

INTERNATIONAL MONETARY FUND

Lessons of the Global Crisis for Macroeconomic Policy

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(in consultation with the Fiscal Affairs and the Monetary and Capital Markets Departments)

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KEY POINTS

The crisis has reopened the debate on whether economic policy should be concerned with asset price booms and increases in leverage. Should policy be used to dampen booms? And, if so, does this fall under the responsibility of monetary policy? What, if any, should be the role of fiscal policy? This debate will continue to occupy economists and policy makers for a while, but a few preliminary conclusions can be reached:

- **Not all booms are alike.** What may matter is not so much the asset price boom in itself, but who holds the assets and the risk, how the boom is financed, and how an eventual bust may affect financial institutions. The degree of leverage associated with the funding of a boom and the degree of involvement of banks and other financial intermediaries will determine the magnitude of balance sheet effects and the dangers to the supply of credit in a bust.
- **The case for policy intervention depends on how a boom is financed and how risk is held.** Asset price booms supported through leveraged financing and involving financial intermediaries should be dealt with, since they entail risks for the supply of credit to the economy; other booms could more likely be left to themselves.
- **The mandate of monetary policy should include macro-financial stability, not just price stability.** To the extent that the build up of systemic risk can portend a sharp economic downturn, and to the extent that regulation cannot fully prevent such a buildup, it is now clear that policy makers cannot neglect asset-price and credit booms. That said, prudential measures provide a more targeted and less costly policy solution than interest rate changes and should be a central element of an integrated policy response.
- **The crisis also highlights two important lessons for fiscal policy.** The first is that, in many countries, budget deficits were not reduced sufficiently during the boom years when revenues were high, which limits the fiscal space needed to fight the crisis. The second has to do with the structure of taxation. In most countries, the tax system is biased toward debt financing through deductibility of interest payments. This bias to higher leverage increases the vulnerability of the private sector to shocks, and should be eliminated.

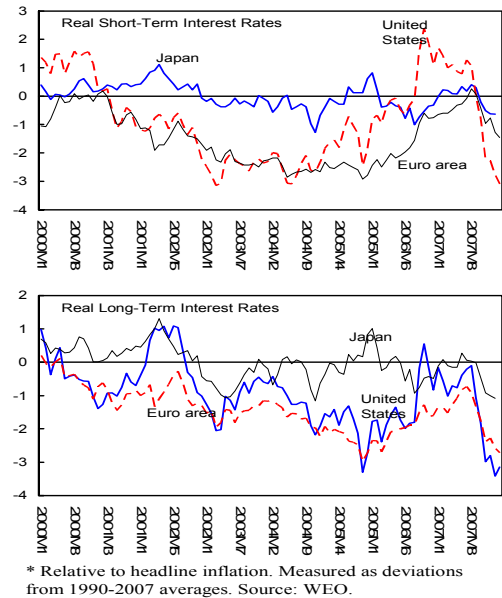
I. BACKGROUND

1. **The years preceding the crisis were years of high global growth.** For the most part, this growth was healthy. Productivity growth was high. Inflation was stable in most countries, indicating that growth in activity was roughly consistent with growth in the economy's potential. Short-term rates were low, reflecting accommodative monetary policy. Long-term interest rates were also low, reflecting high saving in Asian and oil surplus countries and low saving in the United States (the counterpart of which were large net capital flows to the United States).
2. **In retrospect, however, it is clear that these benign conditions fed the build up of systemic risk.** Low interest rates, together with increasing and excessive optimism about the future, pushed up asset prices, from stocks to housing prices in the United States as well a broad range of other advanced countries and emerging markets. Low interest rates and limited volatility prompted a search for yield, and underestimation of risks led to the creation and the purchase of ever riskier assets.
3. **On the policy front, the pre-crisis period was characterized by the increasing popularity of inflation targeting among policy makers and academics alike.** Some central banks geared monetary policy nearly exclusively to stabilize inflation. Others gave more explicit weight to aggregate activity as well. Few, if any, took sufficient account of risks from asset price increases or leverage. This so called "benign neglect" approach to dealing with the boom reflected three factors. First, the underestimation of the associated buildup of systemic risk, and thus the need for a response. Second, the notion that monetary policy should focus squarely on inflation and that financial stability is a task better left to prudential regulation. Third, the perception of monetary policy as too blunt an instrument to counteract asset price booms coupled with the belief that if and when booms reversed, the effects on activity could be largely counteracted through lower interest rates at that time.
4. **The crisis has reignited the debate on whether economic policy should be concerned with asset price booms (and busts) and increases in leverage.** There is now a stronger case for monetary policy decisions to be based on a framework that incorporates the longer-term implications of asset-price booms for inflation and economic growth. There was in fact a major build up of risk across many sectors, and a build up of systemic risk. Regulation may have been the better tool in theory, but in practice huge risks accumulated below the regulator's radar, in banks and in the shadow banking system. Finally, the depth of the crisis is refuting any notion that the ex-post clean up can be relatively costless and easy. Monetary policy easing and last-resort lending are showing their limits as financial system solvency is systemically impaired or in serious doubt. And even the sharp decrease in policy rates since the onset of the crisis has not been sufficient to stave off a steep downturn. The crisis and the role played by the so-called global imbalances have also reopened the debate on the dangers associated with capital inflows.

