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FINANCIAL CRISES: PAST LESSONS AND POLICY IMPLICATIONS

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ABSTRACT/RÉSUMÉ

Financial crises: past lessons and policy implications

Abstract: This overview paper examines the financial crisis in light of past country experience and economic theory and sets out some 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, policy recommendations for both addressing the economic downturn and enhancing the resilience of the economies over the medium to long-term are discussed.

JEL classification: E6, G1, E44
Keywords: financial crisis; macroeconomic policies; fiscal costs

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Crises financières: leçons du passé et implications de politiques économiques

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 préliminaires de politiques économiques. 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 budgétaire (brut et net). Les répercussions de la crise sur les variables macro-économiques clefs sont ensuite présentées. Au final, des recommandations de politiques économiques sont discutées pour à la fois répondre au retournement économique et accroître la résilience des économies sur le moyen et le long terme.

Classification JEL : E6, G1, E44
Mots clés : crise financière ; politiques macroéconomiques ; coûts budgétaires

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FINANCIAL CRISES: PAST LESSONS AND POLICY IMPLICATIONS

by Davide Furceri and Annabelle Mourougane[1]

I. Introduction

1. Financial market stress intensified and reached new heights in October 2008. The failure of Lehman Brothers was a turning point, transforming the financial turmoil that started a year earlier to the most serious financial crisis over the past century. The financial disruption will bear on growth perspectives over coming years, despite the implementation of substantial and concerted crisis resolution policies.

2. Financial crises are generally characterised by a collapse of trust between financial institutions and their creditors. Increased uncertainty materialised into soaring premia on short-term liabilities and a squeeze on liquidity. When premia reach a very high level, the liquidity problem becomes a solvency and capital shortage problem, 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 with 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 in late 1980s and 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 to draw some 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 polices 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 sets out some preliminary policy recommendations.

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

- The current financial crisis resembles past episodes in some dimensions. It is essentially an abrupt adjustment to past imbalances resulting from strong credit growth, fuelling higher equity and house prices. This crisis differs, nonetheless, from other episodes notably regarding the massive underpricing of risk and explosive lending to non-creditworthy households (sub-prime

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1. OECD Economics Department, Office of the Chief Economist. The authors would like to thank K. Schmidt-Hebbel, J. Coppel, B. Cournède, R. Ahrend, V. Koen, J.L. Schneider, L. Willard and many other colleagues in the Economics Department, in particular country Desks, for helpful comments and discussions. They would also like to thank Penny Elghadab for excellent editorial support. The text is based on information available up to January 2009.

mortgage debtors) prior to mid-2007. This was the combined result of the saving glut, agency problems and a number of regulatory failures.

- Conventional factors such as asymmetric information explain the rapid spreading of the crisis to other parts of the financial system 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 sub-prime losses for bank credit supply is unique. Another unique element has been the activist role of the monetary authorities and governments. Finally, globalisation through closer integration of markets has certainly sped up contagion effects.

- As in previous episodes, action to address the current financial crisis 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.

- Each policy approach involves trade-offs. 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 through misallocations of capital or through the distortion of incentives and moral hazard risks. 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 market stability and the measures announced are well-suited to re-liquidify interbank markets and reduce bank 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 measures to face possible large cross-border bank failures. Second, small economies may face important sovereign risks and the international community needs to be ready to respond decisively in case emergency measures are needed.

- Policy responses to the crisis 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 economies. This could be done by modifying fiscal frameworks and strengthening the counter-cyclicality 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 reduce the pro-cyclicality of the financial sector and enhance 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 would also be useful.

II. A two-phased crisis

6. The current crisis is characterised by two distinct phases: a period of financial turmoil and limited spreading from July 2007 to 15 September 2008, followed by a total collapse of confidence phase, spreading the crisis throughout the globe. The policy response differed between these two phases. Authorities started by adopting a piecemeal approach, focused on conventional policy measures and *ad hoc* interventions. However, given that these failed to shore-up confidence in the markets, more concerted and systemic rescue packages were subsequently introduced worldwide.

7. 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 mortgage-backed securities (MBS) or related instruments in 2007. Uncertainty regarding balance sheet risks, associated with unknown holdings of 'toxic' and complex derivatives based on sub-prime mortgages led to a rise inter-bank lending premiums in US and European financial markets. Banks announced large write-downs, directly and indirectly linked to the sub-prime mortgage market, in the United States and elsewhere.

8. The autumn of 2008 witnessed a quantum shift in the spreading of the financial crisis with a succession of financial institution failures, notably the investment bank Lehman Brothers (see Table 1). These failures typically reflected fundamental weaknesses.[2] The turbulence led to a consolidation of the financial system as well as the end of the investment bank model in the United States.[3] European markets also experienced crises in the banking system, and a number of large cross-border European banks had to be rescued by governments (*e.g.* the nationalisation of Northern Rock in the United Kingdom).

9. The global money market crisis intensified 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 and the costs of unsecured overnight interbank borrowing surged (Figure 1). Commercial paper funding contracted. Stock prices sharply fell and interbank spreads climbed. Uncertainty led to a flight to quality and heightened default risk, as evidenced by long-term debt default risk spreads and falling Treasury bond yields. Strains spread rapidly outside the banking sector, in particular to pension funds and hedge funds. Credit volume data were difficult to reconcile with these developments in the United States. Indeed, US bank lending to non-financial firms expanded markedly in late September and early October, and interbank lending volumes held up well through September.[4]

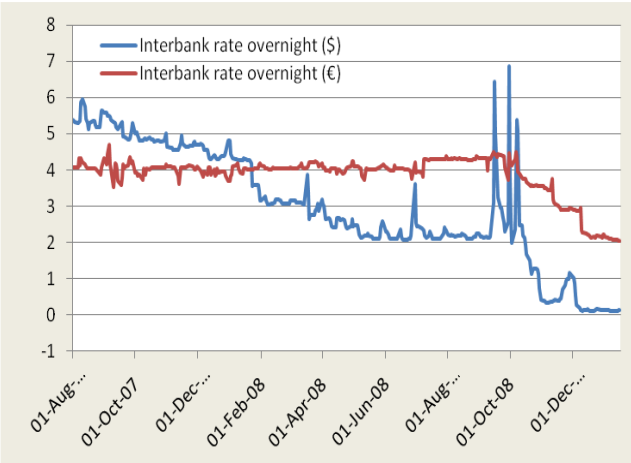
2. For instance, Bear Stearns was largely exposed to sub-prime risk and displayed extremely high leverage.

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

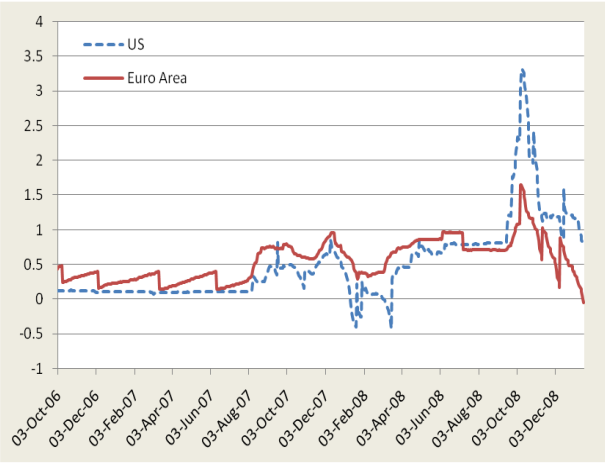
4. A partial explanation for the rise in US commercial bank lending is that JP Morgan Chase took over the assets of Washington Mutual, which was previously a thrift and therefore not accounted for in the Federal Reserve statistics on commercial bank lending. Subsequently, credit data show that lending has started to contract in the United States.

