
Loans	Shareholder equity
Other assets	

48. To correct incentives, strings have been attached to the use of these instruments: measures limited in times, imposition of a fee, or operational measures on executives pay or dividends. Some countries have also opted for using structural instruments such as buying toxic assets (Table 6). In addition, some countries have directed their intervention to prevent a collapse of the housing market by purchasing mortgage bonds. The United States, Switzerland and Japan have opted for the direct purchase of commercial papers and the United Kingdom has put in place the framework to do so.

49. These rescue plans have helped stabilising financial markets though the latter remain under stress. It will be important that they are rapidly implemented, and in particular that viable banks are rapidly recapitalised. To this aim, countries need also to encourage private-sector capital injections. Identifying and moving troubled assets out of banks balance sheets may also be necessary, if recapitalisation fails to restore confidence and markets remain illiquid. At the same time, emergency measures such as banning short-selling and relaxing mark-to-market rules for asset price valuation will also need to be phased out as they increase uncertainties and are likely to slow the pace of the crisis resolution (OECD, 2008). More

generally, a rapid return to transparent balance sheets is essential to ensure sound information flows and efficient markets in the future.

**Table 6: Overview of main measures in OECD countries**

	Traditional monetary instruments				Crisis resolution instruments			Capital injections <sup>1</sup>	Option to purchase toxic assets
	Liquidity injections	Interest rate changes	Increased guarantee of private deposits	Guarantees for bank loans or debt	Fund to purchase commercial papers	Purchase mortgage bonds	Ban or restrict short-selling		
United States	x	cut	x	x	x	x	x	x	x
Japan	x	cut		x	x		x		
Euro area	x	cut	x						
Germany			x	x			x	x	x
France			already high	x			x	x	
Italy			x				x	x	
United Kingdom	x	cut	x	x	x	x	x	x	
Canada	x	cut		x		x	x		
Australia		cut	x	x		x	x		
Austria			x	x			x	x	
Belgium			x	x			x	x	
Czech Republic		cut							
Denmark	x	increase /cut	x	x		x	x		
Finland			x	x			x		
Greece			x	x				x	
Hungary	x	increase	x	x				x	
Iceland		increase	x				..	x	
Ireland			x	x				x	
Korea	x	cut		x					
Luxembourg			x	x					
Netherlands			x	x			x	x	
New Zealand	x	cut	x	x					
Norway	x	cut	already high	x					
Slovak Republic		cut	x						
Poland	x		x						
Portugal			x	x				x	
Sweden	x	cut	x	x		x		x	
Spain			x	x		x	x		
Mexico	x			x					
Switzerland	x	cut	x		x			(x)	x
Turkey	x	cut							

1. Capital has already been injected in banks or money has been allocated for future capital injections. The law allows the Japanese government to inject capital into financial corporation but so far this option has not been used.

Source: OECD.

50. Macroeconomic stabilisation policies have also been substantially used. Policy interest rates have been cut sharply by central banks around the world, to reach in many countries levels close to the zero

nominal bound or unprecedented lows. The timing of the cut was in many instances internationally coordinated.<sup>14</sup> Steps to provide liquidity to the banking system have varied: central banks have increased liquidity available at regular auctions and/or widened the range of assets accepted as collateral. Liquidity has also been made more easily available and bilateral agreements on swaps facilities between the Federal Reserve or the ECB and small economies have been concluded. In addition unconventional monetary policy tools, such as credit easing, have been increasingly been used.

51. Given the severity of the downturn and the impairment of traditional monetary transmission channels, many countries had recourse to fiscal action. But the magnitude of the fiscal stimulus varied widely across countries. A sizeable fiscal stimulus is expected for the US economy and has been announced in China. In Japan, high public indebtedness has limited the scope for fiscal stimulus. A coordinated discretionary response to the slowdown has been decided at the European level, and individual countries have also announced fiscal packages.

*The US Emergency Economic Stabilization Act (EESA)*

52. The prompt adoption of a systemic rescue plan in the United States was clearly necessary and the EESA provided flexibility to the US authorities to stabilise financial markets. The USD 700 billion limit is an attempt to restrict the potentially huge fiscal cost associated with the rescue plan. However, the lack of a coherent strategy resulted sometimes in confusion in financial markets. The choice of the instrument – capital injection or the purchase of toxic assets – was a case in point. The systemic rescue plan adopted by the US authorities early October first focused on the purchase of trouble mortgage-related assets (Box 4). Immediate financial reactions to the plan were limited. Spreads remained elevated in the few days following the vote. In particular, the EESA has been widely criticised on the ground that it addresses the issue of illiquidity and some assets' falling value, but not directly of capital shortage. This criticism was partially ill-funded as the EESA offer the US authorities the flexibility to buy shares and recapitalise banks. Proposed alternatives have most of the time aimed at directly increasing bank's capital.<sup>15</sup> Given the urgency, the EESA has been complemented by a voluntary capital purchase programme and a temporarily sovereign guarantee for new bank debt. In November, the US authorities announced they will not undertake toxic asset purchases, but the option still existed. As confidence in markets remained fragile, the option of buying up toxic assets re-surfaced, with the plan to create a government bank to buy up the bad investment and loans that were behind the huge losses reported by US banks.

53. Over the medium to long-term, this measure would however rely heavily on the details of its implementation. If the programme manages to remove trouble assets and foster new bank lending, perceptions of counter-party risks are likely to decline and money markets should come back to a normal functioning. But a number of challenges are lying ahead on the implementation of the asset management part of the EESA. First, it is difficult to determine the price of trouble asset securities, including in reverse auctions. Indeed assets which need to be valued can be very heterogeneous, and there is a clear asymmetry of information, with banks being more informed than the asset company staff. As far as possible, it will be important that the pricing of these transactions reflects as closely as possible the underlying value of the collateral backing of securities. Second, doubts have been raised as to whether the US administration will be able to hire well-qualified staff to identify trouble assets (Rogoff, 2008). This identification is

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14. On 8 October, the Bank of Canada, the Bank of England, the European Central Bank, the Federal Reserve, Sveriges Riksbank, and the Swiss National Bank jointly announced reductions in policy interest rates. This was followed by rate cuts in Asia, in particular in China, and in Australia.

15. Bank capital can be increased by the government acquiring banks' preferred stock (Krugman, 2008), by obliging the financial companies to raise capital making rights offerings (Rajan, 2008) or by mandating debt-equity swaps (Zingales, 2008; Wolf, 2008).

complicated by the fact that trouble assets are complex and heterogeneous. Thirdly, even putting aside this concern, this approach requires a long time to be implemented. Against this background, some have argued that the timing of the plan was unfortunate and the US authorities should have adopted a more pre-emptive approach.

#### **Box 4. Key elements of the 2008 Emergency Economic Stabilization Act**

On 3 October US authorities passed a rescue plan bill which intends to inject a substantial amount of liquidity in the market. In addition to the initial proposal, a number of sweeteners have been added to the final bill. Key measures include:

- USD 700 bn allocated in two tranches (second USD 350 bn subject to Congressional approval).
- Funds to be used to purchase troubled assets (MBS) or other securities such as bank stock, or to guarantee troubled assets.
- To use the plan, participating firms will need to submit warrants and accept top executive salary caps, with levels to be determined by Secretary of Treasury.
- Encouragement of the SEC to relax mark to market accounting rules. This could help banks that have not marked to market.
- FDIC deposit insurance limits rose from USD 100k to USD 250k. Experience during the crisis in the early 1980s suggests this measure could help banks to attract large inflows of funds and facilitate the buying of damaged assets and encourage lending.
- The Federal Reserve will pay interest on reserves effective October 1. This will enable the Federal Reserve to expand its balance sheet to meet liquidity needs during the crisis without altering its monetary policy objectives. Payment of interest on reserves will also raise banks' income.
- Extensions of tax cuts.
- Some scope for loan modifications, especially on GSE mortgages. This could at the margin reduce foreclosures and ease downward pressure on house prices.

On 14 October, the Treasury announced USD 250 billion will be allocated to capital injections. A broad array of financial institutions will be able to participate in the voluntary purchase programme by selling preferred shares to the US government. Moreover the FDIC will temporarily guarantee the senior debt of all FDIC-insured institutions and their holding companies, as well as deposits in non-interest bearing deposit transaction accounts. Finally, the Federal reserve will provide commercial paper facilities.

On 23 November, the Federal government rescued Citigroup by helping to absorb potentially significant amounts of losses on toxic assets on its balance sheet and injecting fresh capital. On 25 November, the Federal Reserve announced it will buy MBS and provide financial support for consumer financing (with ESSA funds absorbing the first 10% of losses).

On 17 January 2009, the US authorities announced they will help Bank of America absorb the losses incurred when it bought Merrill Lynch. The government will inject \$20 billion in the bank in exchange for preferred shares, bringing the government's total stake in Bank of America to \$45 billion. In addition the government will provide \$118 billion worth of guarantees against bad assets.

Source: US Treasury; Deutsche Bank; OECD

#### *Are national plans sufficient for Europe?*

54. The reaction of European policymakers to the crisis has been surprisingly timely and well coordinated. After the emergency meeting on 12 October, most European countries have announced rescue packages that share similar features i.e. focus on interbank guarantees and capital injections. A number of questions remain unsolved however. First, a number of governments have announced they will rescue any banks in difficulty but no procedure have been set up in the case of large cross-border banks which failure could generate a systemic risk. The failure of a large bank is likely to have larger negative implications for the financial system as markets move toward more integration. In addition, greater scale limits the ability

to take actions that would reduce exposure in the event of a shock without risking magnifying the shock (Lumpkin, 2008). It is important to announce details on the criteria banks should meet to be saved as well as which countries should bear the fiscal burden. A number of alternative proposals can be put forward, the creation of a rescue fund at the European level, or a rule defining which countries should intervene. Second, there is a case of harmonisation of deposit guarantee and interbank loans guarantees rule to avoid distorted incentives.