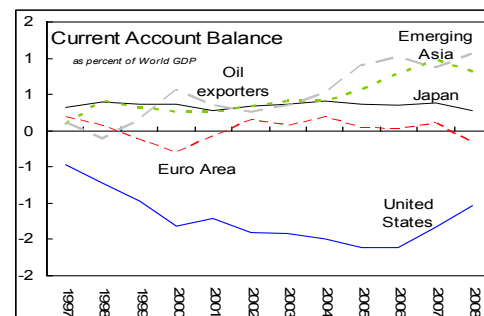
5. **This paper re-examines the role of macroeconomic policy in the management of credit and asset price booms.** First, it briefly reviews the macro-financial conditions prevailing in the run-up to the crisis and discusses the role of the global imbalances. Then, it discusses the relationship between booms and macroeconomic and financial stability. Finally, on this basis, it reviews the role of monetary and fiscal policies in limiting credit and asset booms. The potential for countercyclical prudential policies to tame speculative booms is discussed in greater detail in a companion paper (IMF, 2009a).

II. LOW RATES, RISK TAKING, AND GLOBAL IMBALANCES

6. **Interest rates were exceptionally low in the years preceding the crisis.** Historically low real short-term rates reflected accommodating monetary policy. This, in turn, was allowed by a high degree of central bank credibility: central banks found that they could maintain stable and low inflation with low real rates (in most countries core inflation remained well within its explicit or implicit targets). Low real long-term rates reflected high world saving. In particular, strong demand for safe assets from Asia and several oil exporting countries contributed to depress the yield on longer-term advanced economies' government securities. Real long-term interest rates remained low (and initially continued to drop) even after monetary policy started tightening in 2003.



7. **The period was also characterized by large global imbalances, namely the large current account deficit of the United States matched by large current account surpluses in the rest of the world.** The roots of these imbalances were twofold: high saving in Asia (in particular China) and oil exporting countries and low saving in the United States; and a strong global preference for investment in U.S. assets, considered both less risky and more liquid than most other assets. This geographical distribution of saving and portfolio preferences was reflected in large capital flows from surplus countries into the United States.¹



8. **The main worry before the crisis was that investors would change their mind, and that the large capital flows into the United States might suddenly reverse.** This

¹ Caballero, Farhi, and Gourinchas (2008).

would in turn lead to a disorderly adjustment, including a sharp drop in the value of the dollar. In the event, the crisis came in a different form: a sharp fall in confidence in the global financial system rather than a generalized run on dollar assets. And the adjustment is coming not from a sudden depreciation of the dollar (which has, so far, appreciated) but from a compression in U.S. aggregate demand driven by the unwinding of the housing boom and curtailed credit flows.

9. **One may still argue that low interest rates and capital flows into the United States created an environment favorable to the build up of systemic risk. The main culprit, however, must be seen as deficient regulation.** Low interest rates pushed up asset prices from stocks to houses. Capital inflows spurred by demand from large official entities with strong preferences for government-issued securities kept yields on safe assets low. Private investors searched for yield. Partly in response to buoyant demand conditions, the financial system developed new structures and created new instruments that seemed to offer higher risk-adjusted yields, but were in fact more risky than they appeared. The widespread use of off-balance-sheet vehicles masked the maturity mismatch of the banking system and its vulnerability to liquidity shocks.² Regulation should have stopped those developments, but did not.

10. **Given that regulation is likely to always remain imperfect, the crisis points again to the dangers of large capital inflows.** Large inflows can lead to excessive risk taking and expose domestic financial institutions, households, and firms to exchange rate risk. They can result in sharp currency and asset-price appreciations, often followed by abrupt reversals and strong effects on balance sheets. Inflows can also put pressure on demand, and on output. Monetary policy may work poorly in this context, as an attempt to slow down activity through higher interest rates may make domestic assets even more attractive.

11. **Thus, the crisis raises two policy issues in relation to current account deficits and capital inflows.** The first is the need to revisit when and how to react to large imbalances, through macroeconomic and structural policies that affect saving and investment. Surely, the lesson is not that capital flows should be sharply curtailed. But an attitude of benign neglect has proven to be a mistake. The second is the potential role for prudential measures to reduce systemic risk associated with large capital inflows—e.g., through constraints on the foreign exchange exposure of domestic financial institutions and other borrowers.

