

INTERNATIONAL MONETARY FUND

**The Recent Financial Turmoil—Initial Assessment, Policy Lessons,  
and Implications for Fund Surveillance**

April 9, 2008

**Executive Summary**

1. **In response to the IMFC’s October 2007 communiqué, IMF staff has sought to assess the causes of the present turbulence and draw tentative lessons in order to inform its future bilateral and multilateral surveillance work.** This effort has involved close collaboration with the Financial Stability Forum (FSF) and its working groups, as well as consultation with the private sector, national authorities, standard setters, and other bodies.
2. **The conclusions are tentative: they will need to be refined both in view of the rapidly evolving situation in financial markets, as well as in light of the reports that will come from the FSF and other bodies.** Moreover, the focus in this paper is principally on policy implications that are of a structural, medium-term nature, with the more immediate policy priorities to help manage and mitigate the systemic costs of the present crisis discussed in more detail in the *Global Financial Stability Report (GFSR)*. They can nonetheless provide a basis for further discussion, as well as some preliminary guidance for the Fund’s bilateral and multilateral surveillance.
  - **Risk management.** Risk management practices of many financial institutions were deficient. Both managers and supervisors need to play a more active role in scrutinizing these practices, especially with regard to liquidity management, off balance sheet entities and structured products, and to pursue more active stress testing, particularly in “good times,” when risks are less obvious.
  - **Credit rating agencies.** Credit rating methodologies failed to capture the risks embodied in structured products. Investors relied too heavily on ratings, and some of the financial engineering of recent years may have been focused on re-packaging weak credits into highly-rated securities, spurred partly by the premium that investors and regulators placed on high ratings. This suggests the need to improve methodologies and to adopt a differential ratings system for structured instruments, taking better account of their different risk profile, and to review how prudential norms would then need to be modified.
  - **Valuation, disclosure, and accounting.** Weaknesses in the application of accounting standards and gaps associated with the valuation and financial reporting of structured products contributed to the current crisis. Further guidance is needed on how to apply fair value accounting through the cycle, particularly when markets are illiquid. Supervisors need to ensure financial institutions develop robust pricing, risk management, and stress testing models, and collaborate with international standard setters to achieve better cross-border convergence of accounting and disclosure practices. Additional effort is needed to provide markets with accurate and timely

reporting of exposures to structured credit products and other illiquid assets, as well as the valuation and accounting methodology used.

- **Central bank liquidity frameworks.** The crisis revealed the need to adapt some of the tools and practices to manage liquidity and cross-border differences in emergency liquidity frameworks. Central banks may need to broaden the range of collateral and counterparties that they can deal with and, given the level of cross-border finance, work to avoid significant differences in practice.
- **Supervision and crisis management.** Supervisors did not adequately account for the risks associated with new financial instruments, and there were shortcomings in consolidated supervision and underwriting standards. The experience highlights the merits of Basel II's more risk-sensitive approach to supervision, but regulators and supervisors also need to re-consider the capital and other buffers that banks should hold, especially with regard to illiquid structured products and off balance sheet activities. Crisis management frameworks, including deposit insurance, have in some cases proved inadequate and need to be strengthened.

3. **Integrating these conclusions into the Fund's surveillance will be a key challenge going forward.** The Fund is already contributing to the emerging consensus on the key lessons from the turmoil through its collaboration with the FSF, regulators, standard setters, national authorities, and other bodies. This cooperative process will continue and can be deepened further. But the Fund is also uniquely placed to facilitate the dissemination of lessons learned and best practice, monitor and evaluate policy implementation and its impact on the financial sector, and provide feedback both to member countries and to standard setters and other international bodies that could lead to further improvements.

#### A. Introduction

4. **After a prolonged period of accommodative monetary conditions and rapid innovation in financial markets, the stability of the global financial system is now facing a significant test.** The fault lines that emerged in early 2007 stemmed initially from rising delinquencies on U.S. subprime mortgages, increased leverage, a realization that financial institutions were heavily exposed to complex structured products whose valuations were uncertain and/or dropping precipitously, a seizing up of interbank markets, and large losses and asset write-downs among a number of banks and other large financial institutions.

5. **Policymakers and financial institutions have responded.** In the first instance, central banks in a number of major industrial countries acted quickly to provide unprecedented liquidity support and ease monetary policy. Fiscal and other policy measures are being taken to help mitigate the downdraft in mortgage markets, and weak institutions are being recapitalized or taken over. National regulators, supervisors, and governments are also working to identify and address the regulatory gaps that have emerged over the past year. As well, difficult adjustments are taking place in financial markets, with many private institutions taking significant write downs and soliciting capital injections.

6. **Nonetheless, threats to the financial system are intensifying.** In recent weeks, de-leveraging pressures have intensified and risk becoming self-reinforcing, and systemically

important institutions remain under stress. At the same time, the macroeconomic slowdown in the United States and abroad is placing strains on corporate and household credit quality and exacerbates the danger of a global credit crunch.