Figure 1. Recent financial market developments

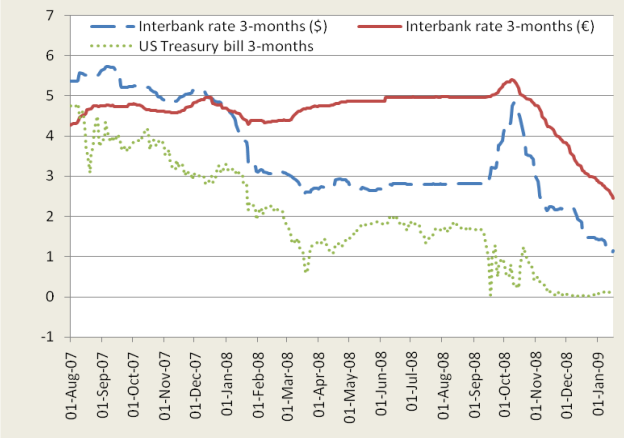
Overnight rates



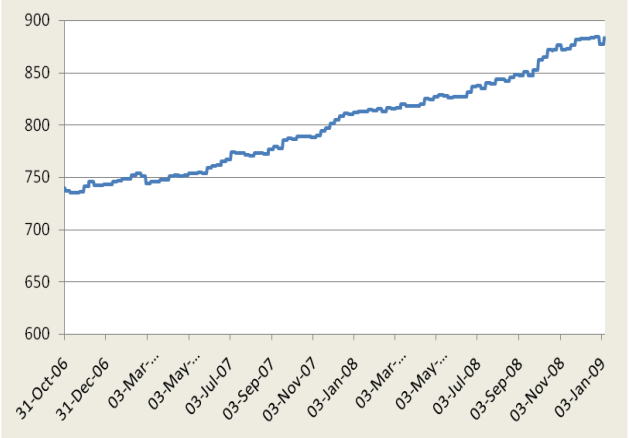
Three-month interbank versus policy rates spreads



US Treasury bond yields and three-month interbank rates



US loans



Source: Datastream.

Table 1: Recent failures of selected financial institutions

Date and country	Event	Fiscal cost
7 February 2008 - United Kingdom	Northern Rock was nationalised	£ 88 billion
14 March - United States	Bear Stearns absorbed by a commercial bank following a significant Federal Reserve subsidy	$ 29 billion
7 September - United States	Freddy Mac and Fannie Mae were de facto nationalised	$ 200 billion
15 September - United States	Lehman Brothers filed for bankruptcy protection	-
17 September - United States	AIG was nationalised	$ 87 billion
29 September – Benelux	Fortis rescued	€16 billion
29 September – United States	Wachovia bought by Citibank	$12 billion
29 September – Germany	Hypo Real Estate rescued	$ 50 billion (raised to 71 on 6 October)
29 September – Iceland	Glitnir rescued	$ 850 million
29 September – United Kingdom	Bradford & Bingley rescued	$ 32.5 billion
30 September – Belgium	Dexia rescued	$ 9.2 billion
30 September – Ireland	Irish banks rescued	$ 572 billion
7 October – Iceland	Lansbanki nationalised	
9 October – Iceland	Kaupthing nationalised	$ 864 million
16 October - Switzerland	UBS rescued	$ 59.2 billion
19 October – the Netherlands	ING	€ 10 billion
20 October – France	French government lent money to 6 large banks	€ 10.5 billion
27 October – Belgium	KBG	€ 3.5 billion
4 November - Austria	Nationalisation of Kommunalkredit Constantia Privatbank was nationalised and sold to five Austrian banks for one euro	
15 January 2009 - Ireland	Anglo Irish Bank nationalised	

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

10. The ineffectiveness of conventional instruments and *ad hoc* interventions led policymakers to introduce rescue packages. Markets reacted favourably to these measures: the flight to quality partly reversed in the United States and Europe; bank credit default swap rates eased considerably; and spreads in three-month interbank markets came down markedly in the United States, though they remained close to their historical peaks in the euro area. Nonetheless, financial markets remained stressed and confidence fragile. Moreover, euro area economies with unfavourable public finance conditions experienced a significant rise in the long-term interest spread *vis-à-vis* Germany and the rating agency Standard and Poor's has downgraded Greece, Spain and Portugal's sovereign debt rating.

11. Another major development is that the conditions of financial stress in the United States and Europe were 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 reached their highest level since 2004. They widened most in countries with large financing needs.

III. Origins and spreading of the crisis[5]

Origins of the crisis

12. The financial crisis owes its origin to both traditional factors that have led to past banking crises and to non-traditional ones that are specific to this crisis.

A number of conventional factors have been at the origin of the crisis…

13. Crises have traditionally been associated with a build-up of imbalances. Typical examples are the Great Depression and the *dot-com* collapse. Herd behaviour and irrationality -excessive inference from recent prices - have compounded asset price and credit expansion in the run-up to previous financial crises. Similar features could be observed in the current crisis.

14. The rapid expansion of credit before the occurrence of a crisis was observed both in the past and in the current crisis (see Figure 2 and Box 1 for the empirical approach to identify and date crises 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 typically 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. In situations of systemic danger to the financial sector, central bank action motivated by crisis management has tended to create moral hazard contributing to future financial imbalances (Ahrend *et al.*, 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 (2008*a*). The dating methods used are those developed by Kaminsky and Reinhart (1999) and Caprio *et al.* (2005). Starting dates are provided in brackets and 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 year T-4 to year T+4, where T is the starting date of the crisis. For the current episode T is 2007.

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

15. In the current case, high credit growth and a lax monetary policy, particularly in the United States, greased the boom mentality. Moreover, changes to the regulatory environment and technological developments supported securitisation, globalisation and consolidation in the financial industry which in turn supported easier credit conditions. While credit expansion in episodes of mild crises only decreased

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

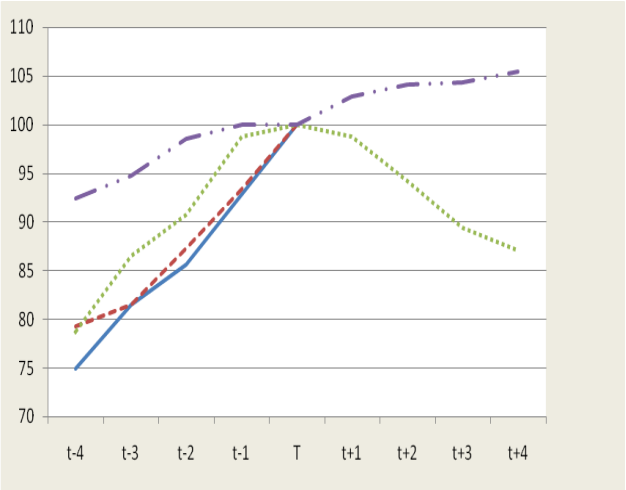
during the first year of the crisis, during deep financial crises credit growth on average decreased for four years. This suggests credit is likely to decline markedly in the years to come.

16. 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

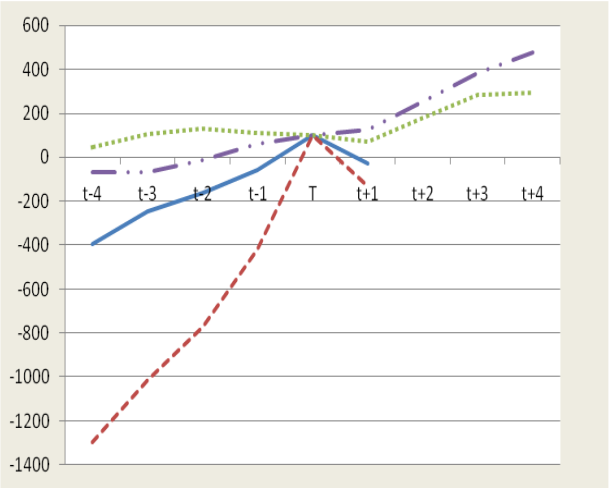
Figure 2. Asset prices and credit growth at times of crisis

(Index at time T=100)