III. ASSET PRICE BOOMS AND MACROECONOMIC STABILITY

12. **Asset price and credit boom-bust cycles are a common feature of financial crises, but not all booms end up in disaster.** It is true that asset price booms and fast credit expansions have been associated with episodes of financial distress. Equally true, however, is

² These issues are discussed in greater detail in IMF (2009)a.

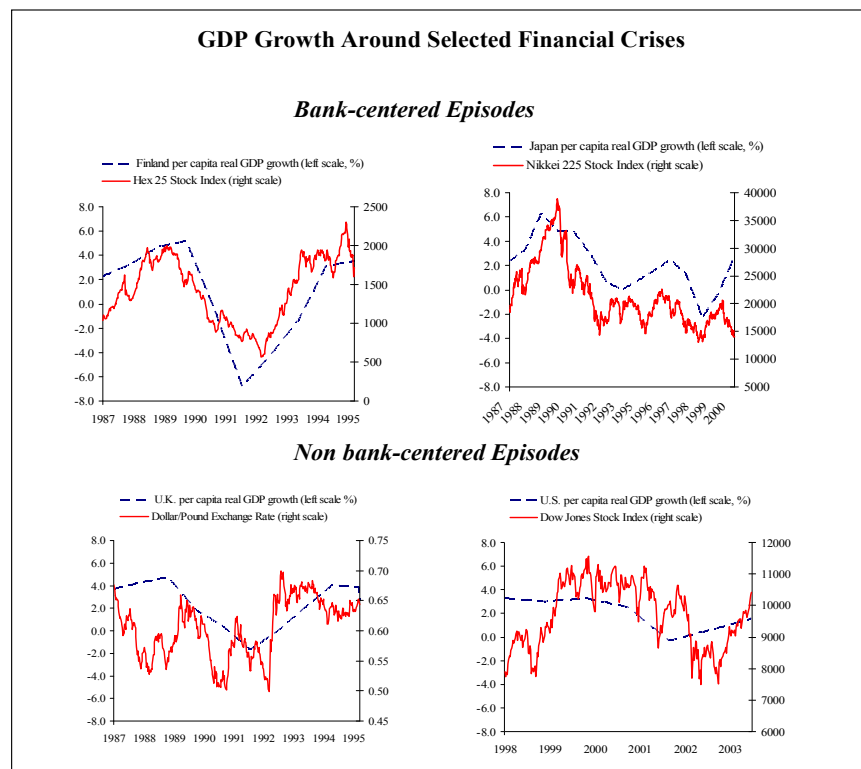
the fact financial development (often measured by the credit-to-GDP ratio, the same variable used to measure credit booms) has been long identified as determinant of economic growth. Then, the issue for policy is to discriminate between good and bad booms and to devise strategies to contain the dangerous ones and minimize the associated risks. What matters is whether a boom leads to the build up of systemic risk, or whether it can deflate without major financial disruption.

Not all booms are alike

13. **What may matter is not so much the asset boom in itself, but who holds the assets, and how an eventual bust may affect financial institutions.** The degree of leverage associated with the funding of a boom and the degree of involvement of banks and other financial intermediaries will determine the magnitude of balance sheet effects and the dangers to the supply of credit in a bust. Banks' exposure to an eventual asset price bust can be direct through the assets held on their balance sheets or through off-balance-sheet obligations, or indirect through the value of collateral held against the banks' loans. To develop this argument it is useful to compare the current crisis with past episodes such as the Great Depression, Japan's 1980s asset price boom and bust, the Scandinavian crisis of the early 1990s, the dot-com boom and bust of the 1990s, and other episodes of financial turmoil such as the ERM crises of the early 1990s.

14. **Boom episodes where leverage and financial intermediaries' involvement are limited tend to deflate without major economic disruptions.** The dot-com bust was

followed by a relatively mild recession. In the preceding boom episode, banks and credit played relatively minor role. While some stocks were bought on margin, the resulting exposures represented a small share of total banking system assets and capital. The stock market crash did have non-negligible wealth effects. However, lacking the interaction between deteriorating borrower and lender balance sheets, it did not result in greatly impaired financial intermediation



and a disrupted credit supply. Balance-sheet effects were also not a large factor in the ERM crisis, which also had little negative consequences for economic growth.

15. **Systemic risk tends to be higher when the asset price upswing is fuelled by bank credit.** In the boom period, such episodes are characterized by a mutually reinforcing rise in asset prices, increasing collateral values and fueling an increase in credit growth and leverage (for both borrowers and financial intermediaries). Leverage, in turn, increases lender exposure by magnifying the impact of a price adjustment on borrowers' balance sheets and, thus on banks' losses and capital. Widespread foreign-currency lending to unhedged domestic agents increases risk correlations by exposing borrowers (and indirectly lenders) to exchange rate movements.