**7. These developments prompt a number of observations, which have shaped the preliminary policy lessons and the suggested policy responses:**

- First, as often occurs during periods of benign economic conditions, market practice, regulatory and prudential norms, and both market and supervisory oversight lagged, leaving the system vulnerable to excessive risk taking.
- Second, while the financial innovation of recent years has brought important benefits, the combination of globalized credit markets, the proliferation of business models, such as the “originate-to-distribute” approach to lending, and the complexity and opacity of structured credit instruments undermined market discipline and left the financial system exposed to systemic shocks and contagion.
- Third, regulation and supervision cannot substitute for effective risk management by private agents and can, if taken too far, exacerbate moral hazard. The focus, therefore, should not be on eliminating risk but on improving market discipline and addressing the tendency of market participants to underestimate the systemic effects of their collective actions.
- Fourth, although it may be comforting to try to identify a single “cause” of the present crisis, the origins were broad and complex. The policy responses should thus be correspondingly multi-faceted and far-reaching.
- Finally, that the U.S. and other financial markets were vulnerable to a hard landing was not a complete surprise: many analysts and policymakers had raised concerns about excessive risk taking, loose underwriting standards, and asset overvaluations, all of which have laid the seeds for crises in the past. But that these warnings had little impact raises important questions about the coordination among national supervisors, and about the role and effectiveness of bodies such as the FSF, BIS—as well as the Fund—in generating action at both national and international levels.

**8. The rest of this paper outlines the Fund staff’s preliminary views on the key lessons from the turmoil and their policy implications over the medium term.** The following five sections contain the main lessons learned and policy recommendations in the areas of risk management; credit rating agency practices; valuation, disclosure, and accounting; central bank liquidity frameworks; and supervision and crisis management. The last section concludes with a discussion of the possible implications of this work for Fund surveillance.

## **B. Risk Management**

*Risk management failures in large and sophisticated financial institutions were a major cause of the current crisis and reflected shortcomings in both judgment and governance that were compounded by weaknesses in accounting and regulatory standards. Managers should*

*challenge aggressively the assumptions underlying risk management and pricing models, especially for new and complex products; scrutinize more carefully off-balance sheet liabilities and the robustness of hedging strategies, including to broader market shocks; avoid an over-reliance on credit ratings, including for assessing liquidity and market risk; and limit concentrated positions in illiquid structured products. Although risk management is principally the responsibility of senior management of financial institutions, supervisors have an important role in pressing for higher quality of risk management and governance in regulated firms and in encouraging more rigorous stress testing, which will require adequate supervisory resources and expertise.*

9. **Risk management failures among major financial institutions reflected shortcomings in both judgment and governance.** There were failures in even the largest and most sophisticated financial institutions in managing risks, especially those related to investments in complex structured products, such as ABS CDOs, that were largely built on subprime collateral. Most firms appeared to have followed well-accepted risk management practices in the run-up to the crisis, and the models used to manage risk do not seem to have systematically failed. However, the users of these models applied poor business judgment, in many cases failing to appreciate their limitations. Especially in the case of structured products, inadequate attention was paid to their vulnerability to tail risks and multiple notch ratings downgrades, stemming in large part from their multiple securitization and risk layering.<sup>1</sup> Moreover, when warnings by risk managers were issued, they were in some cases ignored or underestimated by senior management. Last but not least, supervisory authorities were also not active enough in challenging risk management practices at major financial institutions.

10. **These failures led to important differences in the way risk managers handled structured products.** In some institutions, risk managers recognized that similarly rated structured securities (even those rated AAA) had vastly different risk characteristics, and limited their exposures and/or set additional capital requirements, exposure limits, or other institutional “brakes.” In other institutions, however, the same information and roughly similar models led to very different levels of exposure to structured products. Moreover, in some institutions that suffered relatively greater losses, even when risk managers expressed concern, institutional silos and/or a lack of access to senior management meant that the analysis could too easily be ignored or dismissed by business units.

11. **These failures also led to underestimation of the market—versus the credit—risk inherent in the senior and super-senior tranches of CDOs.** Although risk managers routinely evaluated the tail risk of an extreme credit shock, many firms reached the conclusion that this risk was too remote to warrant the cost of hedging. Other firms may have realized the value of hedging but underestimated the fact that these hedges were being

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<sup>1</sup> Correlated loss assumptions are crucial for the rating analysis of structured credit products, especially for senior tranches. The shape of the loss distributions of CDO tranches, and therefore their ratings, depends critically on the correlations of default in the underlying asset pool—an element absent in bond ratings. In particular, an increase in default correlations shifts probability mass into the tails of the loss distribution, increasing the potential losses to the senior tranches. Nevertheless, it is difficult to estimate underlying default correlations, and they can be highly volatile over a business cycle.

provided by a few, concentrated counterparties (the so-called “monoline” insurers). In both cases, firms appear to have undervalued the vulnerability of highly-rated CDO exposures to market and liquidity shocks.