#### *Sovereign risk in small economies*

55. The situation in some small economies with a developed financial sector has been critical. Sovereign risk has been particularly high in Iceland in particular, where the three main banks have faced severe difficulties. In this context, the Icelandic authorities have placed the banks in receivership under the control of the financial regulator. Other small economies such as Switzerland, Hungary or Sweden have also faced significant risks of collapse. As GDP in these countries is generally small compare to the amount of the required rescue package, there may be a need for international cooperation to address these issues.

56. The IMF has set aside about USD 200 billion available for direct loans and currency swaps. This amount could be extended to some USD 50 billion. Loans have already been granted to Ukraine, Hungary and Iceland. The IMF has also announced the creation of a new short-term liquidity facility for the soundest emerging markets in the form of three-month loans without strings attached. In addition, a number of bilateral agreements have been signed or currency swap facilities have been agreed, but the amounts usually involved are unlikely to be sufficient.<sup>16</sup>

57. There is a risk however that existing swap lines and Fund resource may not be sufficient given the potential size of capital outflows (Blanchard, 2008). Indeed, swap lines are available only to some emerging economies and Fund's resource may not be sufficient in period of extreme stress. Although the IMF can draw on additional resources through standing borrowing arrangements with members, the cumulative pool of resources is likely to be insufficient if the financial crisis continues to spread. A more systematic and coordinated approach to liquidity provision is required.

#### **V. Fiscal costs and financial implications**

58. Systemic financial recues plans or emergency measures usually entail very large costs. Fiscal costs first arise from using public funds to clean up financial markets and/or protect depositors and banks stakeholders. The financing of these measures will tend to deteriorate public finance situation, unless taxes are increased. Historically, these costs have been sizeable, around 13% of GDP on average for a sample of 42 crisis episodes (Laeven and Valencia, 2008). Developing countries appear to entail stronger costs and some episodes have been particularly costly, for instance Argentina or Chile in the early 1980s or the Asian crisis in 1997-1998 (Table 7).

59. Fiscal costs associated to specific measure crucially depend on the implementation details. A deposit insurance limited over time or with a fee will have a limited fiscal cost. The cost of sorting out

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16. The Icelandic government has negotiated loans from the British and Dutch governments so as to be able to pay out retail depositors in those countries the amounts guaranteed in the past (e.g. 20 000 pounds per depositor in the United Kingdom). It has also sought help from the Nordic countries. In addition, the ECB has provided emergency loans to Hungary and assistance to Switzerland. It has also arranged a swap facility for the Danish central bank. In the same vein, the Federal reserve has established swaps facility with New Zealand. It has committed to enable Brazil, Mexico, Singapore and South Korea to swap their currencies more easily for dollars.

good from bad assets the costs will be driven by the pricing or valuation of the non performing assets. Existing empirical research suggests that accommodative policy measures (such as liquidity support, blanket guarantees and forbearance from prudential regulations) tend to be fiscally costly and do not necessarily accelerate the speed of economic recovery (Bordo *et al.*, 2001; Honohan and Klingebiel, 2003; Claessens *et al.*, 2005; Laeven and Valencia, 2008).

60. Gross fiscal costs of first rescue packages are in the range of those observed in the past (Table 8). The total cost of the packages announced in the G7 economies would amount to more than USD 2.5 trillion. These are upper limits. It is difficult to precisely assess how much funding will be required for the state guarantees. Since the beginning of the year, Additional measures have been announced in the United Kingdom and Denmark, and are expected in other countries, increasing the overall fiscal burden.

61. Gross fiscal costs are transfers from present and future taxpayers to present and future beneficiaries of the rescue rather than true economic costs. A measure of net fiscal costs would need to incorporate all the indirect costs entailed by public interventions, including their ex-post effects on tax receipts and spending, effects debt interest risks premium, inflation or currency movements.

**Table 7: Fiscal costs of selected crises in the past**

	<b>Gross fiscal cost</b> <b>(% of GDP)</b>	<b>Net fiscal cost*</b> <b>(% of GDP)</b>	<b>Output loss</b> <b>(% of GDP)</b>
Argentina, 1980	55.1	55.1	10.8
Chile, 1981	42.9	16.8	92.4
Indonesia, 1997	56.8	52.3	67.9
Japan, 1997	24	13.9	17.6
Korea, 1997	31.2	23.2	50.1
Sweden, 1991	3.6	3.4	30.6
Russia, 1998	6.0	6.0	0.0
United States, 1988	3.7	-	4.1
<b>Average 42 episodes</b>	<b>13.3</b>	<b>-</b>	<b>20</b>

\* Defined as Gross fiscal cost minus recovery proceeds.  
Source: Laeven and Valencia (2008).

62. By deteriorating public deficit in the short-term resolution policies can hamper fiscal credibility and government commitments to put public finances on a sustainable path. This could result in a rise in debt interest risks premium, increasing further the burden on public finances. In this context, there could be some pressure on monetary authorities to accept some increase in inflation to lower the debt burden. This could however endanger the credibility of central banks. If resolution policies are not judged credible by markets, pressures for accommodative monetary policy stances could be even stronger.

63. Disruptions in financial markets can trigger rapid exchange rate depreciations and accentuate output losses. Exchange rate depreciation could lead to losses in borrowers' wealth when debt is denominated in foreign currencies. Furthermore depreciation raises interest rates on all loans, and results in adverse relative price movements for non-tradables. Declines in borrowers' income and net worth destroy bank net worth. Additional losses may result from banks' direct exposure to interest rate and exchange rate risks. In many past crises, currency movements played an important role, both as a symptom and a crisis

solution tool. However, it is unclear to what extent exchange rate movements can help solving the crisis, given its global nature.

64. Net fiscal costs are hard to estimate in the absence of counterfactual. One alternative often proposed has been to calculate the loss of output relative to a benchmark, typically trend growth rates. The main conclusion from the literature is that the average cost is usually high but it varies widely across crises. Another alternative is to compute a measure of financial cost based on the effect of the policy response to the crisis on the public deficit (see Box 5 for more details on the methodology). Using this method, the fiscal costs of the US EESA would amount to be around 4% of GDP. This cost needs to be compared with true economic costs of inaction.

**Table 8: Gross fiscal costs of first rescue packages**

	Capital injection	Guarantees	Total of measures announced <sup>1</sup>	Total (% of GDP)
United States	USD 250 bn		USD 700 bn	5.1
Germany	€ 70 bn	€ 400 bn	€ 480 bn	19.8
France	€ 40 bn	€ 320 bn	€ 360 bn	19.0
Italy			€ 40 bn	2.6
United Kingdom	£ 50 bn	£ 250 bn	£ 400 bn	28.6
Canada			CAD 75 bn	4.8
Austria	€ 15 bn	€ 85 bn	€ 100 bn	36.9
Denmark			Kr 35 bn	2.1
Greece	€ 5 bn	€ 15 bn	€ 28 bn	11
Ireland		€ 450 bn	€ 450 bn	235.7
Hungary	USD 3 bn			
Korea		USD 100 bn	USD 100 bn	
Netherlands		€ 200 bn	€ 200 bn	
Portugal		€ 20 bn	€ 20 bn	6.1
Sweden	SEK 15 bn	SEK 1500 bn	SEK 1515 bn	50.5
Switzerland			SFR 60 bn	
Spain	Initially € 30 bn, rising to 50	€ 100 bn	€ 150 bn	14.3

Note: While from an economic point of view the announced plans represent a gross fiscal cost, from a statistical and accounting point of view they may not have any impact on the current net debt or budget balance. In fact, some of these measures as capital injections if treated as a financial transaction, i.e. the government receives in return a financial asset of equal value to the payment (like in the TARP), would not affect neither the net debt nor the balance. In contrast, they will have an impact on the net balance and debt if treated as a non-financial transaction, i.e. the government does not receive in return a financial asset of an equal value.

1. This total is in some cases the sum of measures of which a cost estimate is available up to December 2008.

### Box 5. An estimation of the US EESA fiscal costs corrected by its effects on activity

This box proposes a new measure to correct fiscal costs of crisis resolution policy from its effect on the cycle. The idea is to compare the deficit pre-crisis with an estimated deficit after the crisis ( $D^*$ ), i.e. corrected from output losses. In this way, the need of a counterfactual is limited. This approach accounts for the ability of the announced plan to foster growth through an increase in bank liabilities, output and for the stabilising role of total government revenue and spending. For simplicity, we assume that the gross fiscal cost of the announced plan will correspond one-to one to an increase in of bank liquidities.

#### Definition of corrected fiscal cost

$D^*$  is determined by its components, i.e. government spending ( $G^*$ ), revenue ( $T^*$ ), and the gross fiscal cost ( $GFC^*$ ):

$$D^* = (G^* - T^*) + GFC^* \quad (1)$$

$$Y^* = Y \left( 1 + \theta_{Y,GROS} \left( \frac{GFC^*}{Y} \right) \right) \quad (2)$$

$$\Delta L = GFC^* \quad (3)$$

$$T^* = T \left( 1 + \eta_{T,Y} \frac{Y^* - Y}{Y} \right) \quad (4)$$

$$G^* = G \left( 1 + \eta_{G,Y} \frac{Y^* - Y}{Y} \right) \quad (5)$$

Where  $G$ ,  $Y$ ,  $T$  are the observed values of government spending, GDP and revenue before policy action,  $Y^*$  is output after policy action.  $L$  is the observed value of bank liabilities,  $\theta$  is the semi-elasticity of GDP to the Liabilities-GDP ratio, and  $\eta$ 's are elasticities.