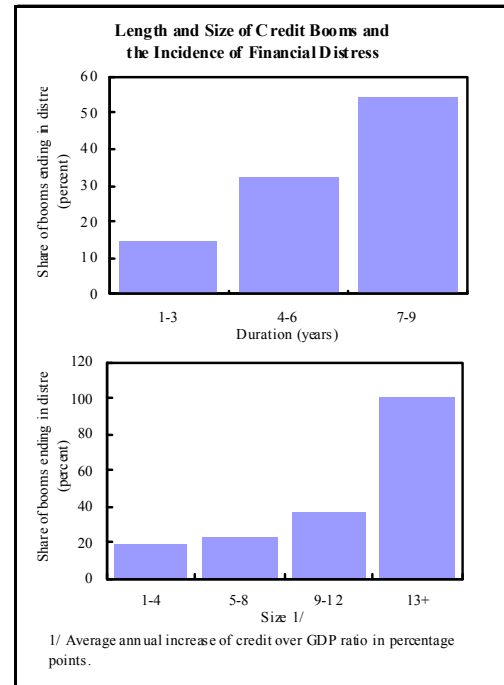
16. **Lending extensively based on (rising) collateral values can be extremely hazardous to lenders when prices collapse.** In a downturn, leverage contributes to tighten lending conditions as collateral values fall and may force immediate distress asset sales by liquidity-constrained borrowers. The unwinding can be associated with sharply deteriorating bank capital and liquidity positions and a resulting freezing of credit. Indeed, busts tend to be far more costly when prices are supported through credit from highly levered institutions.³ The current crisis shares this feature with the Great Depression, the Japanese asset price bust, the East Asian financial crisis, and to a lesser extent the Scandinavian crises.

17. **In particular, what matters is what institutions hold the credit risk and what is their liability structure with regard to maturity, currency mismatches, and leverage.** It is ultimately the liability structure of the holders of credit risk (maturity mismatch and leverage) that determines the transmission of shocks from the real economy to the financial system and vice versa. In that context, the unwinding of a boom tends to have far larger systemic effects when credit risks primarily resides within the banking system and at levered intermediaries with large maturity mismatches.

18. **While leverage can create risks, not all credit booms are bad.** Contrary to the widespread belief that credit booms are at best dangerous, and at worst a recipe for financial disaster, some credit booms reflect financial deepening (at least as measured by the credit-to-GDP ratio). While some credit booms lead to financial crises and a collapse in credit, on average, and especially in advanced economies, financial growth during credit booms has translated into permanent financial deepening (there is a positive correlation between long-term growth in the credit-to-GDP ratio and the cumulated growth in the same ratio occurring during booms, suggesting that a major portion of the gains occurring during booms translates into permanent increases in financial depth).

³ Claessens et al. (2008).

19. **The question for policy then becomes to discriminate ex-ante between credit booms that may end up in stable increases in financial intermediation and those that may end in a bust.** While only a minority (20 percent) of credit booms (defined as episodes of credit growth above a certain threshold from a historical trend) has ended in a crisis, the probability of a financial crisis increases significantly with booms (by between 50 and 75 percent). Furthermore, the larger the size and duration of a boom episode, the greater the likelihood it results in a crisis. Booms that last more than 7 years are twice as likely to end up in a crisis. Credit booms coinciding with higher inflation, fast rising real estate prices, and, to a lesser extent, lower growth and large current account deficits are also more likely to end in a crisis.⁴ That said, as often with early warning indicators, the ability of existing empirical models to distinguish “good” from “bad” booms is relatively low.



Was the recent boom different?

20. **While many patterns were similar to previous crisis, four elements help explain the severity and global scale of the current episode.** First, increased balance-sheet opaqueness and reliance on wholesale funding increased systemic fragility. Once house prices started to fall and defaults to rise (affecting the expected value of the assets underlying MBS and CDOs), the complexity of instruments undermined price discovery and led to market illiquidity, acting as a shock multiplier. Second, increased interconnectedness of financial institutions and markets, more highly correlated financial risks, and the sheer size and centrality of U.S. financial markets intensified cross-market and cross-border spillovers. Third, because of the high degree of leverage across several sectors, for many financial institutions initial liquidity concerns quickly gave way to solvency worries. On the borrowers’ side, high loan-to-income and loan-to-value mortgages increased households’ exposure to shocks. Even moderate declines in house prices could push many borrowers into negative equity. Finally, the prominent role played by household indebtedness complicates the crisis resolution. Moral hazard problems, the sheer number of cases, equity and distribution issues, and political sensitivities make household debt restructuring complicated and costly and slow down the policy response.

⁴ Borio and Lowe (2002).