12. **The general lack of liquidity of structured products, though broadly understood, was often poorly managed.** It was well understood by most market participants that these instruments are relatively illiquid, yet many buy-side institutions, including traditional money market funds, maintained levels of portfolio concentration that in retrospect proved unwise. This situation was compounded by the decision of many institutions to fund these instruments using short-term asset-backed commercial paper, issued by conduits and SIVs, and often subject to performance “triggers” that can require an unwinding and liquidation of the structure.<sup>2</sup>

13. **The inter-relationship between regulation, accounting practices, and ratings may have exacerbated the market turbulence.** Basel capital requirements encouraged securitization and off-balance-sheet funding, while fair value accounting, in combination with relatively illiquid markets for most structured credit products, contributed to procyclical selling pressures and significant price gapping once markets came under stress.

#### *Key lessons and recommendations*

14. **This experience has provided important lessons for both risk managers and supervisors.**

- Managers should challenge aggressively the assumptions underlying risk management models, especially for new and complex products, and adopt more rigorous stress testing for extreme or worst-case scenarios.
- Greater attention should be paid to the robustness of hedging strategies and understanding a firm’s broader exposures, including the potential second-round effects of shocks on its main counterparties and other major market participants, and off-balance sheet obligations. Risk managers and supervisors should not equate credit ratings with liquidity, limit concentrated positions in illiquid structured products, and ensure funding better reflects portfolio duration and liquidity.
- Supervisors should encourage more rigorous stress testing, especially in “good times,” use the results to inform their supervisory practices (see Section F), and assess the quality of risk management and governance in regulated firms to ensure that senior management is well informed about the risks their firms are taking on.

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<sup>2</sup> Some of the safeguards built into these vehicles and structures, such as asset quality tests, net cumulative outflow tests, and other performance, ratings, and market value triggers may have actually accelerated the pressure to unwind asset portfolios. While these automatic triggers protect senior investors and liquidity- and credit-enhancement providers during stable and relatively liquid markets, they create the potential for widespread selling pressure, depressing asset values further during times of market stress.

- To perform these functions successfully, supervisors must have the required skills and resources. The experience of the past year has exposed significant gaps in the ability of supervisors to understand the nature of banks' business and practices.

15. **However, it is crucial to recognize that risk management cannot be achieved solely by regulation.** The onus remains principally on senior management of financial institutions to ensure that internal governance structures are robust. Supervisors can play a role in supporting this process, a process that could be usefully supported with international dialogue and coordinated cross-border supervisory efforts. The Senior Supervisors Group is a welcome development in this regard.

16. **This experience has also raised fundamental questions about the future of some structured credit products, such as ABS CDOs.** Specific issues regarding their rating by credit rating agencies and their valuation are discussed in detail in the following two sections; but the recent turmoil raises some more fundamental issues. These instruments are relatively opaque, illiquid, and complex, especially compared with other corporate credit securities and risk transfer instruments. Their design diminishes their signaling value, since it is difficult to gauge the quality and risk of their underlying credits. Securitization is an important and useful mechanism for pooling and transferring risk, but if ABS CDOs and similarly complex products are to continue to represent a significant part of the financial landscape, prudential or other measures may be needed to ensure that their implications for market discipline are effectively internalized.

### C. Credit Rating Agencies

*The recent crisis has illustrated the limitations of credit ratings in the case of structured credit products, the potential conflict of interest of credit rating agencies, as well as the injudicious use of credit ratings by investors. Credit rating methodologies for structured products need to be improved to take into account their greater risk of rapid, multiple-notch downgrades. At a minimum, this requires the application of different rating scales from corporate and other debt, and disclosure of the stability and limitations of such ratings. Regulators should make better use of approval and licensing procedures to reduce potential conflicts of interest, and to spur improvements in the transparency and disclosure of rating methodologies. The use of ratings in prudential regulations should also be reviewed, if only to account of differential scales that would be applied to structured instruments.*

17. **The recent crisis has illustrated significant problems in the use (and usefulness of) credit ratings of structured products.** In particular, the methodologies used by credit rating agencies (CRAs) were not able to capture the complexity of these instruments, given their multiple tranches and their susceptibility to rapid, multiple-notch downgrades. The complexity of these instruments led to an over-reliance on credit ratings by investors, supported by investor mandates and regulatory requirements. These problems were compounded in the period leading up to the crisis by the sluggish pace of downgrades to previously-rated issues.