#### Estimation

The impact of the gross fiscal cost on GDP ( $\theta_{Y,GROS}$ ), the elasticity of total revenue to GDP ( $\eta_{T,Y}$ ) and total spending to GDP ( $\eta_{G,Y}$ ) are estimated in the three following equations<sup>17</sup>:

$$\log(Y_t) = \alpha + \beta \log(Y_{t-1}) + \theta_{Y,GROS} \log(G_t) + \delta \mathbf{Z}_t + \varepsilon_t^Y \quad (6)$$

$$\log(T_t) = \phi_T + \eta_{T,Y} \log(Y_t) + \gamma_T \log(T_{t-1}) + \theta_T \mathbf{Z}_t + \varepsilon_t^T \quad (7)$$

$$\log(G_t) = \phi_G + \eta_{G,Y} \log(Y_t) + \gamma_G \log(G_{t-1}) + \theta_G \mathbf{Z}_t + \varepsilon_t^G \quad (8)$$

Where  $Z$  is a set of control variables using current and past value of oil prices, inflation and a time trend. Equations (5)-(7) are estimated using Instrumental Variables methods, with instruments being the two lags of liabilities-GDP ratio in equation 5 and the two lags of GDP in equations 7 and 8.

17. See Furceri and Mourougane (forthcoming), for a detailed discussion on equation 5, and Fátas and Mihov (2004, 2006) and Afonso, Agnello and Furceri (2008) for details on equations 6 and 7.

**Estimation results**

Parameters are estimated to be  $\theta_{Y,GROS}=0.21$  and  $\eta_{T,Y}=1.05$  and  $\eta_{T,G}=0.27$ .<sup>18</sup>

Plugging these two values in (1)-(4) and assuming a gross financial cost of 700 billion (5.07 percent of GDP), the deficit-GDP ratio after crisis amounts to  $D^*/Y^*=6.72$ . As the before crisis deficit  $D=2.74$ , the net fiscal cost of the fiscal policy response to the financial crisis is estimated to be 4 per cent of GDP.

**VI. Implications for the real economy and inflation**

65. Historically, financial crises have markedly impacted the real economy. This section reviews these effects by comparing the current crisis in the United States and the euro area to past crises (see Box 1 for more details). Theoretical transmission channels of financial crisis to the real economy are described in Box 6.

**Box 6. What are the main transmission mechanisms from banking (financial) crises to activity?**

The economic literature has identified several channels through which financial crises spread to the real economy.

**Monetary channel**

As financial conditions deteriorate, money supply declines and in turn affects negatively output (Friedman and Schwartz, 1963).

**Credit channel**

On the demand side, financial crises change the value of collateral and thereby the ability for households and firms to get credit (Bernanke and Gertler, 1995; Bernanke, Gertler and Gilchrist, 1999; and Kiyotaki and Moore, 1997). Investment and consumption are turn negatively affected.

On the supply side, banks tighten their lending standards and reduce credit availability. Credit constraints lower consumption and investment and thus income (through domestic multipliers). The economic slowdown in turns worsens the balance sheet of banks, households and firms. Moreover, the deterioration of incomes and balance sheets for households and firms has a further adverse financial-accelerator effect on credit availability (Bacchetta and Gerlach, 1997; Ludvigson, 1998; Bayoumi and Melander, 2008; Grenlaw *et al.*, 2008).

There is a risk of a negative feedback loop as the real economic slowdown affects the banking sector and severely damage financial institutions. Borrowers will have difficulty repaying loans and depositors, anticipating an increase in defaults or non-performing loans. They will try to protect their wealth by withdrawing banks deposits. Banks are caught between the illiquidity of their assets (loans) and the liquidity of their liabilities (deposits).

**Cost of capital**

Information asymmetries between lenders and entrepreneurs can cause higher cost of capital to firms and therefore lower investment and output (Bernanke and Gertler, 1987). In situation of financial distress, asymmetric information between lenders and borrowers becomes quite stringent, due to the increased demand for loans from low-quality borrowers. A "lemon" premium is added to the cost of capital to discriminate between low and high quality borrowers and leads to a contraction of the investment and output.

18. The two coefficients are significant at 5%, and for both equations the validity of instruments is confirmed by the Sargan and Anderson tests. Full set of results is available upon request.

**Bank capital channel**

When bank capital is eroded, banks become more averse to lend and may be forced to deleverage, leading to sharper economic downturns (Bernanke, Lown and Friedman, 1991; Kashyap and Stein, 1995; Peek and Rosengren, 1995; and Altunbas et al. 2007).

**Wealth effects**

Financial crisis can affect private consumption also through changes in asset prices and thereby household wealth<sup>19</sup>. It is important to distinguish between corporate stock and other components of wealth in order to assess the effect of financial crisis on private consumption, as they are associated with different marginal propensity to consume. Boone *et al.* (2001) and Tracy *et al.* (1999) note that the change in household net worth associated with a change in house prices is larger than the change from a comparable variation in stock values for the vast majority of households in the United States.

**Uncertainties**

Financial crises affect economic activity also by increasing the amount of uncertainty in the market. First, uncertainty hampers the efficient allocation of resources as risk-averse agents will reduce the length of their contracts. Second, and perhaps more important, under the assumption of investment irreversibility, increased uncertainty can lead to lower investments (Bernanke, 1983; Pindyck, 1991; Pindyck and Solimano, 1993; Serven and Solimano, 1993). Along with uncertainty, the increase of interest rates and decrease of demand that come with a crisis cause inventories to rise and sales to decrease and result in a capacity surplus in the economy (Andersson and Avery, 1999; Bris *et al.*, 2001). The decline of firms' sales volume during the crisis, also decreases the firms' production and employment.

**Exchange rate volatility**

Financial crisis can affect economic activity also by triggering a currency crisis<sup>20</sup>, exacerbating exchange rate volatility and leading to currency depreciation. Burnside *et al.* (1999) argue that national currency devaluation at high percentages causes an increase in domestic interest rates and opens the way for significant drops in total output, employment, real wages and number of firms. At the same time the devaluation of national currency may lead to short-term increase in net exports. Conversely, high exchange rate fluctuations can increase macroeconomic uncertainty. Reducing this volatility could thus have positive effects on trade (McKinnon, 2000 and Rose, 2000) and investments (Aghion *et al.*, 2006) and growth (Aghion *et al.*, 2006; De Grauwe and Schabl, 2008; Furceri, 2008a).

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19. For empirical evidence on the effect of stock markets on consumption see, for example, Ludvigson and Steindel (1999), Poterba (2000), Boone *et al.* (2001), Case *et al.* (2005).
20. For example, Velasco (1987) stresses that when central banks finance the bailout of troubled financial institutions by printing money, we return to the classical story of a currency crash prompted by excessive money creation. Causation, however, can go in the other way. An initial external shock, such as an increase in foreign interest rates, coupled with a commitment to a fixed parity, will result in the loss of reserves. If not sterilised, this will lead to a credit crunch, increased bankruptcies, and financial crisis. Moreover, if a devaluation occurs, the position of banks could be weakened further if a large share of their liabilities is denominated in a foreign currency (Mishkin, 1996). Kaminsky and Reinhart (1999) study empirically the link between banking and currency crises. While banking crises often precede balance-of-payments crises, they are not necessarily the immediate cause of currency crises, even in the cases where a frail banking sector puts the nail in the coffin of what was already a defunct fixed exchange-rate system. See Diaz-Alejandro (1985) and Nyberg and Vihriälä (1993) for analyses of the 1982 Chilean and 1991 Finnish crises, respectively. Garber and Lall (1998) and Krueger and Tornell (1999) discuss the 1994 Mexican crisis.

*Financial crises dampen economic growth...*

66. Past episodes of crises have usually displayed significant reductions in GDP growth over a prolonged period (Figure 5). It took two years on average for real GDP growth in countries experiencing a severe financial crisis and four years in the case of milder crises to exhibit signs of recovery or stabilisation. A similar though sometimes more pronounced pattern can also be observed for domestic demand. In particular, episodes of financial turmoil in presence of elevated banking sector distress, surge in credit growth and house prices as well as heavy indebtedness of households are found to be followed by a severe and prolonged economic downturn (IMF, 2008b).

67. Given the similarities between the current episode and the past large crises (see section 1), a deep and long downturn in the United States cannot be ruled out at this stage. Tightening of lending standards, widening interest rate spreads and a plunging stock market since mid-2007 are estimated to reduce real GDP growth by over 3% after a lag of four to six quarters (OECD, 2008).<sup>21</sup>

*... by altering its main components*

68. Traditionally the pace of private consumption decelerates markedly following a financial shock. This feature has also been observed for the current shock. A striking difference between the current crisis and past severe crises is that private consumption growth started to decline two years before the burst of the financial crisis. By contrast, it began to fall one year after the start of the financial crisis in the current episode.