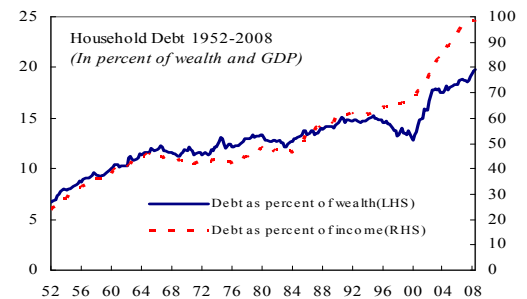
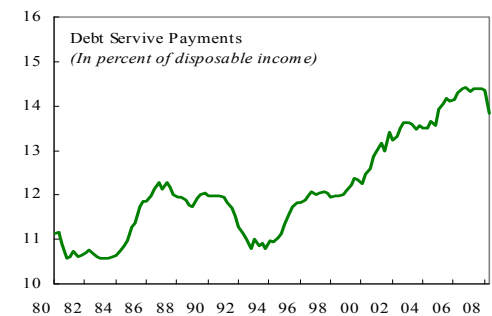
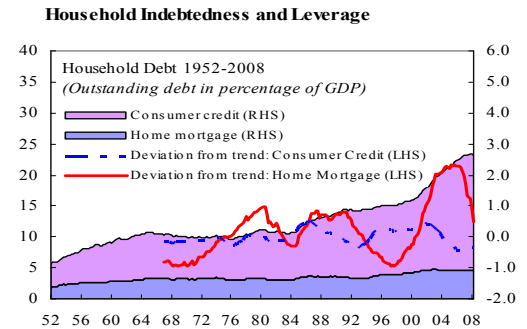
21. **In advanced financial systems, “excessive” credit growth may be difficult to detect.** The prolonged U.S. credit expansion in the run-up to this crisis shared some features with other booms that ended with financial distress, but this was not immediately apparent from credit aggregates. In particular, standard credit-to-GDP measures grew only moderately and financial sector’s leverage was hidden in complex off-balance-sheet instruments.⁵ However, the build up in credit risk was more evident when focusing on the borrowers’ side.

22. **While aggregate credit growth in the United States was less pronounced than in previous episodes, household debt increased sharply.** Credit to households rose rapidly after 2000, driven largely by growth in mortgages. Interest rates below historical averages and financial innovation contributed to the increase in outstanding household debt. Despite low interest rates, however, debt service relative to disposable income reached a historical high. Coupled with the prospects of a depletion of household equity, increased leverage left households vulnerable to declines in house prices, tightening credit conditions, and a slowdown in economic activity. Slower credit expansion to the corporate sector, as corporations had high internal earnings and tapped more capital markets, contained aggregate credit growth.

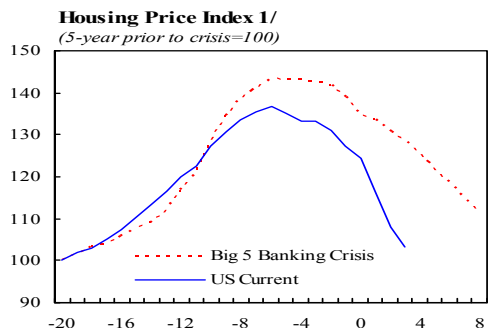
23. **Similar to previous episodes, house prices rose sharply in the run-up to the crisis.** Prices peaked six quarters prior to the beginning of the banking crisis, after rising by more than 30 percent in the previous five years. The overall size of this housing boom and its dynamics were remarkably similar to house prices developments in the previous five major banking crises (Big 5) in advanced economies (Finland, 1991; Japan, 1992; Norway, 1987; Spain 1977; and Sweden, 1991).⁶

⁵ See IMF (2009b).

⁶ Rogoff and Reinhart (2008).



Source: Federal Reserve Board.



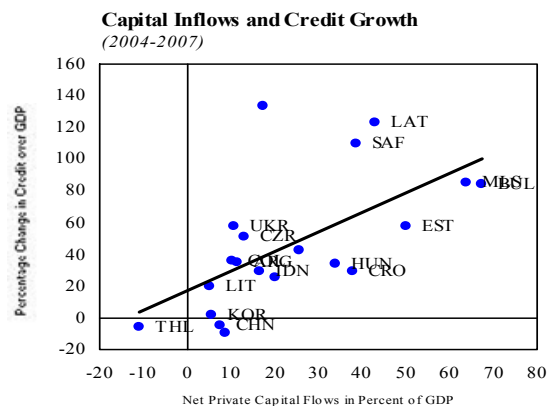
Sources: BIS and Haver Analytics.

1/ House price index is equal to 100 five year prior to banking crises. Big Five refers to the average of indices for the 5 major banking crises. For the current crisis in the United States, the beginning date is assumed to be 2007:3.