18. **Existing methodologies employed by CRAs are either inadequate or inappropriate when applied to complex structured products.** These methodologies use the same default-centered rating scale that is applied to corporate debt. This misses the fact

that these instruments and their ratings are highly sensitive to other risks (e.g., tail, market, and liquidity risks) and present significantly different risk profiles. For this reason, CRAs should adopt greater methodological transparency and disclosure, and (at a minimum) differentiated rating scales for their ratings of complex structured products (see the discussion and recommendations in recent issues of the GFSR).

19. **The impact that CRA ratings have on investor behavior and regulation may have had the unintended effect of spurring financial engineering tailored to obtaining high ratings.** Ratings have a significant impact on portfolio decisions since they provide a relatively low-cost mechanism for identifying and managing risk, and they can also be used to mitigate principal-agent problems (i.e., to prevent managers taking on greater risks than pension trustees and other principals would prefer). This provided a significant incentive to the financial industry to design structures to increase the average rating of asset-backed securities. Supervisory and regulatory incentives may also have contributed to an over-reliance on CRA ratings. Under the Basel II Accord and national insurance and pension fund regulations, CRAs are delegated a central role in certifying the quality of assets held by institutional investors and banks. This both promoted their use and established a perception of CRA ratings as de facto regulatory instruments.

20. **CRAs were also subject to at least the appearance of conflict of interest.** This apparent conflict of interest is partly inherent, since the sponsor of new instruments pays the CRA for being rated; but it was exacerbated by the complexity of structured products. For these instruments, CRAs were often consulted in advance on how alternative structures would affect the instrument's rating. This conflict of interest arguably led to an over-rating of some complex structured products (particularly those associated with sub-prime mortgages) and delays in downgrading when the U.S. housing sector deteriorated.

### *Key lessons and recommendations*

21. **Some changes have been proposed to address these concerns.** The major global CRAs have proposed changes to the IOSCO Code of Conduct for Credit Rating Agencies, and instituted various methodological revisions. These changes aim to reduce conflicts of interest, improve the quality and transparency of the rating process, and strengthen measures to educate investors about the purposes and limitations of CRA ratings. Other proposed reforms target governance procedures and practices.

22. **But more can be done to address shortcomings in credit ratings, especially with regard to methodologies.** Fitch introduced a simulation-based forward-looking indicator (i.e., a ratings stability score) in 2006, and Moody's and Standard & Poor's have also proposed augmenting their rating metrics. None of these initiatives incorporates multiple risk metrics in a fundamental way to rate structured products; instead, they focus mainly on parametric refinements of existing single-risk-focused methodologies (e.g., updating of input default probabilities, industry/obligor and geographic concentration, and recovery rates). What is still needed is to differentiate clearly between the credit risk ratings of structured products and of corporate and other debt; account fully for the multiple risk factors that influence structured credit product pricing; and provide investors with more useful information on the sensitivity and stability of CRA ratings.

23. **There is scope to improve approval and licensing procedures to strengthen the integrity and diversity of the CRA industry.** This could provide scope to boost the transparency and disclosure of rating methodologies and processes, improve the clarity on the purposes and limitations of credit ratings, and reduce barriers to entry.

24. **At the same time, care will be needed to avoid over-regulation.** It has been argued that regulatory oversight of CRAs should be strengthened (akin to what was introduced for auditing firms in recent years) to encourage and sustain ongoing reforms.<sup>3</sup> However, dictating rating methodologies, standards, and other technical criteria could stifle innovation and exacerbate moral hazard problems, including by conveying to market participants the impression of a public sector guarantee of the quality of ratings and underlying methodologies, and by discouraging proactive risk management by the private sector.

25. **There may be merit in multilateral approaches to reform the role and use of credit ratings.** This will be especially important for the major financial standard-setters—especially the Basel Committee—which may wish to reconsider the significant prudential role that credit ratings have been given, as well as how this role might be amended if a different rating system were to be applied to structured products.

#### **D. Valuation, Disclosure, and Accounting**

*Weaknesses in the application of accounting standards and gaps associated with the valuation and disclosure of complex structured finance products contributed to the depth and the duration of the current crisis. Governance and risk management within financial institutions need to be improved, and supervisors should scrutinize more carefully internal processes and controls, as well as pricing and stress testing methodologies. Prudential norms should also be stiffened—e.g., through increased capital and provision buffers—especially for new and complex instruments. A key challenge will be for national authorities and international standard setters to achieve better cross-border convergence of accounting and regulatory standards and disclosure practices.*

26. **The accounting treatment of structured products may have resulted in procyclical valuations.** Structured products are often classified in categories that are subject to fair value accounting.<sup>4</sup> During the upturn, the booming demand for structured products boosted valuations and banks' profits and equity. Conversely, during the downturn, valuations became depressed as demand and liquidity evaporated. It is thus arguable that fair value accounting did not provide accurate information about the banks' true risk profile through the cycle. The frequent incremental revisions in bank losses after the onset of the turmoil further reduced market confidence

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<sup>3</sup> For example, the U.S. Credit Rating Agency Reform Act of 2006 provided the Securities and Exchange Commission with increased oversight responsibility.

