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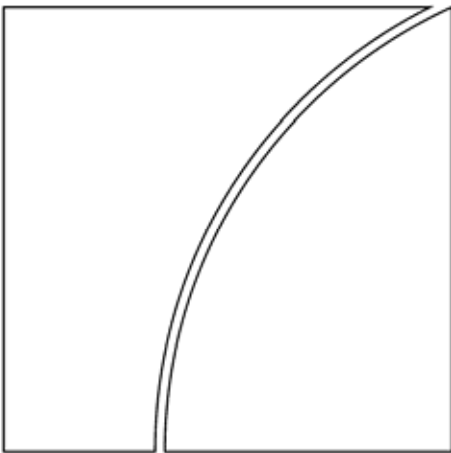
## Financial system and macroeconomic resilience

Sixth BIS Annual Conference  
18–19 June 2007

Monetary and Economic Department

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## Foreword

On 18–19 June 2007, the BIS held its Sixth Annual Conference, on “Financial systems and macroeconomic resilience”, in Brunnen, Switzerland. The event brought together senior representatives of central banks, academic institutions and the private sector to exchange views on this topic. This BIS Paper contains the opening address by William R White (Economic Adviser, BIS), the contributions to the policy panel on “Coping with financial distress in a more markets-oriented environment” and the prepared remarks of the participants at the overview panel of the conference. The participants in the policy panel discussion were Donald Kohn (Board of Governors of the Federal Reserve), Armínio Fraga (Gávea Investimentos) and John Gieve (Bank of England). Yi Gang (People’s Bank of China), Stanley Fischer (Bank of Israel) and Lucas Papademos (European Central Bank) participated in the overview panel, which was chaired by Malcolm Knight (BIS).



## Conference programme

### Sunday 17 June

- 17:30 Conference registration  
19:00 Cocktail reception and informal dinner

### Monday 18 June

- 09:00 Opening remarks: William White (Bank for International Settlements)  
Chair: YV Reddy (Reserve Bank of India)
- 09:15 **Session 1: Financial intermediation through institutions or markets?**  
Paper title: "Financial intermediaries and financial markets"  
Author: Martin Hellwig (Max Planck Institute for Research on Collective Goods)  
Discussants: Bengt Holmström (Massachusetts Institute of Technology)  
Martín Redrado (Central Bank of Argentina)
- 10:45 Coffee break
- 11:15 **Session 2: Towards market completeness**  
Paper title: "Innovations in credit risk transfer: implications for financial stability"  
Author: Darrell Duffie (Stanford University)  
Discussants: Mohamed El-Erian (Harvard Management Company)  
Kenneth Froot (Harvard Business School)
- 12:45 Lunch  
Chair: Alan Bollard (Reserve Bank of New Zealand)
- 14:15 **Session 3: Accounting and financial system behaviour**  
Paper title: "Liquidity and financial cycles"  
Author: Hyun Shin (Princeton University) and Tobias Adrian (Federal Reserve Bank of New York)  
Discussants: Philipp Hildebrand (Swiss National Bank)  
Mary Barth (Stanford University)
- 15:45 Coffee break

## Monday 18 June (cont)

- 16:15      **Session 4:**      **Policy panel discussion on “Coping with financial distress in a more markets-oriented environment”**
- Panellists:      Donald Kohn (Board of Governors of the Federal Reserve System)  
                                      Arminio Fraga (Gávea Investimentos)  
                                      John Gieve (Bank of England)
- 18:00      Adjournment
- 19:00      Reception followed by formal dinner
- Keynote lecture by Robert Merton (Harvard University)

## Tuesday 19 June

- Chair:                      Kazumasa Iwata (Bank of Japan)
- 09:00      **Session 5:**      **Risk transfer to households and macroeconomic resilience**
- Paper title:              “Risk management for households – the democratization of finance”
- Author:                      Robert Shiller (Yale University)
- Discussants:              John Campbell (Harvard University)  
                                                      Jaime Caruana (International Monetary Fund)
- 10:30      Coffee break
- 11:00      **Session 6:**      **Financial system: shock absorber or amplifier?**
- Paper title:              “Financial system: shock absorber or amplifier?”
- Author:                      Franklin Allen (Wharton School of the University of Pennsylvania) and Elena Carletti (Center for Financial Studies)
- Discussants:              Raghuram Rajan (University of Chicago)  
                                                      Yung Chul Park (Seoul National University)
- 12:30      Lunch
- 14:00      **Overview panel**
- Chair:                      Malcolm Knight (Bank for International Settlements)
- Panellists:                Yi Gang (People’s Bank of China)  
                                                      Stanley Fischer (Bank of Israel)  
                                                      Lucas Papademos (European Central Bank)
- 15:30      Close of conference