69. Negative wealth effects from both declining housing and stock prices explain the observed slowdown in private consumption. In the case of the United States, the effect of falling house prices is likely to play a prevailing role, as there is evidence that wealth effects from the housing sector are stronger than those from the financial markets. In particular, based on estimates of the marginal propensity to consume out of housing and stock market financial wealth it is possible to estimate the amplitude of the decline in consumption due to the sharp decrease on housing and equity prices, using marginal propensity to consume out of housing wealth. These are usually estimated to be in the range between 0.03 and 0.15<sup>22</sup>. Considering a drop in home equity of around 20%<sup>23</sup> (from July 2007 to October 2008) and taking the highest estimate of the marginal propensity to consume out of housing wealth, the equity price decline would lead to a 3% decline in real consumption. Using a more conservative estimate of 0.03, the consumption drop would be 0.6%. However, this reduction in consumption is likely to be further exacerbated by a decline in stock market wealth. Given an estimated range of the marginal propensity to consume out of stock market wealth of 0.02- 0.04, and a decline in the stock market equity of around 47%<sup>24</sup> (from 3 July to 2007 to 20 January 2009) the drop in consumption would be in a range between 0.9 and 1.9 %. As housing and equity prices continue to decline, the negative effects on consumption may be even larger than those outlined above

70. The pattern of business investment in the current crisis differs significantly from the one observed in both severe and mild crises. Indeed, business investment surged rapidly in the years before the financial crisis, reflecting sound firms' balance sheets, robust economic growth and strong credit supply.

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21. Financial stress is measured by the financial condition Index (FCI) constructed in Guichard and Turner (2008).

22. See, for example, Boone et al.(2001), Bostic et al. (2007), Case et al (2005), Iacoviello (2004), Greenspan and Kennedy (2005), Lettau and Ludvigson (2004), Piazzesi et al. (2007).

23. Computation based on the Case-Shiller index.

24. Computation based on the Down Jones Composite Wilshire Index.

That said, the bursting of the financial bubble led to a deceleration in private investment both in the case of severe crises and in the current episode. Tightening lending standards as well as deteriorating growth perspectives have certainly contributed to these developments. Past experience suggests that two or more years may be needed for business investment to recover.

71. Residential investment closely mirrors developments in house prices. Strong similarities can be observed between the current crisis and the average of large crises. The slowdown in residential investment following the current turmoil is however found to be more drastic in the United States. Adjustments are underway in the euro area.

*Labour markets tighten and inflation recedes*

72. Labour markets have also been affected by financial crises. The effect on unemployment will vary depending on countries' resilience to shocks. Unemployment rates have usually surged in the event of a deep financial crisis (on average by 5 percentage points in 4 years). By contrast, episodes of softer crises were characterised by a much smoother increase in the unemployment rates of about 1 percentage point in the 4 years following the start of the crisis. In the current crisis, labour markets have been slow to adjust, although adjustments may have accelerated recently in the United States. That said, it is unlikely that the unemployment rate will reach double-digit levels in the next four years as was experienced in past episodes of large crises.<sup>25</sup>

73. Large negative output gaps usually dampen inflation in the year following the start of a financial crisis. The current episode appears to be singular, and headline inflation has surged in the United States and in the euro area when the financial crisis started. However, this pattern can be fully explained by soaring commodity prices which have boosted headline inflation in most economies. As commodity prices decline, and capacity continues to exert downward pressures on prices, inflation is expected to edge down and follow a pattern closer to the one observed in past crises.

*Banking crises affect public and external balances*

74. Many large financial crises have been preceded by a rise in public deficit (Figure 10) and the current crisis is no exception. The deficit usually deteriorates at an even more rapid pace in the years following the crisis, reflecting the pro-cyclicality of the deficit and the implementation of discretionary fiscal policies. In this regard, the current episode displays large similarity with past severe crises.

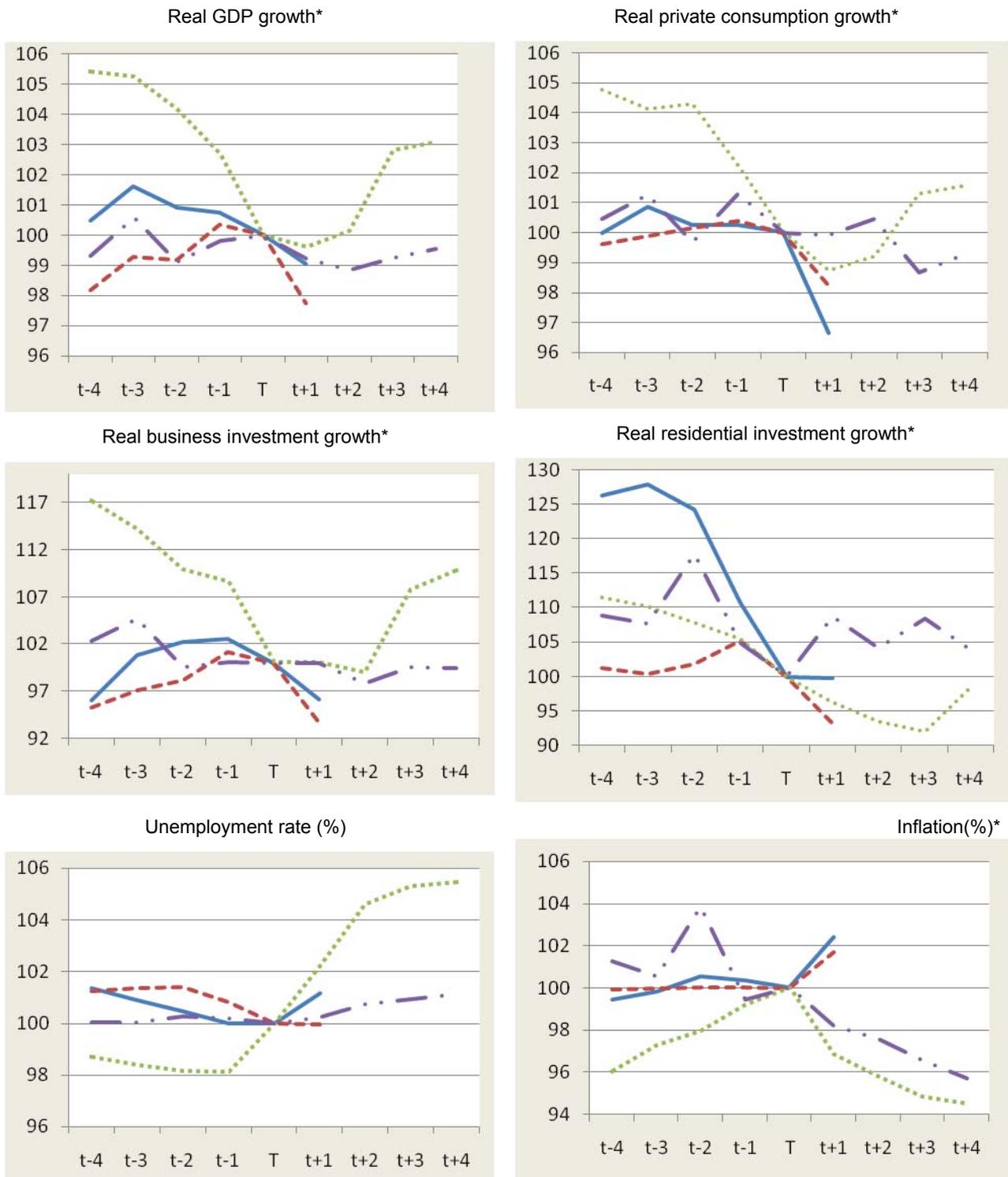
75. Although most crises appear to coincide with currency depreciations, it is hard to identify a common pattern between the different episodes. While large crises were characterised with very volatile exchange developments, mild crises display a steady pace of depreciation. Given the high uncertainties surrounding the current crisis and the large international imbalances, it is hard to infer future developments. Similar caveats apply for current account developments.

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25. Assuming the unemployment rate in the United States in 2008 will be close to the value observed on average in the first two quarters of 2008, a simple calculation suggests that the unemployment rate would have to grow by 20 % per year to reach 10% in 2011.

**Figure 5. Effect of financial crisis on the real economy**

(Index at time T=100)