<sup>4</sup> Financial assets can be classified as trading, available for sale, or held to maturity. According to both U.S. GAAP and IFRS, unless assets are classified as held to maturity, they must be accounted for at fair value.



27. **The procyclicality of fair value accounting was amplified by the use of portfolio covenants or triggers.** These triggers often required sales, margin calls, or additional collateral requirements as valuations declined, which induced a vicious cycle forcing sales that otherwise would not have been made. As assets lost value and were sold, the liquidity of financial institutions was impaired.

28. **Shortcomings in valuation models and practices played a role.** Some of the key assumptions and inputs used in valuation models proved inadequate, especially assumptions of single common factors and the independence of default probabilities and recovery rates. Practitioners relied on relatively limited datasets to estimate default probabilities, especially in the case of subprime mortgages, where the history was short. Beyond the models, there were also deficiencies in the governance of valuations. In some institutions, decisions were taken by senior managers to take risks in order to spur business growth, while in others valuations were not performed or verified independently; this sometimes resulted in senior management receiving inaccurate or misleading information. Moreover, the contingent liabilities and liquidity risks associated with off-balance sheet entities were often underestimated and/or did not figure adequately into contingency funding plans. Indeed, in many cases banks were forced to bring these claims back on balance sheet, either for reputational reasons or because they were contractually obligated; the latter implies that these conduits and SIVs should have been treated on a consolidated basis from the outset.

29. **Financial reporting also appears to have been inadequate, understating the true risk of reporting entities.** Most notably, banks did not report their holdings of structured products in a consistent format: few banks provided a breakdown of exposures by tranches; there was inconsistent reporting of net versus gross exposures; information on hedges was not disclosed; and disclosure of assets held by non-consolidated entities was also limited. These reporting shortfalls have made it difficult to estimate actual and potential losses facing individual institutions and have exacerbated the loss of market confidence. Additional effort is needed to provide markets with accurate, timely and consistent reporting of exposures to structured credit products, other illiquid assets, and off-balance sheet vehicles. The development of a consistent and standardized reporting template could be helpful in this regard. Supervisors and auditors can contribute to making these disclosures more timely and consistent across institutions.

### *Key recommendations*

30. **The challenge is to find better ways to apply fair value accounting through the cycle so as to mitigate procyclicality.** Changing accounting standards at the height of the crisis would risk adversely impacting investor confidence. However, going forward, there is a need to provide more guidance on the calculation and application of fair value accounting rules, in particular for assets that are not actively traded. Specific disclosure of the origin of “write-ups” as well as “write-downs” should become the norm.

31. **Supervisors can help promote this process by strengthening prudential norms.** Prudential supervisors should encourage institutions to develop more robust models that address the aforementioned problems; require and review the use of more prudent and reliable pricing assumptions and stress testing methodologies; and monitor more closely internal processes, models, and controls for managing risk. Prudential supervisors should

evaluate the rigor of the financial institutions' fair value measurement practices and the robustness of underlying risk management strategies, policies, and practices. In addition, supervisors may need to encourage financial institutions to hold larger capital and provision buffers against such instruments. Accounting standard setters need to continue to work with supervisors and the industry to take better account of the financial stability implications of accounting standards and practices.

32. **Given the extent of financial globalization, there are strong arguments for standardizing bank disclosure requirements.** The disclosures should cover the quantity and sensitivity of exposures to credit, market, foreign exchange, and liquidity risks. Separate disaggregated disclosure of off-balance sheet entities should also be required, especially when these pose material risks. Implementation of Basel II would help, but disclosure gaps would still remain and close cooperation between regulators and standard setters still be needed to address remaining concerns.

33. **Current gaps in price discovery mechanisms need to be addressed.** The standardization of securitized instruments would help in this regard, as it would enhance transparency, liquidity, and risk assessment. A centralized over-the-counter (OTC) registry that would collect and distribute transaction data—which the industry already seems to be considering—would also be useful, since it would improve price discovery and the capacity to develop accurate, market based valuations.