## Conference participants

<b>Martín Redrado</b> Governor	Central Bank of Argentina
<b>Philip Lowe</b> Assistant Governor, Financial System Group	Reserve Bank of Australia
<b>Peter Praet</b> Director	National Bank of Belgium
<b>Katherine Hennings</b> Senior Advisor to the Board of Directors	Central Bank of Brazil
<b>Armínio Fraga Neto</b> Partner	Gávea Investimentos Ltda
<b>David Longworth</b> Deputy Governor	Bank of Canada
<b>José De Gregorio</b> Vice Governor	Central Bank of Chile
<b>Yi Gang</b> Deputy Governor	People's Bank of China
<b>Lucas D Papademos</b> Vice President	European Central Bank
<b>Martin Hellwig</b> Director	Max Planck Institute for Research on Collective Goods
<b>Hans Genberg</b> Executive Director, Research Department	Hong Kong Monetary Authority
<b>YV Reddy</b> Governor	Reserve Bank of India
<b>Stanley Fischer</b> Governor	Bank of Israel
<b>Ignazio Visco</b> Deputy Director General	Bank of Italy
<b>Kazumasa Iwata</b> Deputy Governor	Bank of Japan
<b>Yung Chul Park</b> Department of Economics	Seoul National University
<b>Shaik Abdul Rasheed Abdul Ghaffour</b> Prudential Financial Policy Department	Central Bank of Malaysia
<b>José Gerardo Quijano León</b> General Director Financial System Analysis	Bank of Mexico
<b>Jan W Brockmeijer</b> Director Financial Stability Division	Netherlands Bank
<b>Alan Bollard</b> Governor	Reserve Bank of New Zealand

<b>Svein Gjedrem</b> Governor	Central Bank of Norway
<b>Pawel Wyczanski</b> Deputy Director Financial System	National Bank of Poland
<b>Sheikh Hamad Saud Al-Sayari</b> Governor	Saudi Arabian Monetary Agency
<b>Logan J Rangasamy</b> Head International Economics Unit Research Department	South African Reserve Bank
<b>Rafael Repullo</b>	Centro de Estudios Monetarios y Financieros (CEMFI)
<b>Philipp M Hildebrand</b> Vice-Chairman of the Governing Board	Swiss National Bank
<b>Titanun Mallikamas</b> Division Executive Financial Risk Management and Operations	Bank of Thailand
<b>Durmuş Yılmaz</b> Governor	Central Bank of the Republic of Turkey
<b>Sir John Gieve</b> Deputy Governor, Financial Stability	Bank of England
<b>Donald L Kohn</b> Vice Chairman	Board of Governors of the Federal Reserve System
<b>Tobias Adrian</b> Capital Markets Function	Federal Reserve Bank of New York
<b>Joseph S Tracy</b> Executive Vice President and Director of Research, Research and Statistics Group	Federal Reserve Bank of New York
<b>Kenneth A Froot</b> Professor at the Harvard Business School Member of the State Street Associates	Harvard Business School
<b>Mohamed A El-Erian</b> President and CEO	Harvard Management Company, Inc
<b>John Campbell</b> Economics Department	Harvard University
<b>Robert C Merton</b> Graduate School of Business	Harvard University
<b>Jaime Caruana</b> Counsellor and Director Monetary and Capital Markets	International Monetary Fund (IMF)
<b>Bengt Holmström</b> Department of Economics	Massachusetts Institute of Technology
<b>Hyun Song Shin</b> Department of Economics	Princeton University



<b>Mary Barth</b> Board Member Atholl McBean Professor of Accounting	Stanford University
<b>Darrell Duffie</b> Professor of Finance	Stanford University
<b>Raghuram Rajan</b>	University of Chicago
<b>Franklin Allen</b> Professor	University of Pennsylvania
<b>Robert Shiller</b>	Yale University
<b>Bank for International Settlements</b>	
Malcolm Knight	General Manager
William White	Economic Adviser
Már Gudmundsson	Deputy Head of the Monetary and Economics Department
Josef Tošovský	Chairman of the Financial Stability Institute
Claudio Borio	Head of Research & Policy Analysis
Svein Andresen	Secretary General, Financial Stability Forum
Dietrich Domanski	Head of Macroeconomic Monitoring
Andrew Filardo	Senior Economist
Stefan Gerlach	Head of Secretariat, Committee on the Global Financial System
Frank Packer	Head of Financial Markets
Michael Pomerleano	Senior Economist
Konstantinos Tsatsaronis	Head of Financial Institutions & Infrastructure
Philip Turner	Head of Secretariat Group
Gregor Heinrich	Chief Representative, BIS Representative Office for the Americas