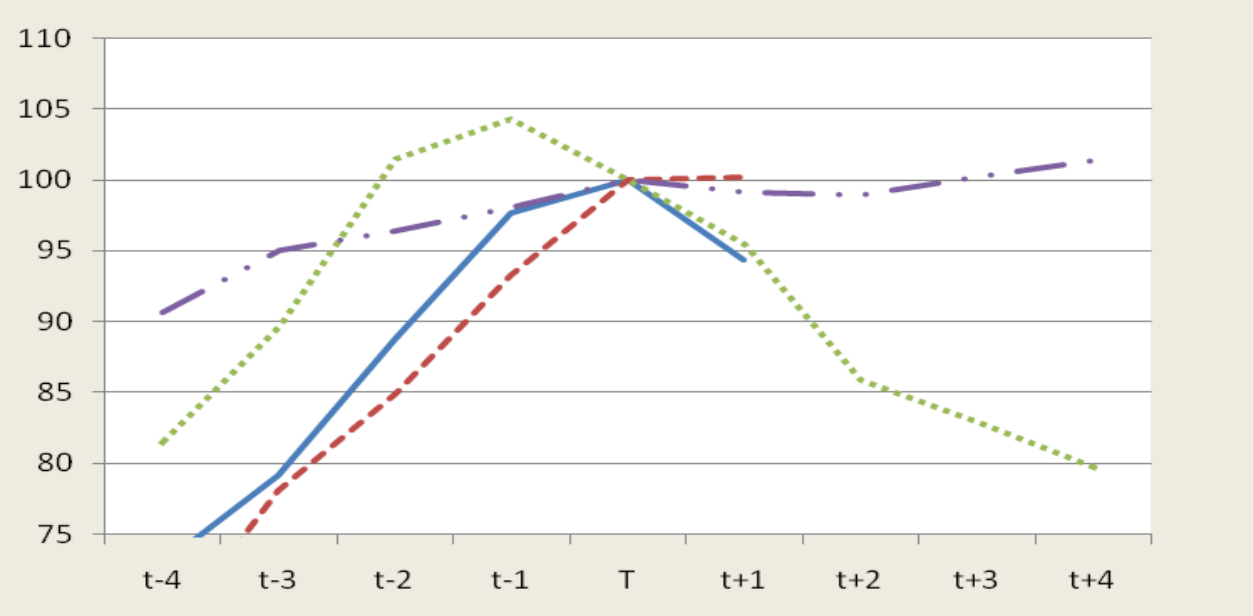
Private credit (% of GDP)



Equity prices



Real housing prices (first quarter of each year)



Source: WDI, World Bank, OECD Analytical database.

characterised by defaults in the banking sector and stagnant 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, while falling prices reduce 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.

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

18. US house price developments have displayed a pattern similar to that observed during past 'deep' banking crises. A number of countries in the euro area experienced similar increases, followed, more recently, by declines. The boom in real estate investment was often driven in past crises by large government homeownership subsidies, which may have encouraged banks and households to take too much risk. In the latest episode, the US financial policy promoted home ownership in several ways, but at the same time arguably increased financial fragility in the real estate market.[6] Home ownership is also subsidised in other countries.

… complemented by new features

19. 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.

20. 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 sub-prime pools prior to the crisis and failed to revise them upward, despite worrying signs such as rapid growth of the sub-prime market (Calomiris, 2008).[7] The underpricing of risks stems from several factors. The very low loss rate during the early history of sub-prime mortgage foreclosures in 2001-02 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 their incentives. Agency problems were exacerbated by changes in bank capital regulations in 2001 and 2004, which reduced sponsors' loss exposure.[8]

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6. Five arrangements either encourage creditworthy borrowers to increase their mortgage leverage or financial institutions to 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 homes; FHA programmes to provide credit; government funding subsidies via Federal Home Loan Bank lending; government initiatives that have encouraged banks to increase low income and minority individuals access 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.

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 sub-prime 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 originators retaining junior stakes in securitisations. Sponsors thus switched from retaining junior stakes to supporting conduits through external credit enhancement, which necessitate lower capital requirements.

21. Second, the global saving glut may have encouraged excessive risk taking by providing a vast pool of resources for investment. The 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. Savings from emerging market economies have, in particular, been a source of credit to US financial institutions.

22. Third, a number of regulatory failures may also have magnified the boom and 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 banks' off-balance sheet vehicles and investment banks from regulatory oversight. This 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 firms and most hedge funds. In addition, comprehensive regulations of financial holding companies were inexistent (*e.g.* in the United States) or inadequate (*e.g.* in the United Kingdom). Liquidity creation outside the banking sector was also important, and part of it escaped regulatory oversight (Ahrend *et al.*, 2008).

23. 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 even though the quality of mortgage credits deteriorated.[9]

Spreading of the crisis to other parts of the financial system and countries

Conventional propagation channels

24. How crises are transmitted has been studied at length (Box 2). Asymmetric information is one of the main conventional factors explaining rapid contagion. 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. A taxonomy of the causes and factors that spread financial crises

What causes financial crises?

A financial crisis can be triggered by a number of factors. One 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 in every cycle.

A 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 such 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

9. Those at the beginning of the sub-prime 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.

would then lead the economic downturn.

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 crises have become more closely related. Usually a banking crisis is followed by a currency crisis, which in turn exacerbates the banking crisis.

What factors drive financial contagion?

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 though their leverage management. A shock in one part of the financial market can thus spread to other parts through a number of channels:

- interbank claims or payment systems: if a bank fails, the financial institutions holding claims on the bank will be weakened. 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;

- information: a fall in price in 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 too.

Change of regime

Under extreme cases arising from a generalised breakdown of short-term lending, money markets and 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 stop and no corporate bonds are issued. The payment system could break down and 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 in 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 credit. Countries with larger financial imbalances and balance sheet vulnerabilities at the outset of an episode of financial crisis experience more severe output contractions.

25. 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 sub-prime 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 reflect a lack of understanding 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

26. New factors have also contributed to the propagation of the shocks. The consequences of sub-prime losses for bank credit supply were at the start of the crisis mitigated by the ability and willingness of financial institutions to issue equity. This occurred despite huge adverse selection problems.[10] It contrasts

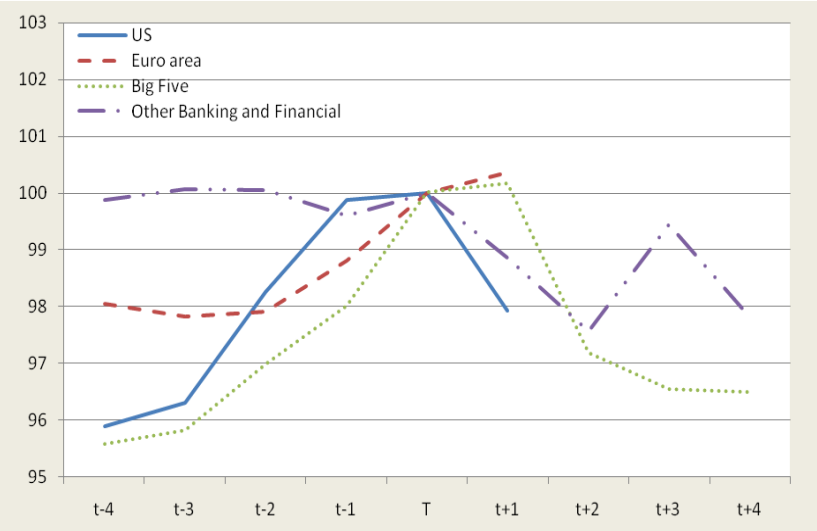
10. Any bank trying to issue equity at a time where large losses remain unidentified will experience a large decline in its stock price, as the market may infer the offering institution may have unusually high losses. This will dilute the stock value of existing shareholders.

starkly with bank capital crunches of the 1930s and 1989-91, 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 became extremely difficult when share prices started to fall and investors suffered 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.

27. The activist role of the monetary authorities and governments has been unique. The US Federal Reserve and the Treasury tried to ease liquidity constraints, via discount window operations and other assistance programmes targeted to support particular financial institutions. The Federal Reserve has dramatically cut the Federal Fund target rates since mid-2007, leading to a marked fall in the 3-month interest rate (Figure 3). Other central banks have also promptly cut policy rates. Bank liquidity reserves (relative to 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 ease financial stress. Massive injection of liquidity by central banks suggests a similar pattern is taking place in the United States and the euro area.