#### E. Central Bank Liquidity Frameworks

*The swift action by central banks to provide liquidity support was critical to staving off a possibly even more severe disruption of interbank markets. At the same time, the crisis exposed shortcomings and cross-border differences in the way central banks manage liquidity support. Many have already taken steps to widen the range of counterparties, extend the range of acceptable collateral, and improve cross-border cooperation, thus narrowing the differences between the facilities offered in different countries. This convergence is welcome, given the increasingly global reach of large financial institutions but, at the same time, care is needed to avoid exposing central banks to undue credit and counterparty risk. The key challenge will now be to ensure that the momentum that was driven by short-term necessity is maintained and fosters longer-lasting cooperation and improvements in the interoperability of liquidity frameworks.*

34. **The experience of the past year has illustrated that central banks follow very different practices for providing emergency liquidity support.** The range and type of counterparties that central banks may deal with (either through open market operations or via standing facilities) varies, and collateral policies also differ. Moreover, although global banks' funding relies increasingly on the availability of liquid foreign-exchange swap (and related) markets, individual central banks have differing capacities to address funding strains in these more international contexts. The steps taken in recent weeks by the U.S. Federal Reserve illustrate increasing awareness of these limitations.

35. **Recent events have also highlighted the danger of conflicts between liquidity support operations and the monetary policy stance.** In times of stress, changes in the pattern of liquidity provision can confuse market participants about monetary policy

intentions. In addition, the sterilization of large-scale short-term liquidity injections can be difficult to manage. Thus, the lesson of recent months is that there is an even greater premium on effective communication to clarify objectives and processes in times of market stress.

36. **Finally, the crisis has also shown that there is still a “stigma” attached to central bank standing facilities.** Banks under stress may be reluctant to access central bank facilities, concerned that depositor confidence could be damaged. This reluctance can put further pressure on interbank rates and increase the risk that illiquidity begins to damage solvency.

*Key lessons and recommendations*

37. **Central banks need to ensure that they can lend to a sufficiently broad set of counterparties.** In the recent crisis, central banks faced problems in ensuring that liquidity flowed where it was most urgently needed: some illiquid but solvent institutions that did not have direct access to central bank lending were unable to access funds. This suggests that broadening the pool of counterparties has the potential to ease market strains, especially when gaps occur within customary interbank network relationships.

38. **The range of eligible collateral should be widened.** Those central banks that maintained a wider definition of acceptable collateral appeared to be better able to cope with the market turbulence over the past year, while those with narrower definitions or larger differences between collateral eligible for open market operations (OMO) and standing facilities (SF) were required to make rapid and operationally complex adjustments.

39. **At the same time, care is needed to avoid “bad collateral driving out good” and exposing central banks to excessive credit and counterparty risk.** Banks and other counterparties will naturally be opportunistic in selecting the collateral they place with central banks during times of stress. If central banks are too generous in accepting a wide range of collateral in OMO, the incentive for their counterparties to hold “high quality” paper will be diminished. Indeed, experience has shown that funding-cost arbitrage tends to lower the average quality of the central bank’s collateral, an example of “Gresham’s law.” To forestall these risks, operating frameworks could contain the ability of counterparties to place nontraditional and less creditworthy collateral with central banks, including with concentration limits and differential pricing. Ideally, pricing and collateralization practices should be kept broadly in line with usual market practice to facilitate transparency and access, as well as to minimize the exposure of central banks to risk.

40. **In times of stress, central banks will need to communicate early and often to explain how their longer-term liquidity relates to its broader monetary policy stance.** Market participants and the public should be as clear as possible that the purpose of emergency operations is to ensure orderly markets, and what implications there may be for the central bank’s short-term interest rate objectives.

41. **With increasing globalization of institutions and markets, closer collaboration among central banks is needed in their provision of liquidity.** The participation of the ECB and the Swiss National Bank in the Federal Reserve’s TAF illustrated the merits of this

approach, allowing the ECB and the Swiss National Bank to provide dollars to European banks without interfering with the Federal Reserve’s domestic liquidity management and without implicating other policy areas, in particular those related to exchange rates.

42. **Indeed, there may be merit in central banks establishing a more permanent set of emergency swap lines.** Such an arrangement could be modeled upon the procedures used in December and January and could be broadened to other central banks. This approach could bolster market confidence in the ability of central banks to act in a timely manner in times of global stress.

43. **Central banks should examine how to avoid a “stigma” being attached to the use of their standing facilities.** Relying on “emergency” bilateral facilities can be counterproductive, since this can itself undermine confidence. It might be more effective to have in place instruments that are flexible enough to scale up in the face of turmoil. However, in some cases delicate balances may have to be struck—for example, broadening the OMO collateral pool in times of distress or lending longer-term may distort incentives to manage private liquidity risk prudently, and may thus involve moral hazard.

#### F. Regulation, Supervision and Crisis Management

*The crisis has exposed shortcomings in many aspects of regulatory, supervisory, and crisis management frameworks in mature market economies. These shortcomings highlight the merits of Basel II’s more risk-sensitive approach to supervision, but the transition to Basel II should be managed carefully, since partial or incomplete implementation would pose risks. More generally, greater care is needed to ensure that consolidated supervision is applied effectively to off-balance sheet entities, and minimum underwriting and consumer protection standards should extend to all financial intermediaries. Resolution frameworks and deposit insurance systems need to be strengthened and complemented by better interagency coordination, taking care to ensure that central banks maintain a key role, given their responsibility for systemic stability and emergency liquidity provision.*

44. **The recent turmoil exposed important fault lines in the prudential oversight of financial institutions in a number of mature economies.** These stem from weak implementation of consolidated supervision, coupled with supervisory frameworks that did not adequately capture the risks associated with new financial instruments and a significant deterioration in lending standards. Mortgage securitization contributed to the deterioration in lending standards, and supervisors did not pay enough attention to bank exposures to structured debt or the use of off balance sheet conduits and SIVs.