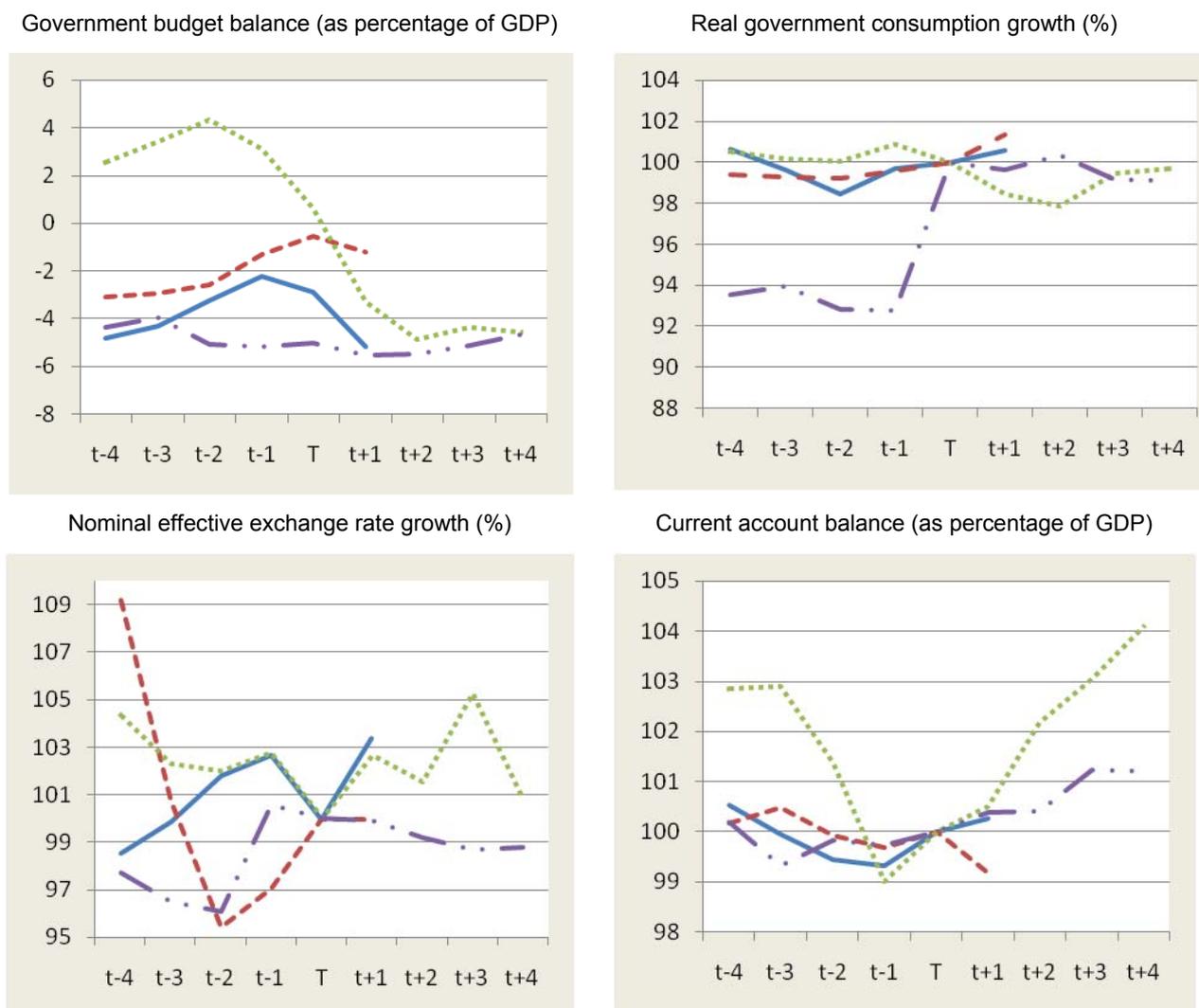
\*t+1 for US and Euro Area has been computed as average of the first three quarters of 2008.

Source: OECD Analytical database.

— United States — Euro area  
 ..... Big Five -.- Others

**Figure 6. Effects of financial crisis on public and external balances**

(Index at time T=100)



Note: t+1 for US and Euro Area has been computed as average of the first three quarters of 2008.

Source: OECD Analytical database.

— United States    - - - Euro area  
 ..... Big Five    - · - Others

*Effects on emerging market economies*

76. Intensified trade and financial linkages are likely to speed up the pace of crisis contagion to other economies. After months of relative resilience, emerging market economies (EME) are now starting to experience the effects of the financial turmoil that began in advanced economies in the summer of 2007.

77. EME financial markets are currently characterised by: i) an increase in deleveraging by commercial and investments banks; ii) a sharp rise in risk aversion; iii) mounting banking failures.

International investment banks have started to aggressively reduce their reliance on wholesale funding by shrinking the asset side of their balance sheet. This reduces the availability of credit for EME through less loan extensions and through less leverage offered to the banks clients. The systemic breakdown in interbank and money market poses serious risks of a sudden stop in capital flows to EME. This stop will have significant effects for EMEs currencies and growth since foreign funding accounts for about 50 percent of annual financing sources in these regions. Moreover, although leverage levels remain overall moderate, many countries (such as Hungary, Romania, Ukraine, Turkey and Philippines) may face significant refinancing risks. Finally, as equity prices in EME are correlated with those of foreign markets, EME can suffer for negative wealth effects and decline in consumption and investment.

78. In addition to the direct negative effect of the credit crunch and sudden stop in capital flows, economies will be affected by the slowing down in the economy of their main trading partners. The latter factor is expected to be particularly important for some of the emerging economies, as well as NAFTA countries.

## VII. Policy implications

79. Looking forward, normalisation of financial markets is expected to be long though, as time is required to implement the different measures that have been announced. The most probable scenario is that financial stress is going to persist for some time so that lending conditions will be tighter than before 2007. Against this background, the OECD economies are expected to recover from a deep recession over the next few years (OECD, 2008). However, large uncertainties remain as to the depth and the duration of the economic downturn which are contingent to the speed of the financial crisis resolution.

80. At the current juncture, short-term emergency measures may be required to address immediate needs. This section discusses possible fiscal and monetary reactions to limit the extent of the economic slowdown. Over the medium to long-term it is also important to rationalise the policy framework and make it more counter-cyclical to maximise long-term economic growth and welfare gains.

### *Short-term policy reactions*

#### *Fiscal policy*

81. In recent months, there have been renewed calls for governments to actively use fiscal policy as stimulus to address the sharp declines in activity, as economies have been buffeted by falling asset prices, rising costs for raw materials and credit, and waning confidence. The use of fiscal policy can be warranted in a context of reduced effectiveness of monetary policy and if a rapid policy action is required to stabilize the economy, as long as it does not endanger long-term fiscal sustainability.

82. The economic literature has extensively tried to analyse the impact of fiscal stimulus on economic activity during downturns, without providing a clear answer whether discretionary fiscal policy can successfully stimulate the economy during downturns.<sup>26</sup> Estimates of the fiscal policy effects on many macroeconomic variables can differ in amplitude but also in sign. Moreover, these effects have been found to be dependent on the country's economic structure.

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26. See, for example, Ramey and Shapiro (1998); Edelber et al. (1999); Fátas and Mihov (2001); Mountford and Uhlig (2002); Blanchard and Perotti (2002); Johnson et al (2006); Galí et al. (2007);

83. Even given the uncertainty regarding the real effects of fiscal stimulus, the current scenario may suggest that ttt (temporarily, timely and targeted) fiscal stimulus may be welcome in countries where the effects of the financial crisis could be potentially strong. At the same time, policy makers should be very careful about how stimulus packages are designed and implemented. In particular, they should ensure that they are timely and not likely to become entrenched.

84. However, relatively weak fiscal positions in several OECD economies, together with fiscal constraints in the context of the Growth and Stabilisation Pact in EU countries, are likely to inhibit wide-spread use of discretionary fiscal instruments as a stabilising policy tool during the current downturn, reinforcing the importance of automatic stabilisers. At the same time, these constraints, even if they limit the scope for discretionary policies, can help to reduce fiscal volatility (thereby reducing output volatility, Fátas and Mihov, 2004 and 2006) and increase the efficiency of automatic stabilisers (Arreaza *et al.*, 1999; Galí and Perotti, 2003; Lane, 2003; Furceri, 2008b).

85. International coordination of fiscal policy will bolster policy effectiveness, especially in economies where trade and financial flows are closely integrated. A coordinated approach also helps in terms of consistency in the timing and the direction of the fiscal stimulus across countries. Past experience provides little guidance regarding the choice of different instruments given the global nature and the complexity of the current situation. But short-term stabilisation policies should be consistent with long-term sustainability. In particular the design of fiscal package should not endanger public finances sustainability and favour as far as possible environmental-friendly measures.

#### *Monetary policy*

86. In addressing simultaneously the combined effects of the financial crisis, past commodity price rises, and the prospects of weakening activity, monetary policy has played a leading role in reacting to quickly changing financial and real prospects, and inflationary pressures.

87. The main challenge for monetary policy is that financial imbalances can also build up in the absence of overt inflationary pressures (Goodhart and De Lary, 1999). Moreover, credible anti-inflation regimes may actually contribute to this conjunction of circumstances, by delaying the emergence of inflationary pressures which would otherwise signal the un-sustainability of the economic expansion (Borio and Lowe, 2002).

88. Recent disruptions to interbank funding markets and the resulting increased dependence on overnight and short-term liquidity have evidenced a change of regime. Empirical analysis shows that in the context of significant financial stress, interest transmission channel may be altered in particular in the United States (IMF, 2008). This calls for broadening access to emergency liquidity to contain systemic risks and liquidity management by central banks becomes key (Box 7). Moreover, while there is a well established mechanism of injecting reserves into a country's financial system, there is no way to guarantee that the injected liquidity will go to the banks that need it. Thus, the managing of liquidity provision in the market it has become a key instrument for central banks in addressing the current financial crisis.

### Box 7. Federal Reserve's Liquidity Management

The Federal Reserve on loan is actively using four policy tools to manage liquidity provisions in the market in addition to the discount rate: i) Term Auction Facility (TAF), Primary Dealer Credit Facility (PDCF), ii) Term Securities Lending Facility (TSLF). iii) Term Securities Lending Facility (TSLF); iv) Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility; v) Money Market Investor Funding Facility (MMIFF); vi) Term Asset-Backed Securities Loan Facility (TALF). All these instruments have been introduced to guarantee a more diffuse liquidity in the market.

Under the Term Auction Facility (TAF), the Federal Reserve will auction term funds to depository institutions. All depository institutions that are eligible to borrow under the primary credit program will be eligible to participate in TAF auctions. All advances must be fully collateralised. Each TAF auction will be for a fixed amount, with the rate determined by the auction process (subject to a minimum bid rate). Bids will be submitted by phone through local Reserve Banks.