Figure 3. Short-term interest rate movements at times of crisis

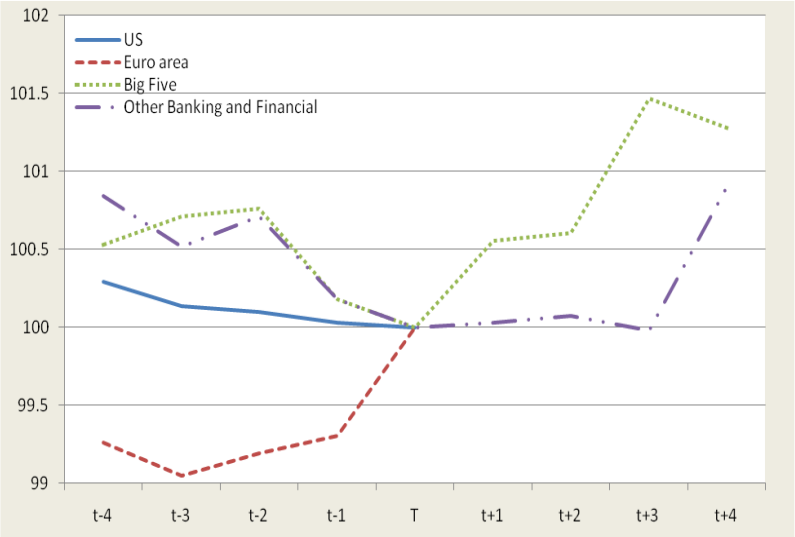
(Index at time T=100)



Source: OECD Analytical database.

Figure 4. Bank liquidity reserves (% of total bank assets) at times of crisis

(Index at time T=100)



Source: WDI, World Bank.

International contagion effects

28. With globalisation, the speed of propagation of crises is likely to have increased. Globalisation also increases the risk of contagion where there is a change in expectations unrelated to fundamentals.

29. Historical experience suggests that not all financial crises spread to other countries. However, in general, shocks in centre countries 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 appear to explain contagion effects (Kaminsky, Reinhart and Vegh, 2003).

A combination of market, regulatory and policy failures

30. 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: Summary of the main failures explaining the origins of the crisis

Policy failures	Regulatory failures	Market failures
- Overly accommodative monetary policy	- Some features of Basel capital requirements	- Herd behaviour and irrationality
- Exchange rate pegging system in some emerging economies	- Exemptions of commercial banks' off-balance sheet and investment banks from regulatory oversight	- Agency problems
	-Lack of coverage by regulators of systematically important sectors of the financial system.	
	- Lack of transparency of the originate-to-distribute model	

IV. Containing the financial crisis: the policy response

The very high risks of inaction

31. The losses so far from the current crisis are immense. According to OECD estimates, they come close to $450 billion in the sub-prime market. In October 2008, the IMF estimated losses from the global financial crisis to the US banking system of about $1.4 trillion (IMF, 2008). But the downturn could be more pronounced and prolonged, sparking additional losses. Indeed, recent developments have cast doubt on the solvency of financial institutions and recapitalisation of banks has become more difficult.

32. The world economy could incur significant damage too, if the underlying causes of the crisis are not addressed. A lack of confidence, insufficient inter-bank lending and deleveraging can undermine the real economy through adverse effects on consumption and investment, for example. Moreover, day-to-day business functions, such a leasing, inventory management and trade credit are also affected. Risks of deeper economic downturn and of a feedback between stress in financial markets and the real economy would increase. This would put more loans at risk and create a vicious cycle of falling asset prices, deteriorating ability to repay loans and diminishing credit flows. The more these difficulties persist, the higher the cost of inaction. Moreover, contagion to other countries would raise further the costs of inaction.

33. At the same time government interventions entail fiscal costs. Rescue packages can also generate indirect costs via misallocations of capital or the distortion of incentives through moral hazard. Support provided to banks in a crisis could increase bank risk-taking in the future by making assistance appear more likely. Hence, in a widespread crisis the authorities face a trade-off between maintaining financial stability today – through offering protection to failing banks – and jeopardising future financial stability by increasing moral hazard later on. Conditions for moral hazard could be reduced by imposing costs on all responsible parties and getting the resources back into productive use as soon as possible. Intervention usually also has redistribution effects. Overall, the benefits of preventing a deep economic downturn should be balanced against the costs of intervention.

A typology of policy responses to financial stress

A two-phased approach

34. 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 loan 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 for 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 is required not least to prevent erosion of confidence in credit markets. Postponing a comprehensive approach can entail large systemic, fiscal, and real costs.

Systemic rescue plans can encompass several types of instruments

35. A large number of instruments are available to address financial crises. Identifying the best policy approach involves trade-offs. In this section the effects of the different market-based instruments, their relative advantages and drawbacks are discussed.[11]

36. Following Dziobek (1998), crisis resolution policy can be classified into one of three types (Table 3). They are: 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

	Advantages	**Limits**
Financial instruments	Improve banks' balance sheets and help banks return to solvency.	Do not address the underlying causes of weakness 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 design of 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 instability and tight fiscal conditions

11. Indeed, the use of non-market instruments was found to be very costly and has been progressively abandoned since the 1930s.

State support through bonds	Bank asset quality improves Income improves to the extent an interest rate is paid on bonds	
Equity injection	The government may realise gains once the bank returns 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	Restores confidence as the government assures markets of the bank's viability	Assumes that existing owner or new owners have sufficient funds and confidence in the bank's future profitability
Operational instruments		
New management and staff consolidation	Restores confidence	Can be difficult and expensive Can be prevented by legal barriers
Improve internal governance	Restores confidence	Takes time
Facilitate entry of foreign banks or twinning	Brings skills and banking expertise	Foreign banks not familiar with domestic regulation and can have too high expectations
Structural instruments	Address the underlying problems of the sector and focus on strengthening competition and soundness	
Regulatory forbearance	Lowers bank compliance costs	Can distort incentives if done for a long period Difficult to end the measure
Implementing a firm closure/exit policy	Provides incentives for all banks to cooperate actively in the restructuring efforts	Complicated task, which requires legislative action and the establishment of appropriate court procedures Can disrupt the payment system and erode public confidence Implies potentially arbitrary application
Restructuring 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	Permits banks to refocus on core activities Can have multiplier effects and lower spreads	Complicated tasks which require skilled staff and resources Takes time Effect on capital depends on transfer price (relative to market value) Requires good regulatory environment (bankruptcy law, low corruption etc…) Need to monitor progress of the asset management activities
Privatisation	Levels the playing field between private and previous state-owned companies	Takes times and requires prior restructuring

		Presupposes available buyers
Enterprise restructuring	Complement the banking sector restructuring	Not always easy to identify insolvent firms

Source: Partly based on Dziobeck (1998).

37. 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 Resolution Trust Corporation (RTC) 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 a sound institutional framework. In this context, any weaknesses in the regulatory, 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.[12] 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.

38. 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 others, 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 slowdowns.

39. Historically, 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, blanket loan 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 up 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.[13]

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

13. 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.

40. Each instrument presents advantages 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 a 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.

41. Capital injections and the purchase of toxic assets can be considered as complements rather than substitutes, and in practice both have been combined to restore banks' 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 offers 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 faces important implementation challenges, the main one being the identification and pricing of toxic assets. In addition, the overall quantity of troubled assets should be limited and manageable for this measure to be successful.

42. In most cases, financial measures involve sizable distributional effects as they reallocate losses from banks or firms to taxpayers. Injecting capital through preference shares will, for instance, put the burden on the 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 responded to the current crisis?

43. 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 first adopted emergency measures in response to the financial shocks. Deposit insurance ceilings were pre-emptively raised in most jurisdictions, though not in a consistent way.[14] Bans or limits on short-selling have also been introduced.

44. 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 measures to re-establish interbank lending and help recapitalise banks (Table 4). Such a plan is likely to be less costly and more effective than a piecemeal approach. In addition, more international cooperation has been called for.

45. The United States was the first to announce a comprehensive rescue package. It originally focused on buying troubled mortgage-related assets, but was complemented a few weeks later by capital injections. The United Kingdom led interventions, concentrated 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 crisis resolution policies. 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 enlarged its system of guarantees though not going as far as buying commercial papers, as the United States did. Subsequently rescue plans have been announced in a number of European economies. Although financial caps to rescue 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

Recommendation	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 long-term liquidity pools to purchase assets (by issuing 10-year government bonds)	X	
Absorb significant amounts 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	X

Source: Baldwin and Eichengreen (2008).