45. **These shortcomings highlight the need for a more risk-sensitive approach to supervision, as called for under Basel II.** The Basel II framework will better align capital charges with the underlying risk that banks take on, and reduce the incentive for shifting assets off balance sheet. Nonetheless, the Basel Committee’s decision to review aspects of the Basel II framework in light of recent developments is appropriate, and there will still be a need for more rigorous enforcement of existing policies regarding consolidated supervision and capital charges. Countries that have internationally active or sophisticated banks engaged in rapid innovation will need to move more quickly to Basel II, but in all cases care is needed

to ensure that the supervisory capacity and other preconditions for its effective application are in place.

46. **Crisis management and bank resolution frameworks have been also found deficient in some cases.** Weaknesses were exposed in supervisory authority, bank resolution and intervention frameworks, deposit insurance, and interagency and cross-border coordination. These were more problematic in countries where central banks do not have a central supervisory role.

*Key lessons and recommendations*

47. **The Basel Committee's intention to review aspects of the Basel II framework is welcome.** Recent events underscore the appropriateness of the Basel Committee's review of the adequacy of capital charges, including those that apply to highly-rated CDOs and liquidity lines under Pillar 1, and the treatment of implicit support and reputational risk under Pillars 2 and 3. Greater attention to managing the transition to Basel II is also warranted. Supervisors need to be aware of the risks associated with "cherry-picking" elements of the Basel II framework, as partial or incomplete implementation will not deliver the benefits of the framework. At the same time, supervisors should pay particular attention to the impact analysis from the parallel run period, and should be prepared to extend the capital floors to longer periods, if warranted. Moreover, in implementing the Basel II framework, it will be important to use existing elements to reduce its procyclicality. The calculation of risk factors and the calibration of rating systems should take into consideration at least a full cycle. Banks should have strategic plans for raising sufficient capital in good times, to ensure that they are able to endure an stressful economic environment when the cycle turns.

48. **Minimum underwriting and consumer protection standards should apply to all financial intermediaries to limit excessive risk taking and regulatory arbitrage.** This issue is especially salient in the United States, where unregulated (or lightly regulated) financial institutions originate consumer credit products similar to those originated by regulated financial institutions. Steps to level the regulatory and supervisory playing field that would require closer coordination of state and federal supervisors, such as the ones proposed in the President's Working Group recent recommendations in the United States, would be necessary to meet the systemic risks that these originators can pose.

49. **Supervisory risk identification processes need to be strengthened.** Risk-based supervisory approaches, which base the frequency of on-site examinations on an assessment of the systemic importance of institutions, will need to be re-calibrated in light of recent experience and the new transmission channels that have become evident. Moreover, while utilizing external auditors to perform on-site supervision is accepted practice in some countries, it is important that outsourcing of supervision does not compromise the quality of the dialogue with the banks and the understanding of their activities, nor impede bank supervisors from taking timely preventive actions.

50. **Consolidated supervision and prudential reporting should be applied to off balance sheet entities associated with financial institutions and to loans sold with implicit or explicit recourse.** Presumptions that loans sold by financial institutions no longer pose a liability for the seller need to be revisited when the institution maintains any sort of

relationship with the entity that purchased the loans (e.g., SIVs and conduits). This risk needs to be better captured within the context of the consolidated supervision and prudential reporting regime.

51. **Resolution frameworks need to be strengthened and should include specific triggers to initiate action.** Banking stresses should be identified early and corrected quickly. Supervisors should have credible authority to intervene at the first sign of weakness and resolution action could commence at some positive level of risk-weighted capital. Bank failures should be covered by specialized financial sector insolvency proceedings and dealt with either by a specialized court or a specialized agency. Bankruptcy laws should clearly identify loss-sharing arrangements. There should be provisions to facilitate the transfer of control from owners and managers to the official administrator. Receivers should be provided with a broad range of instruments for resolving failed institutions, and supervisors' actions should have finality and should not be automatically suspended by the courts.

52. **Deposit insurance systems should aim to limit the likelihood of retail depositor runs from troubled banks.** Schemes should include all deposit-taking institutions, should cover adequately the large majority of retail depositors, and have the capacity to pay depositors quickly. Public awareness of the system's terms and coverage is critical for stabilizing depositor confidence, and recent events have illustrated that co-insurance arrangements need to be designed carefully. Funding mechanisms should be in place to enable payouts: in this regard, ex ante funding systems are more effective and less procyclical. While the mandates may differ across systems, the role and function of the deposit insurance system must be unambiguous and have adequate authority and resources to carry out its role in the bank resolution framework.