The Primary Dealer Credit Facility (PDCF) is an overnight loan facility that provides funding to primary dealers in exchange for a specified range of eligible collateral and is intended to foster the functioning of financial markets more generally.

The Term Securities Lending Facility (TSLF) is a weekly loan facility that promotes liquidity in Treasury and other collateral markets and thus fosters the functioning of financial markets more generally. The program offers Treasury securities held by the System Open Market Account (SOMA) for loan over a one-month term against other program-eligible general collateral. Securities loans are awarded to primary dealers based on a competitive single-price auction.

The Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility is a lending facility that provides funding to U.S. depository institutions and bank holding companies to finance their purchases of high-quality asset-backed commercial paper (ABCP) from money market mutual funds under certain conditions. The program is intended to assist money funds that hold such paper in meeting demands for redemptions by investors and to foster liquidity in the ABCP market and money markets more generally.

**Table 9: Federal Reserve assets (in USD, billions)**

	4 July 2007	2 Jan. 2008	19 March 2008	24 Sept. 2008	14 Jan 2009
<b>Securities</b>					
Held outright	790.6	740.6	660.5	486.6	505.3
Repurchase agreements	30.3	56.3	62.0	86.0	40.0
<b>Loans</b>					
Primary credits	0.2	4.9	0.12	39.3	66.5
Term auction credit		40.0	80.0	262.3	371.3
Primary dealer credit			28.8	105.7	33.4
ABCP-MMMF Liquidity <sup>2</sup>				72.7	16.1
Other credit extensions				44.6	0.0
Other assets and reserves <sup>1</sup>	59.3	84	49.3	116.7	1026.1
<b>Total assets</b>	<b>880.4</b>	<b>925.7</b>	<b>890.7</b>	<b>1213.9</b>	<b>2058.4</b>

1. Includes foreign reserves, gold and other assets

2. Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility

The Money Market Investor Funding Facility (MMIFF) will provide funding to purchase assets including USD denominated CDs and CPs issued by highly rated financial institutions with 90-day maturities or less from money market mutual funds. The facility acts alongside the CPFF and AMLF programs by providing liquidity to the money markets.

The Term Asset-Backed Securities Loan Facility (TALF) will help market participants meet the credit needs of households and small businesses by supporting the issuance of asset-backed securities (ABS) collateralized by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Administration (SBA).

The massive injection of liquidity in the market and its management has deeply changed the overall amount asset of the Federal Reserve and its composition (Table 9). Before crisis, the Fed had total assets amounting to USD 880 bn, while currently it has almost the double (nearly USD1500 bn). Before the crisis, the Fed had nearly USD 800 billion in securities outright. That amount has been reduced to nearly USD 500. Repurchase agreements used to be close to USD30 bn now are in the order of USD 80 bn. Prior to January 2008 lending was insignificant now it exceeds USD 450 bn (more than 50 percent of total assets before the crisis).

Source: Federal Reserve

89. Finally, the importance of US dollar liquidity pressures for Euribor spreads highlights the global integration of funding markets and the importance for central banks to take into account international spillovers of shocks in their decisions. More frequent cooperation and communication between central banks, including information sharing, becomes ever more important during a crisis.

90. Looking forward, significant differences in monetary policy stances are likely to persist between the OECD countries and emerging market economies, reflecting different positions in the cycle or speculative attack against the currency<sup>27</sup>. Moreover, the same monetary response to financial crisis can have asymmetric effects among different economies (Christiano *et al.*, 2002). In particular, while an interest rate cut will produce an expansion in flexible economies (characterised by substantial substitution possibilities among factors of production, and not too great diminishing returns), it can exacerbate the recession in relative inflexible economies.

### ***Strengthening the resilience of the economies***

91. The financial crisis has highlighted the weaknesses of the current regulatory and policy frameworks and the need to strengthen the resilience of the economies. Changes to the systems could help raise their counter-cyclicality and increase the ability of economies to adjust to exogenous shocks.

#### *Are countercyclical fiscal policies useful?*

92. Apart from *ad hoc* intervention and temporary measures (stimulus), it could be useful to implement (or strengthen) a framework of counter-cyclical discretionary fiscal policy aimed at pursuing a stable structural or long-term budget balance that allows for strongly counter-cyclical fiscal deficits.

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27. The latter has prompted some European countries to raise their interest rates despite the economic slowdown.

93. The importance of automatic stabilisers as an instrument to provide insurance against output shocks has been extensively analysed in the literature.<sup>28</sup> The results suggest that while some of the items of governments spending and revenue are found to be countercyclical, the amount of GDP shock smoothed by fiscal variables is not very large.<sup>29</sup> Thus, the effect of automatic stabilisers in reducing output fluctuations could be augmented. Policy in this direction could be, for example, an increase in the progressivity of the revenue system; change in certain tax, transfer, or spending programs to introduce links to the state of the economy following simple rules; adoption of fiscal rule which could lead to less discretionary and more stabilising spending (Arreaza *et al.*, 1998).

*Should monetary policy lean against the wind?*

94. The role of asset prices in monetary decision is still under discussion. On the one hand, it can be argued that interest rate policy should not react to asset prices and credit expansion over and above their estimated implications for inflation and real and financial stability. Indeed, it is difficult to assess at what level interest rates should be set to correct for a potential asset price imbalance. On the other hand, models for asset prices exist and it should not be more difficult to use these, than for instance, to estimate the output gap. Moreover, by raising interest rates at an early stage when asset prices are starting to accelerate and before the expansion in credit has become too sharp, the central bank can achieve somewhat lower inflation than is desirable in the short term. Somewhat tighter monetary policy than otherwise could also be able to counter an over-optimistic pricing of financial assets and properties.

95. Finally, financial market changes coupled with monetary policy that focus exclusively at inflation developments can allow the build up of financial imbalances similar to those at the origins of the current financial crisis (Borio and White, 2004). To this extent, monetary policy should be alert to the possibility that financial imbalances can also build up when inflation is low and stable and stand ready to occasionally lean against those imbalances as they develop even if near-term inflation pressures are not apparent.

96. The ECB's two-pillar strategy aims at price stability by relying on an analysis of economic analysis (first pillar) and other monetary and financial indicators (second pillar). This framework is flexible and can help to guarantee financial stability in European markets if optimally used. The first pillar can indeed be seen as providing information on the volume counterpart of asset price developments. In addition, the second pillar comprises a large set of information from domestic and international economic indicators from the real and financial sectors (wages, import prices, interest and exchange rates etc.). The content of the second pillar could be even broaden and take explicit account of asset prices and volume in its monetary policy framework.

*Housing markets and mortgage lending*

97. The crisis has underlined the importance of well-functioning housing markets. Over the long-term, the US experience suggest that one important lesson from the crisis is to leave in the future the securitisation of mortgages to the private sector to foster competition and limit moral hazard risks (OECD, 2008).

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28. See, for example, Asdrubali *et al.* (1996); Auerbach and Feenberg (2000); Blanchard and Perotti(2002); Farina and Tamborini (2004); Galí and Perotti (2003); Goodhart and Smith (1993); Giorno *et al.* (2002); Mélitz and Zumer (2002).

29. See, for example, Afonso and Furceri (2008); Arreaza *et al.* (1998); Furceri (2008b).

*Regulating financial and capital markets: options for reform*

98. Over the medium to long-term, structural policies should be put in place to ensure the efficient functioning of financial systems and maintain the stability of the real economy. This needs to be done along three lines. Reducing cyclicality of the financial system is a key element in order to limit the abruptness of the financial crisis and to reduce its impact on real economic activity (Box 8). Increasing transparency is also fundamental in order to remove uncertainty and limit moral hazard problems. Policies should be devoted to reduce the uncertainty surrounding the assessment of credit risk and increase transparency in financial reporting and disclosure.<sup>30</sup> Finally, the financial crisis has shown the need for strengthened financial market regulation. It is important however to resist any temptation to revert to a too conservative banking system, as future challenges such as tackling climate change, will require substantial technology financing.

**Box 8. Procyclicality of the financial systems**

Financial system procyclicality can be explained by two main factors: *measurement of risk* and *incentives*.

Measurement of risk (near-horizon estimates of short-term volatility, asset and default correlations, probabilities of default and loss given default) tend to move in line with the cycle. In fact, measures of risk tend to increase as tensions arise, triggering strains, and tend to decrease during the economic expansion phase, as vulnerability and risk becomes less perceived.

The second source is distortions in incentives. Even if risk measurement would not lead to procyclicality, distorted incentives can by themselves do.

A first distortion involves the principal-agents problem between the providers and users of funds. Many financial contracts collaterals or margin requirements are procyclical. These instruments are a way for lenders to protect themselves from actions taken by borrowers that could erode the value of the loans.

A second incentive distortion involves actions that may be rational from the perspective of individual agents but, collectively, may result in undesirable outcomes. For instance, individual retrenchment at times of stress can be self-defeating, by inducing fire sales or a credit crunch that can exacerbate financial strains. Individual agents naturally treat prices and macroeconomic conditions as independent of their actions, and usually fail to take into account the fact that, *collectively*, they can strongly influence them.

99. These reforms can be implemented in various ways. Instruments should be chosen according to their ability to reduce asymmetry of information, minimise moral hazard, correct incentives or correct regulatory failures. Different options have been put forward by international organisations, in particular in the context of the Financial Stability Forum (Table 10).