24. **However, financial innovation and the sheer complexity of the system led to the underestimation of systemic risk.** As discussed above, what matters is who holds the credit risk. In the United States, the recent housing boom was funded through an increase in mortgages originated by banks and non-banks. A large portion of these mortgages was securitized. In the upswing, the widespread perception was that risk had been sufficiently passed to those investors that could more safely hold it because of their longer-term and less-leveraged liability structure. In the bust, the “surprise” was that banks (and highly leveraged broker-dealers) had far larger than anticipated exposures to the housing sector through their SIVs, conduits, and trading books. Given the liability structure (maturity mismatch and leverage) of these ultimate holders of credit risk, the housing downturn became a threat for financial and macroeconomic stability. The bust would have had far milder systemic consequences, had the banks truly unloaded most of the credit risk.

25. **Ex-post, the fast expansion of credit seems to have played a role in the current crisis, in a fashion similar to previous crises.** In the United States, regions that experienced faster growth in mortgage origination and sharper increases in house prices are now witnessing greater increases in delinquency rates. The mechanism linking credit booms to crises operates through an increase in the leverage of borrowers (and lenders) and through a decline in lending standards.⁷ In the U.S. episode, both channels were at work. In addition to a sharp increase in household and non-corporate business leverage, evidence shows that a decrease in lending standards (as measured by a significant increase in loan-to-income ratios and a decline in mortgage denial rates) not explained by improvement in the underlying economic fundamentals played a significant role.⁸

26. **Some of these patterns extended to varying degrees to other countries caught in the current storm.** In the run-up to the crisis, credit aggregates grew extremely fast in the United Kingdom, Spain, Iceland, and several Eastern European countries. As in the United States, these credit expansions fueled real estate booms. House prices rose rapidly in most of Eastern and Western European countries now caught in the financial turmoil, including the United Kingdom and Iceland (WEO, April 2008). As in the United States, these housing booms were generally supported by sharply increased household leverage. Increased international financial integration helped these patterns along. For Eastern Europe and some other emerging markets, a clear relationship can be documented between credit growth and



⁷ Dell’Ariccia and Marquez (2006).

⁸ Dell’Ariccia et al. (2008).

capital inflows. In many of these countries, risks were exacerbated by widespread unhedged foreign-currency borrowing by households.

IV. IMPLICATIONS FOR MACROECONOMIC POLICY

27. **There are lessons from this and past crises for the conduct of economic (monetary and fiscal) policy.** How assets are held and who is exposed to the eventual crash may matter most for whether and how policy should respond to a boom. Asset price booms supported through leveraged financing and involving financial intermediaries should be dealt with, since they entail risks for the supply of credit to the economy; other booms could more likely be left to themselves. Monetary policy and procyclical prudential policies can help to contain dangerous booms. Fiscal space to deal with a potential crisis should be built during upswing and tax distortions favoring indebtedness and leverage should be eliminated.

A. Monetary policy

28. **The first question is whether responding to booms is a task for monetary policy.** The benign neglect view posits that central banks should focus on their primary objectives— inflation (and growth). Asset prices can be usefully monitored to the extent they might carry information on the state of the economy, but should not be targeted in themselves. This view rests on three main arguments: (1) it is difficult to distinguish speculative booms from episodes of “rational exuberance”; (2) the role of monetary policy is to control inflation; and (3) monetary policy may be too blunt a tool to stop a boom and policy intervention could do more harm than good. It would be better to clean up and pick up the pieces ex post rather than to try to prevent the building up of “difficult-to-detect” excessive imbalances ex ante. These three arguments are discussed in what follows.

When to react: Monitoring systemic risk

29. **Speculative booms may be indeed difficult to identify with certainty.** Yet, this task can be made easier by narrowing the focus to episodes involving credit and the banking system. In addition, even if discerning “bad” booms is difficult, it may be optimal to undertake policy actions on the basis of probabilistic call (as for inflation), if inaction may lead to catastrophic scenarios. The monetary authority can also have an important influence on market behavior through its statements and general analyses of trends.

30. **The analysis of potentially unsustainable growth in credit and leverage is complex as it needs to take into account households, corporations, and financial intermediaries.** The ratio of credit to GDP and its growth rate provide useful warning bells for overall leverage, to be complemented with other leverage measures, including using data on borrowers and the analysis of balance-sheet exposures. With open economies, the International Investment Position and the capital account can provide complementary information on potentially unsustainable increases in leverage. Although financial imbalances typically take a long time to build up, research suggests that some of these variables can be

useful in telling “good” from “bad” booms, and in predicting output and inflation, even three to five years out. In addition, special attention should be paid to real estate booms since they typically involve a high degree of borrower leverage.

31. **More generally, this crisis underscores the need to develop new measures of systemic risk.** These measures could complement more firm-centric regulatory variables and could focus on system-wide leverage, aggregate foreign exposure, etc. If well constructed, such measures could help distinguish between benign and dangerous asset booms and should be some of the variables central banks should take into account.