53. **Regardless of the national supervisory arrangements, central banks need to play a central role.** Given their responsibility for systemic stability and emergency liquidity provision, it is essential that central banks continuously monitor of the risk profiles of individual institutions and have adequate information to do so, especially those banks material to the orderly functioning of the payments systems and money and interbank markets. Moreover, while supervisory frameworks focus on effective oversight of group-wide risks, they need to be complemented with arrangements for coordinated actions among agencies responsible for supervisory oversight, provision of liquidity, and bank resolution.

54. **The recent turmoil also suggests the need to reconsider the regulation of monoline financial insurers.** These entities are a critical lynchpin of the financial system, given the extent to which investors have relied on their guarantees of municipal and mortgage-backed securities. These guarantees, in turn, have hinged on the triple-A ratings of these insurers, which have shown themselves to be thinly capitalized, especially given their vulnerability to market risk.

55. **Supervisors must be provided with sufficient legal powers and resources.** Regardless of the national supervisory arrangements, if institutions answer to multiple regulators and supervisors, it is essential that there be no ambiguity about mandates and responsibilities, and that the lead agency responsible and accountable for the prudential supervision of an institution be vested with full authority for enforcement and for taking early remedial action. At the same time, given the increasing complexity of the business that these

institutions perform, it is essential that supervisors be provided with sufficient resources—including staff—to carry out their responsibilities effectively.

### G. Implications for Surveillance: An Initial Assessment

56. **The Fund is already contributing to the emerging consensus on the causes of the financial market turmoil and the lessons for policy makers.** Fund staff are collaborating closely with the FSF and its working groups, as well as consulting with the private sector, regulators and national authorities, standard setters, and other bodies. This report, prepared in response to IMFC communiqué of October 2007, is a snapshot of this ongoing process. This dialogue will continue: the Fund's assessment and recommendations will be shared, as appropriate, with other stakeholders and, at the same time, remain open to progress made in other relevant fora.

57. **Even though the turmoil in financial markets is still evolving, and consensus on the appropriate policy responses is still emerging, the Fund's surveillance will need to respond.** The risks to global financial stability are serious, and through its bilateral and multilateral surveillance the Fund is uniquely placed to facilitate the dissemination of lessons learned and best practice to its member countries; monitor and evaluate policy implementation and its impact on macroeconomic and financial stability; and provide feedback to standard setters and other international bodies that could lead to further improvements.

58. **The Fund can respond to these challenges through both its Article IV consultations and FSAP assessments.** In particular, recent developments suggest scope to sharpen surveillance and policy advice in the following areas:

- The dialogue with *supervisors and regulators* should seek to ensure the adequacy of risk management practices in financial institutions, especially where complex structured finance products are used, and the robustness of stress testing by both private sector institutions and by supervisors. In addition to capital adequacy, supervisors should be especially vigilant with regard to liquidity, and have in place effective contingency planning, bank resolution, and deposit guarantee frameworks. Cooperation with foreign supervisors is particularly pertinent in cases where foreign banks have a significant presence in the domestic financial system.
- Many of these issues are also relevant for *central banks*. In cases where central banks do not have supervisory functions, it would be particularly important to assess the degree of cooperation with banking supervisors and arrangements for coordinated action and early intervention, in the event of financial sector stress. In addition, the recent turmoil has also highlighted the importance of having in place provisions for providing emergency liquidity in a manner that does not unduly deter access while also avoiding significant credit risk falling on the central bank.
- Although the turmoil has thus far not had a major impact on *emerging markets*, the risk of contagion is significant in countries with large current account deficits financed by debt-creating capital inflows and/or financial sectors dominated by banks from mature markets. In these cases, surveillance should pay special attention to the

authorities' own stress testing and bank resolution frameworks and, where applicable, cross-border supervisory cooperation arrangements. In many countries, the Fund can also help strengthen domestic policy frameworks in these areas through capacity building.

59. **There are also lessons that can help sharpen the Fund's multilateral surveillance.** The April 2008 *GFSR* has already sought to draw policy lessons from the turmoil, and placed a particular emphasis on central bank liquidity frameworks and risk management. Fund staff, with the encouragement of the G7, is coordinating more closely with the Financial Stability Forum and a broad range of other international organizations to help forge a broad policy consensus. Some of the issues emerging from the foregoing sections could also be discussed in the context of future multilateral consultations. As noted at the outset, the Fund, with its universal membership and surveillance mandate, is uniquely placed to contribute both the analysis of these issues and also to help disseminate and encourage best practice.