14. Deposit insurance schemes were created in Australia and New Zealand, where they did not exist before.

Box 3. Main elements of the UK rescue packages

In October 2008, the UK government has offered to inject equity through preference shares into a wide range of eligible institutions. The 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 allows tax payers to gain if rescued banks finally recover. In addition, there is specific conditionality regarding dividend policies, executive compensation and lending policies. Injection will amount to up to £ 50 billion.

Subsequently the Government announced it will make capital investments to the Royal Bank of Scotland and upon successful merger with HBOS and Lloyds TSB for a total of £ 37 billion.

The Bank of England special liquidity scheme will double in size, making at least £200 billion of readily cashable Treasury bills available for banks through swaps 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.

HM 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 also created a guarantee scheme for asset-backed securities and the Bank of England extended its discount window facility and set up a programme to buy assets such as corporate bonds and commercial paper. In addition, the Monetary Policy Committee was also allowed to use asset purchases for monetary policy purposes.

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

47. To sharpen incentives, strings have been attached to the use of these instruments. For instance, the measures are often time-limited, incur a fee, or entail operational measures on executive pay or dividend policy. Some countries have also opted to use 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 corporate bonds or commercial papers and the United Kingdom has put in place the framework to do so.

48. These rescue plans have helped to stabilise 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 end, countries need also to encourage private-sector capital injections. Identifying

Table 6: Overview of main financial crisis responses in OECD countries (September 2008-January 2009)

	Traditional monetary instruments		Crisis resolution instruments						
	Liquidity injections	Interest rate changes	Increased guarantee of private deposits	Guarantees for bank loans or debt	Funds to purchase commercial papers	Purchase mortgage bonds	Ban or restrict short-selling	Capital injections[1]	Option to purchase toxic assets
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	x	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	Cut	x						
Portugal			x	x				x	
Sweden	x	Cut	x	x		x		x	
Spain			x	x		x	x		
Mexico	x	Cut		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 corporations, but so far this option has not been used.

Source: OECD.

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 may also need to be phased out as they increase uncertainties and are likely to slow the pace of crisis resolution (OECD, 2008*b*). More generally, transparent balance sheets are essential to ensure sound information flows and efficient markets in the future.

49. Macroeconomic stabilisation policies have also been deployed. 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 cuts was in some cases internationally coordinated.[15] At the same time, steps to provide liquidity to the banking system have varied in scope. Some 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 swap facilities between the Federal Reserve or the ECB and small economies have been established. In addition, unconventional monetary policy tools, such as credit easing, have increasingly been used.

50. Given the severity of the downturn and the impairment of traditional monetary transmission channels, many countries have also taken fiscal action. The magnitude of the fiscal stimuli has varied widely across countries. There have been sizeable fiscal stimuli notably in the United States, China and Germany. In Japan, high public indebtedness has limited the scope for fiscal stimulus. Moreover, a co-ordinated discretionary response to the slowdown has been agreed at the European level, and individual European countries have announced fiscal stimulus packages.

The US Emergency Economic Stabilization Act (EESA)

51. The adoption of the ESSA systemic rescue plan in the United States was clearly necessary to stabilise financial markets (Box 4). It is limited in size to $700 billion to restrict the potentially huge fiscal cost associated with the rescue plan. However, the lack of a coherent strategy has sown some confusion in financial markets. The choice of the instrument – capital injection or the purchase of toxic assets – was a case in point. The EESA has been criticised on the grounds that it addresses the issue of illiquidity and some assets' falling value, but not directly the issue of capital shortages. This criticism was partially ill-founded as the EESA offers the US authorities the flexibility to buy shares and recapitalise banks. Given the urgency of the situation, the EESA has been complemented by a voluntary capital purchase programme and a temporary sovereign guarantee on new bank debt. And, as confidence in markets remained fragile, the option of buying toxic assets re-surfaced, with a plan to create a government bank to buy the bad investments and loans that were behind the losses reported by US banks.

52. Over the medium to long term, the effect of these measures will depend heavily on how they are implemented. If the programme manages to remove troubled assets and foster new bank lending, perceptions of counterparty risks are likely to decline. But a number of challenges lie ahead concerning the implementation of the asset management part of the EESA. First, it is difficult to determine the price of troubled 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 better informed than the asset company staff. 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 troubled assets (Rogoff, 2008). This identification is complicated by the fact that troubled assets are complex and heterogeneous. Thirdly, even putting aside this concern, the approach requires considerable time to implement. Against this background, some commentators have argued that the timing of the plan was unfortunate and that the US authorities should have adopted a more pre-emptive approach.

15. On 8 October, the Bank of Canada, the Bank of England, the European Central Bank, the US 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.

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

On 3 October 2008, the 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:

- $700 billion allocated in two tranches (second $350 billion 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 the Secretary of the Treasury.
- Encouragement of the SEC to relax mark to market accounting rules.
- FDIC deposit insurance limits raised from $100k to $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 it 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 $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 EESA 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?

53. The reaction of European policymakers to the crisis has been timely and well coordinated. After the emergency meeting on 12 October, most euro area countries have announced rescue packages that share similar features with the action taken in the United Kingdom *i.e.* a focus on interbank guarantees and capital injections. A number of questions remain unresolved, however. First, some governments have announced they will rescue any banks in difficulty but no procedures have been set up in the case of large cross-border banks where failure could generate a systemic risk. The failure of a large bank is likely to have bigger negative implications for the financial system, as markets become more integrated. In addition, greater scale limits the ability of the authorities to take action that would reduce exposure in the event of a shock without risking a magnification of the shock (Lumpkin, 2008). It is important to announce details on the criteria banks should meet to be eligible for support as well as which countries should bear the fiscal burden. A number of alternative proposals can be put forward, such as the creation of a rescue fund at the

European level, or a rule defining which countries should intervene. Second, there is a case for harmonisation of deposit guarantee and interbank loans guarantee rules to avoid distorted incentives.

Sovereign risk in small economies

54. The situation in some small economies with a developed financial sector has been critical. Sovereign risk has been particularly high in Iceland where the size of the banking sector was disproportionate relative the size of the economy. Because of the absence of a foreign currency lender of last resort and the incapacity to provide sufficient liquidity, the country could not respond to the speculative attack on its three internationally active banks and on its currency. In this context, the Icelandic authorities had to place the banks in receivership under the control of the financial regulator to request loans from the IMF and from the Nordic countries. Other small economies have also faced significant risks of foreign banks withdrawals. Since output in these countries is small compared to the amount of the likely size of the rescue package needed, there may be a case for international cooperation to address these issues.

55. The IMF has set aside about $200 billion for direct loans and currency swaps. This amount could be extended by some $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 with no strings attached. In addition, a number of bilateral agreements have been signed and currency swap facilities have been agreed.[16]

56. There is a risk, however, that existing swap lines and the IMF's resources may not be sufficient given the potential size of capital outflows (Blanchard, 2008). Indeed, swap lines are available only to some emerging market economies and the IMF's resources may not be sufficient in periods of extreme stress. Although the IMF can tap 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. In this case, a more systematic and coordinated approach to liquidity provision is likely to be required.

V. Fiscal costs and financial implications

57. Systemic financial rescue plans or emergency measures usually entail large costs. Fiscal costs arise from using public funds to clean up financial markets and/or protect depositors and banks stakeholders. Historically, these costs have been sizeable, at around 13% of GDP on average for a sample of 42 crisis episodes (Laeven and Valencia, 2008). Developing countries appear to incur higher costs. Some episodes have been particularly costly, for instance, Argentina or Chile in the early 1980s and the Asian crisis in 1997-98 (Table 7).

58. The size of the fiscal costs associated with specific rescue measure depends crucially on the implementation details. For example, the cost of a deposit insurance scheme depends on whether it is limited in time or incurs a fee. Likewise, the cost of sorting out good from bad assets will depend on the pricing or valuation methods used. Empirical research suggests that accommodative policy measures, such as liquidity support, blanket guarantees and forbearance from prudential regulations, tend to be costly and

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 up to the amounts guaranteed in the past (*e.g.* £20 000 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 swap facilities with New Zealand and it has committed to enable Brazil, Mexico, Singapore and South Korea to swap their currencies more easily for dollars.

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).

59. The gross fiscal costs of rescue packages announced in 2008 are in the range of those observed in the past (Table 8). The total cost of the packages announced in the G7 economies amounts to more than $2.5 trillion. These are upper limits, however, and it is difficult to assess how much funding will be required for the loan and deposit guarantees. Since the beginning of 2009, additional measures have been announced in many OECD countries and are expected in other countries, increasing the overall fiscal cost.