*Enhancing international cooperation*

100. For the longer run, the probability of future crises can be lowered by stepping up international cooperation. In particular, governments and central banks need jointly to improve world standards for prudential supervision and regulation of financial institutions, and to monitor and enforce those standards. This will lower the risk of unilateral action that could be very detrimental to competition. Cooperation will in particular be vital to ensure smooth exit strategy from the emergency measures that have been put in

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30. According to Borio (2008), this strategy would allow to distinguish three dimensions of the information provided about any firm: i) the point estimates of current value, income and cash flows; ii) the statistical dispersion for these estimates ; iii) the uncertainty associated with the imperfect measurement of the first two types of information.

place in most economies. Greater cooperation will be needed to achieve a healthier and more stable evolution of the world's financial markets, and also to put in place mechanisms to increase the market resilience to shocks. This is in particular the case for Europe. Although progress has been made to improve the supervision of large cross-border institutions, achieving a coherent system of financial supervision in the region and managing cross-borders risks will require a more integrated approach (OECD, 2008b.)

**Table 10: Options to reform financial markets in the medium to long-term**

	Reduce asymmetry of information	Minimise moral hazard	Correct incentives	Correct regulatory failures
<b>Reduce cyclical of the financial system</b>				
Encourage firms to rely on better methodologies to assess the risk	X		X	
Introduce regulatory capital standards <sup>1</sup>	X			X
Set-up liquidity buffers in good times to face adverse systemic conditions				
Reduce the cyclical of collaterals <sup>2</sup>			X	
Promote compensation schemes that reflect the underlying risks taken	X	X	X	
<b>Increase transparency</b>				
Standardise and improve the disclosure of off-balance sheet items; increase the transparency of the pricing of collaterals	X		X	
Increase the transparency of the pricing of collaterals	X		X	
Complement point estimates for the value of collaterals with measure of uncertainty	X		X	
Increase transparency of the liquidity management of major financial institutions	X		X	
<b>Strengthen financial market regulation</b>				
Implement insolvency procedures specifically adapted to banks, and ensure that such regimes allow for prompt corrective actions before insolvency occurs improve the functioning of deposit guarantee schemes by ensuring that pay-out occur promptly and ensure that scheme are properly funded			X	X
Increase the harmonisation (internationally) of deposit guarantee schemes to enhance a level playing field	X		X	X
Increase transparency and applicability of procedures for burden sharing in situations of public intervention in a cross-border financial institution	X		X	X
Increase bank supervision, and foster simplicity of the financial framework <sup>3</sup>	X		X	X

1. Examples include : strengthening the through-the-cycle orientation of minimum capital requirements; set the corresponding risk parameters based on smoothed outputs of financial institutions' internal risk models; and add a countercyclical "macro prudential overlay" to the minima based on measures of the financial cycle, put greater emphasis on the leverage ratio to improve the stability of the system over the cycle.
2. This could be done through low minimum ratios as well as conservative and less market-value oriented valuations of the collateral; through-the-cycle margining requirements.
3. The current financial crisis has underlined how the regulations that affect incentives in the US financial system have evolved into a very complex and uneven framework, with substantial opportunities for arbitrage, large gaps in coverage, significant inefficiencies, and large differences in the degree of oversight and restraint upon institutions that engage in very similar economic activities. Some illustrations of this include the large shift in subprime mortgage originations to less regulated institutions; the incentives to shift risk to where accounting and capital treatment is more favourable; and the amount of risk built up in entities that operate in the grey areas of implied support from much larger affiliated institutions.

Source: BIS, IMF, OECD, Borio (2008).

## References

- Afonso, A. and D. Furceri (2008), “EMU enlargement, stabilization costs and insurance mechanisms,” *Journal of International Money and Finance*, 27(2),169-187.
- Ahrend R., B. Cournède and R. Price (2008), “Monetary Policy, Market Excesses and Financial Turmoil”, *OECD Economics Department Working Paper*, 597.
- Allen F. and E. Carletti (2008), “The role of Liquidity in Financial Crises”, Federal Reserve Bank of Kansas 2008 Symposium “Managing Stability in a Changing Financial System”.
- Arreaza, M., B. Sorensen and O. Yosha (1998), “Consumption Smoothing through Fiscal Policy in OECD and EU Countries”, *NBER Working Papers*, 6372.
- Aghion, P., P. Bacchetta, R. Ranciere and K. Rogoff (2006), “Exchange Rate Volatility and Productivity Growth: The Role of Financial Development”, *NBER Working Papers*, 12117.
- Altunbas, Y., L. Gambacorta. and D. Marqués ( 2007), “Securitisation and the Bank Lending Channel”, *ECB Working Paper*, 838.
- Asdrubali, P., B. Sorensen and O. Yosha (1996), “Channels of Interstate Risk Sharing: United States 1963-90”, *Quarterly Journal of Economics*, 111, 1081-1110.
- Auerbach, A. and D. Feenberg (2000), “The significance of federal taxes as automatic stabilizers,” *Journal of Economic Perspectives*, Summer, 37-56.
- Bacchetta, P. and S. Gerlach (1997). “Consumption and Credit Constraints: International Evidence,” *Journal of Monetary Economics*, 40, 207–238.
- Bank of England (2003), “Resolution of banking crises: a review”, *Financial Stability Review*, December.
- Bhardwaj G. and R. Sengupta (2008), “Where’s the Smoking Gun? A Study of Underwriting Standards for US Subprime Mortgages”, *Federal Reserve Bank of Saint Louis, Working paper series*, 2008-0.36A.
- Bayoumi, T., and O. Melander (2008), “Credit Matters: Empirical Evidence on U.S. Macro-Financial Linkages,” *IMF Working Paper*, 169.
- Blanchard, O. and R. Perotti (2002), “An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output” *Quarterly Journal of Economics*, 117, 1329-1368.
- Bernanke, B.S. (1983), “Irreversibility, Uncertainty and Cyclical Investments”, *Quarterly Journal of Economics*, 85-106.
- Bernanke, B.S. and M. Gertler (1987), “Financial Fragility and Economic Performance “. *NBER Working Papers*, 2318
- Bernanke, B., and M. Gertler (1995), “Inside the Black Box: The Credit Channel of Monetary Policy Transmission”, *Journal of Economic Perspectives*, 9, 27–48.
- Bernanke, B., C. Lown and B. Friedman (1991), “The Credit Crunch,” *Brookings Papers on Economic Activity*, 2, 205–47.
- Bernanke, B., M. Gertler and S. Gilchrist (1999), “The Financial Accelerator in a Quantitative Business Cycle Framework,” *Handbook of Macroeconomics*, Vol. 1C (Amsterdam: North-Holland), pp. 1341–93.
- Blanchard, O. (2008), “The Tasks Ahead”, *IMF Working Papers*, 262, November.
- Boone, L., N. Girouard and I. Wanner (2001), “Financial Market Liberalisation, Wealth and Consumption”, *OECD Economics Department Working Paper*, 308.
- Bordo et al. (2001), “Is the crisis problem growing more severe?”, *Economic Policy*, April.

- Borio, C. and J. Lowe (2002), “Asset prices, financial and monetary stability: exploring the nexus”, *BIS Working Papers*, 114.
- Borio, C. (2007), “Change and constancy in the financial system: implications for financial distress and policy”, *BIS Working Papers*, 237.
- Borio, C. (2008), “The financial turmoil 2007-?: a preliminary assessment and some policy considerations”, *BIS Working Papers*, 251.
- Bostic, R.W., S. Gabriel and G. Painter (2007), “Housing Wealth, Financial Wealth, and Consumption: New Evidence from Micro Data” Working Paper 2007-01, Ziman Center for Real Estate, University of California, Los Angeles.
- Calomiris, C. (2008). “The Subprime Turmoil: What’s Old, What’s New, and What’s Next”, Manuscript.
- Calomiris, C., D. Klingebiel and L. Laeven (2003), “Financial Crisis Policies and Resolution Mechanisms: A Taxonomy from Cross-Country Experience,” in P. Honohan and L. Laeven (eds.), *Systemic Financial Distress: Containment and Resolution*, Chapter 2, Cambridge University Press.
- Calomiris, W. C. and B. Wilson (2004), “Bank Capital and Portfolio Management: The 1930s “Capital Crunch” and the Scramble to Shed Risk”, *Journal of Business*, 77(3), 421-456.
- Caprio, G., D. Klingebiel, L. Laeven and G. Noguera, G. (2005), “Banking Crisis Database”, in P. Honohan and L. Laeven (eds.) *Systemic Financial Crises*, Cambridge University Press.
- Case, K.E., J.M. Quigley and R.J. Shiller (2005), "Comparing Wealth Effects: The Stock Market versus the Housing Market", *Advances in Macroeconomics*, 5(1), Article 1.
- Christiano, L. J., C. Gust and J. Roldos (2002), "Monetary Policy in a Financial Crisis," *NBER Working Papers*, 9005.
- De Grauwe, P. and G. Schabl (2004), “Exchange Rate Regimes and Macroeconomic Stability in Central and Eastern Europe”, *CESIFO Working Paper*, 1182.
- Díaz-Alejandro, C.F. (1985), “Good-Bye Financial Repression, Hello Financial Crash.” *Journal of Development Economics*, 19 (1–2), 1–24.
- Dziobek, C., (1998), “Market-Based Policy Instruments for Systemic Bank Restructuring”. *IMF Working Paper*, 113.
- Ellis, L. (2008), “The housing meltdown: Why did it happen in the United States?” *BIS Working Papers*, 259.
- Edelberg, W., M. Eichenbaum and J.D.M. Fisher (1999), “Understanding the Effects of a Shock to Government Purchases,” *Review of Economic Dynamics*, Vol. 2 (January), pp. 166–206.
- Farina, F. and R. Tamborini (2004), “‘Set a sufficiently ambitious budget target and let automatic stabilizers work’: Will it really work in the European Monetary Union?” *Open Economies Review*, 15, 143-168.
- Fatás, A. and I. Mihov (2001), “The Effects of Fiscal Policy on Consumption and Employment: Theory and Evidence,” *CEPR Discussion Paper*, 2760.
- Fatás, A. and I. Mihov (2003), “The Case for Restricting Fiscal Policy Discretion”, *Quarterly Journal of Economics*, 118, 1419-1447.
- Fatás, A. and I. Mihov (2006), “The Macroeconomics Effects of Fiscal Rules in the US States”, *Journal of Public Economics*, 90, 101-117.
- Furceri, D. (2008a). “Long-Run Growth and Volatility: Which Source Really Matters?” *Applied Economics*, (forthcoming).