Whether to react: Role and limits of monetary policy

32. **Monetary policy should take into account macro-financial stability, not just price stability.** The failures of the benign neglect approach underscore the need for monetary policy decisions to be based on a framework that incorporates the longer-term implications of asset-price booms for inflation and economic growth. Containing inflation remains a primary objective of monetary policy, but policy makers must take more account of asset price movements, credit booms, leverage, and the build up of systemic risk. To the extent that the build up of systemic risk can portend a sharp economic downturn and to the extent that regulation cannot fully prevent such a buildup, monetary policy may have to play a more active role in containing booms. In other words, under certain conditions, there may be long term benefits for growth and inflation from “leaning against the wind” during times of asset price exuberance. In that context, monetary policy tightening may be advisable even when near-term inflation appears under control.

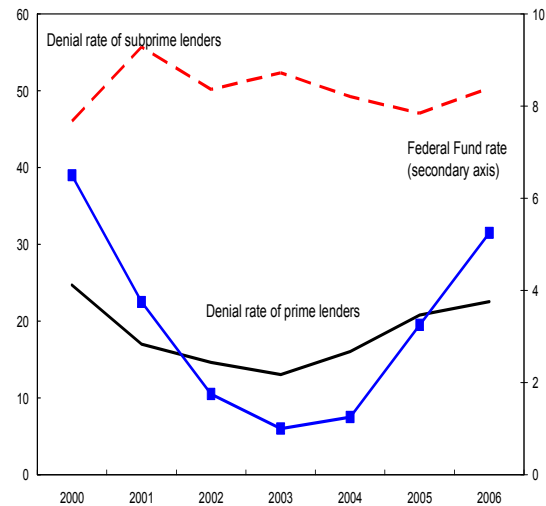
33. **That said, financial stability (or more directly asset price stability) need not be an explicit target of monetary policy.** It is possible to conceive a monetary-policy objective function where a measure of financial stability or asset price stability sits next to inflation and the output gap. And under certain conditions this is shown to perform better than say a classical Taylor rule (IMF 2008). The explicit inclusion of asset price or financial stability as targets, however, may lead to a less credible commitment to inflation fighting; an argument similar to that often brought in support of the separation of the monetary and supervisory authorities. Furthermore, the linkages between monetary conditions, asset prices, and financial stability are likely to operate at longer lags than those typically considered in many inflation targeting regimes. Monetary policy makers could, instead, take into account the impact of their decisions on asset prices and financial stability (and possibly the reaction function of the authority in charge of financial supervision and regulation) only to the extent that they affect inflation and growth over the long run. This would be similar to how they consider the impact of interest rate changes on fiscal balances and the reaction function of the fiscal authorities.

34. **Monetary policy alone remains, however, a blunt tool to deal effectively with speculative booms.** During booms, the expected return on assets may be so high that marginal interest rate changes may have little effect on investors' choices. Whether they do or not depends on circumstances. There is

some evidence that tighter monetary conditions could have mitigated the housing boom in the run-up to this crisis.⁹ Higher interest rates can lower demand and supply of bank loans. For instance, the denial rate for prime mortgage application was clearly correlated with the monetary policy rate.

Indeed, the proportion of prime conforming mortgages in total mortgage originations dropped sharply after 2003 (the start of the tightening cycle). However, denial rates in the subprime mortgage market were uncorrelated with the Federal Funds rate,

suggesting that the more speculative component of housing lending was less sensitive to monetary policy changes. Similarly, tighter monetary conditions in the Euro area did not prevent Western European banks from investing in risky U.S. mortgage backed securities and from lending aggressively in foreign currency to Eastern European households.



35. **The effectiveness of monetary policy is also often limited by capital account openness.** This is especially true in small open economies and in countries with more advanced financial sectors, where banks have easy access to foreign credit, including from parent institutions. Reserve requirements can sometimes be more effective in limiting credit growth—at least in domestic currency. In many countries, currency substitution is also a concern. For instance, evidence from Eastern Europe suggests that restrictive monetary policy leads to a decrease in domestic currency lending but simultaneously increases the origination of foreign-currency denominated loans, thus increasing rather than decreasing the risks associated with a boom. Furthermore, tighter monetary conditions may support expectations of a currency appreciation leading to further capital inflows. These in turn may further feed the asset boom.

How to react: Monetary policy versus regulation

36. **Given the limitations of monetary policy, the burden to curb credit booms should be placed first on flexible prudential and supervision policies aimed at mitigating the procyclical impetus of financial intermediation.** The main problem with speculative booms is the financial sector instability associated with the potential bust.

⁹ Taylor (2008), IMF (2008).

Prudential and administrative measures may provide a more targeted and less costly policy solution than interest rate changes and should be a central element of an integrated policy response. For instance, minimum regulatory capital requirements should be increased during upswings and lowered in downturns and more aggressive provisioning should be encouraged during periods of fast credit growth.¹⁰ Such policies should go beyond the current focus on the risks to individual banks and be based on system-wide measures.