60. These gross fiscal costs are transfers from present and future taxpayers to present and future beneficiaries of the rescue packages 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 on debt interest risk premia, inflation and currency movements.

Table 7: Fiscal costs of selected crises

	Gross fiscal cost (% of GDP)	Net fiscal cost* (% of GDP)	Output loss (% of GDP)
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
Average of 42 episodes	13.3	-	20

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

61. By weakening the 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 risk premia, further increasing the burden on public finances. In this context, there could be pressure on monetary authorities to accept some increase in inflation to lower the debt burden, endangering the credibility of central banks. If resolution policies are not seen as credible, pressure for accommodative monetary policy could be even stronger.

62. Financial market dislocation can trigger rapid exchange rate movements and accentuate output losses. Exchange rate depreciation for example 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. 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 as a crisis resolution tool. However, it is unclear to what extent exchange rate movements can help solve the current crisis, given its global nature.

63. Net fiscal costs are hard to estimate given the absence of a counterfactual. One approach has been to calculate the loss of output relative to a benchmark, typically trend growth rates. Using such an approach, the average cost is typically high and varies widely. Another method 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 around 4% of GDP. This cost needs to be compared against the cost of inaction.

Table 8: Gross fiscal costs of rescue packages in 2008

	Capital injection	Guarantees	Total of measures announced[1]	Total (% of GDP)
United States	$ 250 billion		$ 700 billion	5.1
Germany	€ 70 billion	€ 400 billion	€ 480 billion	19.8
France	€ 40 billion	€ 320 billion	€ 360 billion	19.0
Italy			€ 40 billion	2.6
United Kingdom	£ 50 billion	£ 250 billion	£ 400 billion	28.6
Canada			CAD 75 billion	4.8
Austria	€ 15 billion	€ 85 billion	€ 100 billion	36.9
Denmark			Kr 35 billion	2.1
Greece	€ 5 billion	€ 15 billion	€ 28 billion	11
Ireland		€ 450 billion	€ 450 billion	235.7
Hungary	$ 3 billion			
Korea		$ 100 billion	$ 100 billion	
Netherlands		€ 200 billion	€ 200 billion	
Portugal		€ 20 billion	€ 20 billion	6.1
Sweden	SEK 15 billion	SEK 1500 billion	SEK 1515 billion	50.5
Switzerland			SFR 60 billion	
Spain	Initially € 30 billion, rising to 50	€ 100 billion	€ 150 billion	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 such 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 affect neither the net debt nor the budget balance. In contrast, they will have an impact on the net fiscal balance and debt if treated as a non-financial transaction (*i.e.* if the government does not receive in return a financial asset of an equal value).

1. This total is in some case 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 for its effects on activity

This box proposes a new measure to correct the fiscal cost 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 for 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 corresponds one-to one with the increase in bank liabilities.

Definition of corrected fiscal cost

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

$D^*=(G^*-T^*)+GFC^*$ (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 tax revenue before policy action, Y* is output after policy action. L is the observed value of bank liabilities, θ is the semi-elasticity of GDP to the liabilities-GDP ratio, and η'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:[17]

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

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

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

Where Z is a set of control variables using current and past values of oil prices, inflation and a time trend. Equations (5)-(7) are estimated using instrumental variable 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.

Results

The parameters are estimated to be $\theta_{Y,GROS}$ = 0.21 and $\eta_{T,Y}$ = 1.05 and $\eta_{T,G}$ = 0.27.[18]

The pre-crisis deficit amounts to *D* = 2.7% of GDP. Plugging these values in (1)-(4) and assuming a gross financial cost of 700 billion (5.07% of GDP), the deficit-GDP ratio after crisis amounts to *D*/Y**=6.72%. The net fiscal cost of the fiscal policy response to the financial crisis is thus estimated at 4% of GDP.

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.

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

VI. Implications for the real economy and inflation

64. Financial crises impact markedly on 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). The transmission channels of financial crisis to the real economy are described in Box 6.

Box 6. What are the main transmission mechanisms from banking 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, the money supply declines, negatively affecting 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 in 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 turn 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 damages financial institutions. Borrowers will have difficulty repaying loans and depositors, anticipating an increase in defaults . They will try to protect their wealth by withdrawing bank 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 a higher cost of capital to firms and therefore lower investment and output (Bernanke and Gertler,1987). In situations 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 investment and output.

Bank capital channel

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

Wealth effects

Financial crises can affect private consumption through changes in asset prices and thereby household wealth.[19] It is important to distinguish between corporate stock and other components of wealth because 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

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).

stock values for the vast majority of households in the United States.

Uncertainties

Financial crises affect economic activity by increasing market uncertainty. Uncertainty hampers the efficient allocation of resources, as risk-adverse agents will reduce the length of their contracts. Second, and perhaps more importantly, 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, an increase in interest rates and a decrease of demand associated with a crisis causes inventories to rise and sales to decrease and results in surplus capacity in the economy (Andersson and Avery, 1999; Bris *et al.,* 2001). The decline of firms' sales volume during the crisis, also decreases firms' production and employment needs.

Exchange rate volatility

Financial crisis can affect economic activity by triggering a currency crisis,[20] exacerbating exchange rate volatility and leading to currency depreciation. Burnside *et al.* (1999) argue that large national currency devaluations causes an increase in domestic interest rates and open the way for significant drops in total output, employment, real wages and the number of firms. At the same time, devaluation may lead to short-term increases 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), investment (Aghion *et al.*, 2006) and growth (Aghion *et al.*, 2006; De Grauwe and Schabl, 2008; Furceri, 2008a).

Financial crises dampen economic growth…

65. Past financial crises have usually been accompanied by 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 to recover. A similar though sometimes more pronounced pattern can also be observed for domestic demand. In particular, episodes of financial turmoil when combined with elevated banking sector distress, surges in credit growth and house prices and high indebtedness of households are found to be followed by a severe and prolonged economic downturn (IMF, 2008*b*).

66. Given the similarities between the current and past large crises (see section 1), a deep and long downturn in the United States is likely. Indeed, a 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).[21]

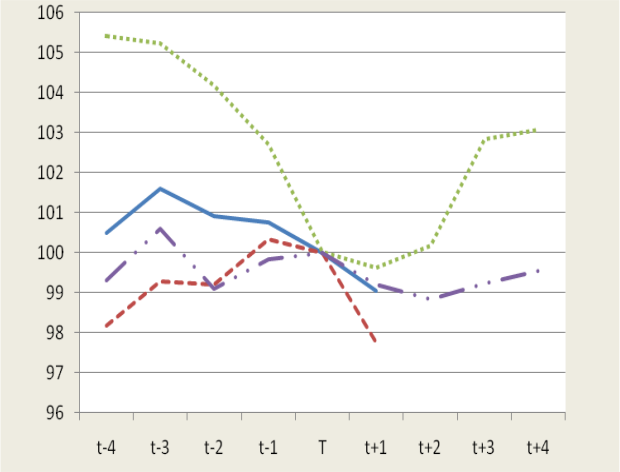
20. For example, Velasco (1987) stresses that when central banks finance the bailout of troubled financial institutions by printing money, we return to the classical story of a currency crash prompted by excessive money creation. Causation, however, can go in the other way. An initial external shock, 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 cases where a frail banking sector puts the nail in the coffin of what was already a non-functioning 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.