- Furceri, D. (2008b) “Stabilization Effects of Social Spending: Empirical Evidence from OECD Countries”, manuscript.
- Furceri, D. and A. Mourougane (forthcoming), “Estimates of Financial Crisis’ Net Fiscal Costs: Past and Current Experiences”, Mimeo.
- Friedman, M. and A. Schwartz, A. (1963). *A Monetary History of United States, 1867-1960*. Princeton, NJ: Princeton University Press.
- Galí, J. and R. Perotti, 2003, “Fiscal policy and monetary integration in Europe,” *Economic Policy*, 37, October, 533-572.
- Galí, J., D. López-Salido and J. Vallés (2007), “Understanding the Effects of Government Spending on Consumption,” *Journal of the European Economic Association*, Vol. 5 (March) pp. 227–70.
- Garber, P. and S. Lall (1998), “Derivative Products in Exchange Rate Crises,” in R. Glick, *Managing Capital Flows and Exchange Rates: Perspectives from the Pacific Basin*, New York, Cambridge University Press.
- Giorno, C., P. Richardson, D. Roseveare and P. van den Noord (1995), “Potential output, budget gaps, and structural budget balances,” *OECD Economic Studies* 24, 167-209.
- Goodhart, C. and P.J.R. DeLargy (1999). “Financial crises: plus ça change, plus c'est la meme chose”, *LSE Financial Markets Group Special Paper*, 108.
- Goodhart, C. and S. Smith (1993), “Stabilization”, *European Economy, Reports and Studies*, 5, 417-56.
- Gonzalez-Hermosillo, B. (2008). “Investors Risk Appetite and Global Financial Market Conditions”, *IMF Working Paper*, 85.
- Greenlaw, D., J. Hatzius, A. Kashyap and H. Shin (2008), “Leveraged Losses: Lessons from the Mortgage Market Meltdown,” draft paper prepared for US Monetary Policy Forum Conference.
- Greenspan, A. and J. Kennedy (2005), “Estimates of Home Mortgage Originations, Repayments, and Debt on One-to-Four-Family Residences”, *Finance and Economics Discussion Series* 2005-41, Board of Governors of the Federal Reserve System, Washington, D.C.
- Guichard, S. and D. Turner (2008), “Quantifying the effect of financial conditions on US activity”, *OECD Economics Department working paper*, 635.
- IMF (2008a), *Global Financial Stability Review*.
- IMF (2008b), “Financial Stress, Downturns, and Recoveries”, *World Economic Outlook*.
- Kaminsky, G.L. and C.M. Reinhart (1999). “The Twin Crises: The Causes of Banking and Balance of Payments Problems”, *American Economic Review*, 89, 473-500.
- Kaminsky, G. L., C.M. Reinhart and C.A. Végh (2004), “When It Rains, It Pours: Procyclical Capital Flows and Policies,” in M. Gertler and K. S. Rogoff, eds. *NBER Macroeconomics Annual 2004*, Cambridge, Mass: MIT Press, 11–53.
- Kashyap, A. and Stein, J. (1995). “The Impact of Monetary Policy on Bank Balance Sheets,” *Carnegie-Rochester Conference Series on Public Policy*, 42, 151–95.
- Keefer, P. (2007), “Elections, Special Interests and Financial Crises”, *International Organization* 61: 607-41.
- Kiyotaki, N. and J. Moore (1997). “Credit Cycles,” *Journal of Political Economy*, 105, 211–48.
- Krueger, A. and A. Tornell (1999), “The Role of Bank Restructuring in Recovering from Crises: Mexico 1995-98,” *NBER Working Paper*, 7042.

Knight, M. (2008), “Some reflections on the future of the originate-to-distribute model in the context of the current financial turmoil”, Speech at the Euro 50 Group Roundtable on “The future of the originate and distribute model”, London, 21 April 2008.

Iacoviello, M. (2004), “Consumption, House Prices and Collateral Constraints: a Structural Econometric Analysis,” *Journal of Housing Economics*, 13(4) pp. 305-321.

Johnson, D.S., J.A. Parker and N.S. Souleles (2006), “Household Expenditure and the Income Tax Rebates of 2001,” *American Economic Review*, Vol. 96 (December), pp. 1589–610.

Lane, P. (2003). “The cyclical behaviour of fiscal policy: evidence from the OECD”, *Journal of Public Economics*, 87 (12), 2261-2675.

Lettau, M. and S.C. Ludvigson (2004), “Understanding Trend and Cycle in Asset Values: Reevaluating the Wealth Effect on Consumption,” *American Economic Review*, 94(1) pp. 276-299.

Ludvigson, S., (1998), “The Channel of Monetary Transmission to Demand: Evidence From the Market for Automobile Credit,” *Journal of Money, Credit and Banking*, 30, 366–383.

Ludvigson, S. and C. Steindel (1999). “How Important is the Stock Market Effect on Consumption?” *Federal Reserve Bank of New York Economic Policy Review* 5, 29-52.

Lumpkin, S. (2008), “Resolution of Weak Institutions: Lessons Learned from Previous Crises”, *Financial Market Trends*, OECD, Paris.

McKinnon, R. (2000), “The East Asian Dollar Standards, Life after Deaths?”, *Economic Notes*, 29, 31-82.

Méltitz, J. and F. Zumer (2002). “Regional Redistribution and Stabilization by the Central Government in Canada, France, the UK and the US: A Reassessment and New Tests,” *Journal of Public Economics*, 86 (2), 263-286.

Mitchell, W.C. (1941). *Business Cycles And Their Causes*, University of California Press.

Mishkin, F. S. (1996) “Understanding Financial Crises: A Developing Country Perspective,” in Michael Bruno and Boris Pleskovic, eds., *Annual World Bank conference on development economics*. Washington DC.

Mountford, A. and H. Uhlig (2002), “What Are the Effects of Fiscal Policy Shocks?”, *CEPR Discussion Paper*, 3338.

Nyberg, P. and V. Vihriälä (1993), “Finish Banking Problems: Handling and Prospects,” *Bank of Finland Bulletin*, 67, 3—7.

OECD (2002), “Experiences with the ‘Resolution of Weak Financial Institutions in the OECD Area”, *Financial Market Trends*, 82, June.

OECD (2008a), *Economic Outlook* 84, November.

OECD (2008b), *Economic Survey of the Euro Area*, November.

Peek, J. and E. Rosengren (1995), “The Capital Crunch: Neither a Borrower Nor a Lender Be,” *Journal of Money, Credit and Banking*, 27, 625–38.

Pindyck, R.S. (1991), Irreversibility, Uncertainty and Investments, *Journal of Monetary Economics*, 1982, 139-162.

Pindyck, R.S and A. Solimano (1993), Economic Instability and Aggregate Investments, *NBER Macroeconomics Annual*, eds. O.J. Blanchard and S. Fisher, The MIT Press, Cambridge.

- Piazzesi, M., M. Schneider and S. Tuzel (2007), "Housing, Consumption, and Asset Pricing", *Journal of Financial Economics* 83, pp. 531-569.
- Poterba, J. M. (2000), "Stock Market Wealth and Consumption", *Journal of Economic Perspectives*, 14, 99-118.
- Rose, A.K. (2000), "One Money, One Market: Estimating the Effect of Common Currencies on Trade", *Economic Policy*, 30, 7-46.
- Reinhart, C.M. and K. Rogoff (2008a), "Is the 2007 US Sub-Prime Financial Crisis So Different? An International Historical Comparison", *American Economic Review*, 98,339-344.
- Reinhart, C.M. and K. Rogoff (2008b), "This Time is Different: A Panoramic View of Eight Centuries of Financial Crises", *NBER Working Paper*, 13882.
- Rogoff, K. (2008), "Contre le Plan Paulson", *les Echos*, 6 October.
- Romer, C.D. and D.H. Romer, 2007, "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks," *NBER Working Paper*, 13264.
- Serven, L. and A. Solimano (1993)," Private Investment and Macroeconomic Adjustment: a Survey", *The World Bank Research Observer*, 7, 3-20.
- Tracy, J., H. Schneider and S. Chan (1999), "Are Stocks Overtaking Real Estate in Household Portfolios?", *Current Issues in Economics and Finance*, 5, Federal Reserve Bank of New York.
- Velasco, A. (1987), "Financial Crises and Balance of Payments Crises: A Simple Model of the Southern Cone Experience." *Journal of Development Economics*, 27 (1-2), 263-83.
- VOX (2008), "The G7/8 Finance Ministers Meeting: An Opportunity", 9 October.