37. **Prudential and supervision policies will also be more effective in reducing the specific risks associated with a boom.** These include general measures to ensure that banks and supervisors are equipped to deal with such risks (e.g., higher capital and provisioning requirements, more intensive surveillance of potential problem banks, and appropriate disclosure requirements of banks' risk management policies). They may also target specific sources of risks (e.g., limits on sectoral loan concentration, tighter eligibility and collateral requirements for certain categories of loans, limits on foreign exchange exposure, and maturity mismatch regulations). Other measures may aim at reducing existing distortions and limiting the incentives for excessive borrowing and lending (e.g., eliminating implicit foreign exchange guarantees and engaging in public risk awareness campaigns). As for monetary policy, financial globalization limits the effectiveness of these prudential measures—through efforts to circumvent the restrictions, switching activities to off-shore centers and foreign banks, or institutions subject to less scrutiny, calling for more international coordination.

38. **The crisis underscores the need for greater domestic and multilateral policy coordination.** At the domestic level, macroeconomic and financial stability were generally treated separately. The former focused on preserving low and stable inflation as well as growth, the latter on firm-level supervision of the formal banking sector. Neither set of policymakers saw the wider implications of rising risks in the shadow financial sector; nor did they appreciate that economy-wide trends in credit growth, leverage, and house prices posed systemically costly tail risks. Across borders, the effectiveness of several prudential measures can be enhanced (and sometimes depends on) adequate cross-country supervisory cooperation to avoid loopholes, such as currency substitution, or switching from domestic lending in foreign currency to direct foreign credit. This cooperation will become increasingly vital as banking systems become more integrated. Coordination among host- and home-country regulators and monetary authorities will also be critical when it comes to liquidity (and solvency) support in case of a bust.

B. Fiscal Policy

39. **Fiscal policy did not play a major role in the run up to the crisis.** The large U.S. fiscal deficits were indeed one of the main two factors behind global imbalances. But we argued earlier that global imbalances were, at best, an indirect contributor to the build up of

¹⁰ These measures are discussed in depth in IMF (2009a).

systemic risk. And, paradoxically, if one believes that world interest rates were too low, U.S. fiscal deficits were, in this light, a stabilizing rather than destabilizing factor. One may have rightly worried, and many observers indeed did, that large deficits may lead investors to move away from U.S. government bonds. But this risk did not materialize, and the crisis was triggered by other factors.

40. **Nevertheless, the crisis brings two important lessons.** The first is that, in many countries, including the U.S., budget deficits were not reduced sufficiently during the boom years when revenues were high, which now limits the fiscal space needed to fight the crisis. The second has to do with the structure of taxation. In most countries, the tax system is biased toward debt financing through deductibility of interest payments. This bias to higher leverage increases the vulnerability of the private sector to shocks, and should be eliminated.

41. **Fiscal policy can help contain speculative episodes and make it easier to deal with their aftermath.** Fiscal buffers should be established in good times—a and rules-based framework can reinforce this, especially since asset price increases can mask a less robust underlying fiscal position by temporarily boosting tax revenues. In addition, at the aggregate level, fiscal policy can help mitigate booms and reduce the buildup of vulnerabilities by lowering demand pressures.

42. **Tax distortions were not a proximate cause of the crisis but can encourage high leverage.** While there were no obvious changes in tax rules triggering recent events, tax rules in many countries are conducive to high levels of household and corporate (including in the financial sector) indebtedness. *Mortgage interest deductibility* or similar tax provisions favoring housing borrowing encourage the accumulation of gross housing debt. These subsidies are large. One estimate for the United States, for instance, suggests a tax subsidy to owner occupation of about 19 percent of user costs on average, and around 8 percent for low-income households. *Deductibility against corporation tax of interest payments, but not the return to equity*, creates a bias toward the use of debt finance (including for financial institutions, though regulatory restrictions may limit the effect). Technically, these tax distortions can be eased. Solutions are known, and have been applied. Political difficulties can be overcome. While it would be unwise to tighten the tax treatment of housing in current circumstances, the experience of the United Kingdom, for instance, shows that mortgage interest relief can be phased out without major political costs. In addition, a few countries have adopted corporate tax systems that level the playing field between debt and equity finance.

43. **Tax provisions may have affected the level, growth and volatility of key asset prices—but ad hoc tax changes are unlikely to be the best way to control speculative booms.** The dividend tax cut in the United States, for example, may have increased equity prices, and some have argued that the housing boom reflected a change in capital gains tax rules in 1997. However, the effects of taxation on asset price dynamics are potentially complex, and ad hoc measures risk creating tax avoidance opportunities. Financial regulatory

measures are likely to be better targeted, leaving neutrality across types of asset and income as the best guide for tax policy, with countercyclical tax measures best applied uniformly to all.

44. **As yet little studied, several other tax issues merit attention.** These include the potential role of aggressive tax planning (not least across national borders) in obfuscating financial arrangements, tax impacts on risk-taking, and the proper treatment of tax losses.

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