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

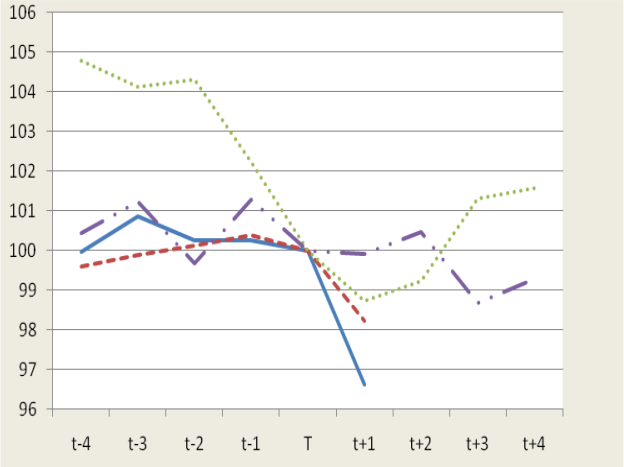
Figure 5. Effects of financial crises on the real economy

(Index at time T=100)

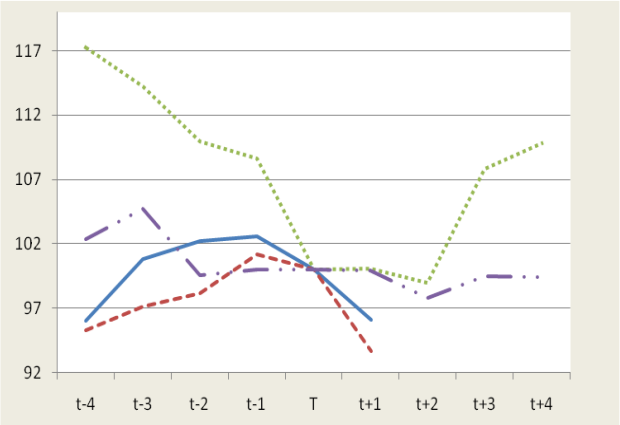
Real GDP growth*



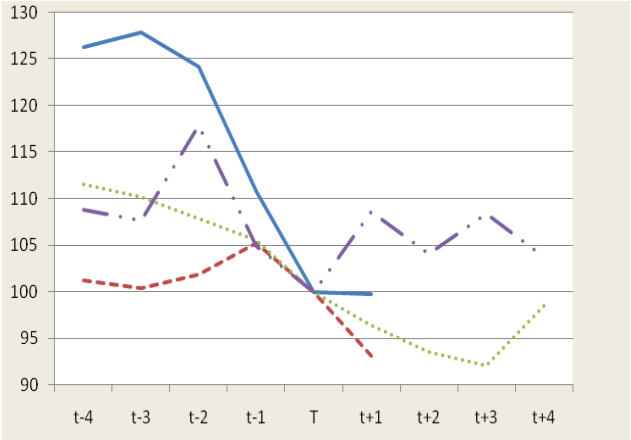
Real private consumption growth*



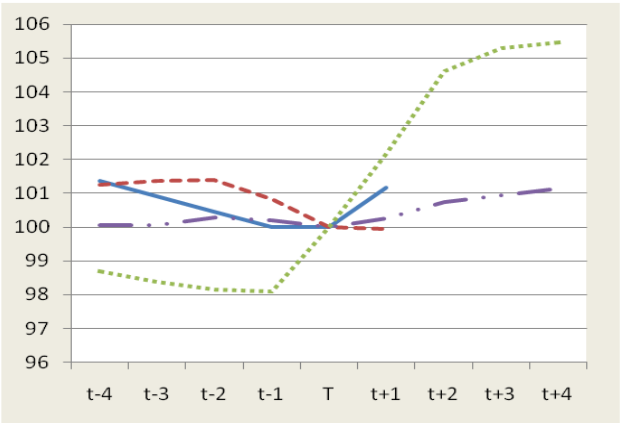
Real business investment growth*



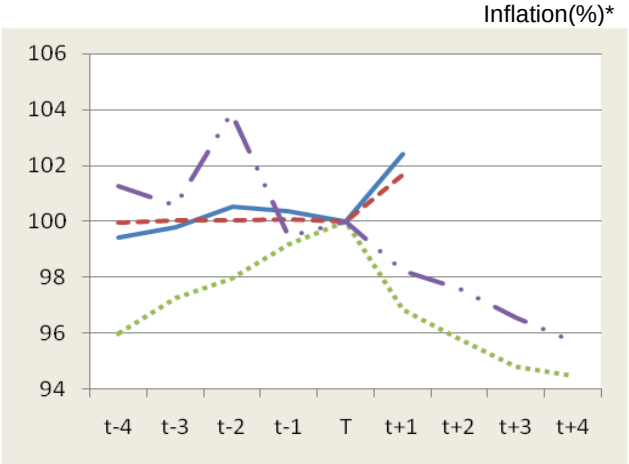
Real residential investment growth*



Unemployment rate (%)



Inflation(%)*



*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

… by altering its main components

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

68. Negative wealth effects from declining house and equity 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, because wealth effects from the housing sector are stronger than those from financial markets. 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. The marginal propensity to consume out of housing wealth is usually estimated to be in the range between 0.03 and 0.15.[22] Considering a drop in home equity of around 20%[23] (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 to 0.04, and a decline in stock market equity of around 47%[24] (from 3 July to 2007 to 20 January 2009) the drop in consumption would 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

69. The pattern of business investment in the current crisis differs significantly from the one observed in past severe and mild crises. Indeed, business investment surged rapidly in the years before the current financial crisis, reflecting sound corporate balance sheets, robust economic growth and strong credit supply. That said, bursting financial bubbles led to a deceleration in private investment both in past severe crises and in the current episode. Tightening lending standards as well as deteriorating growth perspectives have contributed to these developments. Past experience suggests that two or more years may be needed for business investment to recover.

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

Labour markets tighten and inflation recedes

71. Labour markets are also 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). In contrast, milder crises were characterised by a much smaller increase in the unemployment rate of about 1 percentage point in the 4 years following the start of the crisis. In the current crisis, labour markets have so far been slow to adjust,

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

23. Computation based on the Case-Shiller index.

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

although adjustments may have accelerated recently in the United States. Labour markets have subsequently weakened massively in some European countries, especially Spain.

72. Large negative output gaps usually dampen inflation in the year following the onset 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

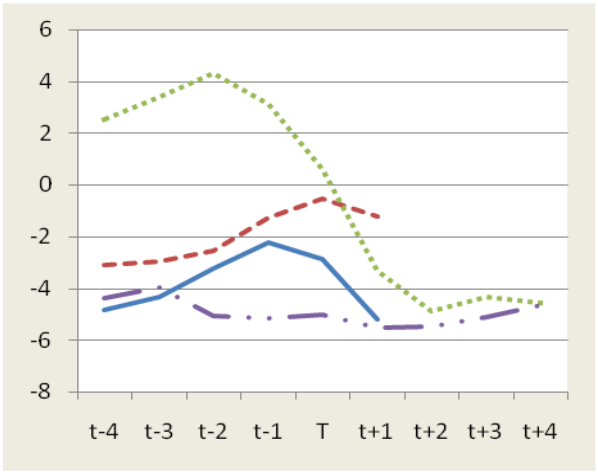
73. Many large financial crises have been preceded by a rise in the public deficit (Figure 6) and the current crisis is no exception. The deficit usually deteriorates even more rapidly in the years following the crisis, reflecting the pro-cyclicality of the deficit and the implementation of discretionary fiscal policies. In this regard, the current episode displays a close similarity with past severe crises.

74. 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 by volatile exchange rate developments, mild crises tend to be associated with steady 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.

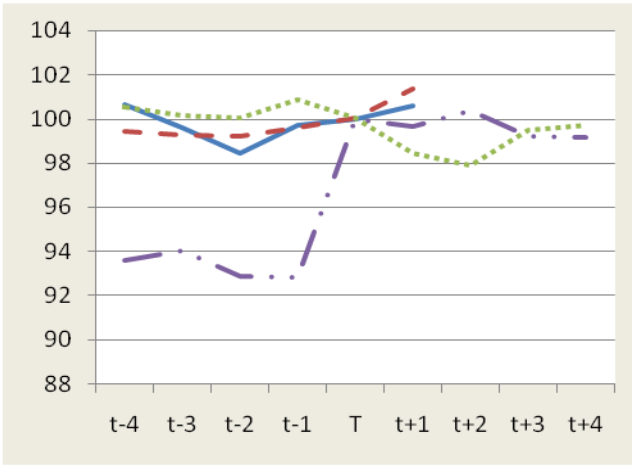
Figure 6. Effects of financial crises on public and external balances

(Index at time T=100)

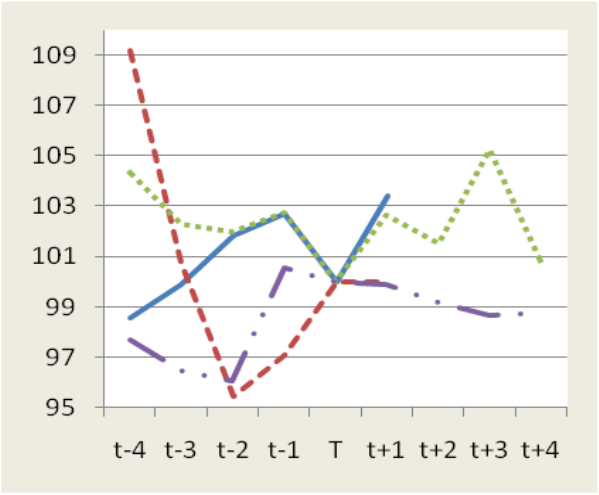
Government budget balance (in % of GDP)



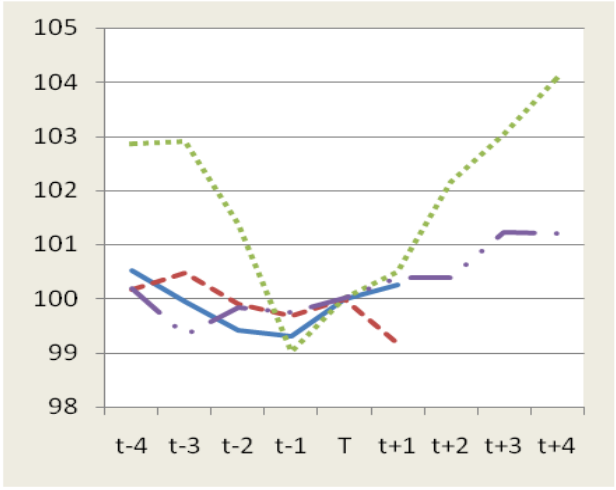
Real government consumption growth (%)



Nominal effective exchange rate growth (%)



Current account balance (in % of GDP)



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

75. 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) started to experience the effects of the financial turmoil towards the end of 2008.

76. EME financial markets are currently characterised by: i) an increase in deleveraging by commercial and investment 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 markets poses serious risks of a sudden stop in capital flows to EME. This would have significant effects for EME currencies and growth, since foreign funding accounts for about 50% of annual financing sources in these regions. Moreover, although leverage levels remain moderate overall, 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 from negative wealth effects and declines in consumption and investment.

77. In addition to the direct negative effect of the credit crunch and sudden stop in capital flows, economies will be affected by the slowing of the economies of their main trading partners. This is expected to be particularly important for some of the EMEs, as well as NAFTA countries.

VII. Policy implications

78. The normalisation of financial markets is expected to take considerable time. Against this background, OECD economies are expected to recover from a recession only slowly over the next few years (OECD, 2008a). However, large uncertainties remain as to the depth of the economic downturn, which depends crucially on the speed of the financial crisis resolution.

79. 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.

Short-term policy reactions

Fiscal policy

80. In recent months, governments have actively deployed fiscal policy to address the sharp declines in activity, as economies have been buffeted by falling asset prices, tightened credit conditions and waning confidence. The economic literature, however, does not provide a clear answer as to whether discretionary fiscal policy can successfully stimulates the economy during downturns.[25] Estimates of the fiscal policy effects on macroeconomic variables differ both in amplitude but also in sign and depend on the country's economic structure.

81. 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.

82. However, relatively weak fiscal positions in several OECD economies, together with fiscal constraints in the context of the Stabilisation and Growth 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, 2008*b*).

25. 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. 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

84. 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.

85. The main challenge for monetary policy is that financial imbalances can also build up in the absence of overt inflationary pressures (Goodhart and De Largy, 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 unsustainability of the economic expansion (Borio and Lowe, 2002).

86. 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 channels 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. The US Federal Reserve's liquidity management system

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

		4 July 2007	2 Jan. 2008	19 March 2008	24 Sept. 2008	14 Jan 2009
Securities						
	Held outright	790.6	740.6	660.5	486.6	505.3
	Repurchase agreements	30.3	56.3	62.0	86.0	40.0
Loans						
	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[2]				72.7	16.1
	Other credit extensions				44.6	0.0
Other assets and reserves[1]		59.3	84	49.3	116.7	1026.1
Total assets		880.4	925.7	890.7	1213.9	2058.4

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 US dollar 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 changed the amount of assets of the Federal Reserve and its composition (Table 9). Before the crisis, the Fed had total assets amounting to $880 billion, while currently it has almost the double (nearly $1500 billion). Before the crisis, the Fed had nearly $800 billion in securities outright. That amount has been reduced to nearly $500 billion. Repurchase agreements used to be close to $30 billion, but have since risen to around $80 billion. And prior to January 2008 lending was insignificant it exceeded $450 billion (more than 50% of total assets before the crisis).

Source: Federal Reserve.

87. 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.

88. Looking forward, differences in monetary policy stances are likely to persist between OECD countries and emerging market economies, reflecting different positions in the cycle or strategies against

speculative currency attack.[26] Moreover, the same monetary response to financial crisis can have asymmetric affects 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 large diminishing returns, it can exacerbate the recession in relative inflexible economies.

Strengthening resilience

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

Are counter-cyclical fiscal policies useful?

90. 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 action.

91. The importance of automatic stabilisers as an instrument to provide insurance against output shocks has been extensively analysed in the literature. [27] The results suggest that while some of the items of government spending and revenue are counter-cyclical, the amount of GDP smoothed by fiscal variables is not very large.[28] 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; changes in tax, transfer, or spending programmes that are linked to the state of the economy by simple rules; and adoption of fiscal rules which lead to less discretionary and more stabilising spending (Arreaza *et al.*, 1998).

Should monetary policy lean against the wind?

92. The appropriate weight given to asset prices in monetary policy decisions has long been 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. Tighter monetary policy than otherwise could also be able to counter an over-optimistic pricing of financial assets and property.

93. Finally, financial market changes coupled with monetary policy that focus exclusively on inflation developments can allow the build-up of financial imbalances similar to those at the source of the current financial crisis (Borio and White, 2004). To this extent, monetary policy should be alert to the

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

27. 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).

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

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.

94. The ECB's two-pillar strategy aims at price stability by relying on 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 second pillar can indeed be seen as providing information on the volume counterpart of asset price developments. In addition, the first 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 first pillar could be even broader and take explicit account of asset prices and volume in its monetary policy framework.

Regulating financial and capital markets: options for reform

95. Over the medium to long term, structural policies should be put in place to ensure the efficient functioning of the financial system 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 reducing uncertainty surrounding the assessment of credit risk and increase transparency in financial reporting and disclosure. [29] Finally, the financial crisis has shown the need to strengthen 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. Pro-cyclicality of the financial system

Financial system pro-cyclicality 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 business cycle. In fact, measures of risk tend to increase as tensions arise, triggering strains, and tend to decrease during the economic expansion phase, as perceptions of vulnerability and risk weaken.

The second source of pro-cyclicality is distortions in incentives. Even if risk measurement would not lead to pro-cyclicality, distorted incentives can be enough to do so.

A first distortion involves the principal-agent problem between the providers and users of funds. The collateral of many financial contracts or margin requirements are pro-cyclical. 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.

29. 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.

96. 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).

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
Reduce cyclicality of the financial system				
Encourage firms to rely on better methodologies to assess risk	X		X	
Introduce regulatory capital standards[1]	X			X
Set-up liquidity buffers in good times to face adverse systemic conditions				
Reduce the cyclicality of collateral[2]			X	
Promote compensation schemes that reflect the underlying risks taken	X	X	X	
Increase transparency				
Standardise and improve the disclosure of off-balance sheet items; increase the transparency of the pricing of collateral	X		X	
Increase the transparency of the pricing of collateral	X		X	
Complement point estimates for the value of collateral with measure of uncertainty	X		X	
Increase transparency of the liquidity management of major financial institutions	X		X	
Strengthen financial market regulation				
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 occurs 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[3]	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 "macroprudential 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 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 sub-prime 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).

Enhancing international cooperation

97. 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 detrimental to competition. Cooperation will in particular be vital to ensure a smooth exit from the emergency measures that have been put in 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 market resilience to shocks. This is especially 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.)

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