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# Financial system and macroeconomic resilience

## Opening remarks

William R White

May I begin by welcoming you all to Brunnen and to this sixth annual BIS conference for central bankers and academics. This conference seems to me to have been growing steadily in reputation and quality, as indicated respectively by the participation of those here today and the papers that will be presented both today and tomorrow. Obviously, my first thanks must be to you all, but I would also like to thank my BIS colleagues for having put it all together: in particular, Claudio Borio, but also Andy Filardo and Kostas Tsatsaronis. And, on the logistical side, Melanie Sykes has been working overtime on this for many months. I do hope that you will get as much out of this conference as we have tried to put into it.

The topic we will be discussing highlights a set of issues in which the BIS has had a long-standing interest. For many years now, we at the BIS have been focusing on the reality of constantly changing economic structures, with a view to understanding the implications for public policy and for the central banks who are our clients. In recent years, globalisation and technological advances have altered significantly how the real economy, including the inflation process, functions. Similar forces have transformed the financial system in the industrial countries, but are increasingly affecting emerging markets as well. And finally, the increased focus of central banks on controlling inflation, together with an increased willingness to explain their modes of thinking, constitutes a further important change with feedback effects on both the real economy and the financial system. In sum, the world has changed substantially and continues to do so.

But to be more specific about the subject matter of this conference, “Financial system and macroeconomic resilience”, the implicit question being asked is whether the massive changes we have seen in the financial system in recent years have been unequivocally welfare-enhancing. On the face of it, the facts seem to shout out “yes”. The big macro variables have been so well behaved that they have earned the name “the Great Moderation”. Real growth rates at the global level have for some years been at record highs, and the variance of growth rates has been markedly reduced. In the United States, where financial developments have been among the most advanced, the recession of 1990 was small, and that of 2001 smaller still. Global inflation has also come way down, as has its variance. And that is by no means all the good news. Consider that this has happened against a backdrop of significant shocks that could conceivably have had macroeconomic repercussions: the failure of LTCM, a number of large corporate bankruptcies, the collapse of the Nasdaq and other stock markets in the late 1990s, and the events of 9/11 in 2001.

And to look at financial markets today, the prevailing view seems to be that this good news will continue. While long rates have recently moved up a little, they still seem low relative to prospective growth rates, reflecting what appears to have been a longer-term trend downward in term premia. Equity markets have hit new record highs almost everywhere, with price increases in many emerging markets verging on the spectacular. Spreads on high-risk corporates have fallen to unusually low levels, while spreads on sovereigns have been maintained at record lows. Moreover, to judge from the implicit volatilities drawn from option markets, the market seems unusually certain about this view as well. Finally, the fact that house prices almost everywhere have risen to record levels, along with the prices of fine wine, art, antiques and even stamps, must also constitute good news, at least to the people who already own them.

Of course, just looking at facts and simple correlations, however striking, does not provide proof of causality. We must get behind the facts to look at the theory. What are the specific channels through which identified changes in financial markets might have contributed to the welcome set of macroeconomic circumstances just identified? This line of reasoning leads to two different schools of thought. One is essentially supportive of the hypothesis, while the other is also supportive, but only to a point. In particular, the latter cautions that much of the good news to date might be at the cost of significantly worse news looking forward. Both schools stress the interaction of monetary policy and recent structural changes in the financial system. Evidently, however, they come to quite different conclusions as to what macroeconomic outcomes these interactions might produce. Let us characterise them as the “first best” and “second best” schools of thought.

The “first best” school looks at monetary policy over the last two decades and concludes that it has done an excellent job. The growing commitment to price stability and associated policy actions produced price stability and an associated credibility. The firming of inflationary expectations, around a low level, allowed economic upturns to go on longer than would have been normal earlier. It also allowed a rapid easing of monetary policy whenever growth seemed under threat for whatever reason.

For this school, financial developments have also played an important role in explaining events. As markets have become more complete, the “bang for the policy buck” as policy has eased seems to have increased. Upturns have been strengthened as corporations and households have obtained access to credit that would not otherwise have been available. New ideas have been allowed to come to fruition, productivity has been encouraged and intertemporal optimisation has been allowed. Moreover, the system has been made more resilient to downturns, with risk being increasingly transferred to those who can best bear it, and with the availability of multiple sources of credit making credit crunches less likely. Further, the growing importance of market-based intermediation implies less exposure for the banking system and less likelihood of disruptive bank failures potentially affecting the payment system. Add to this much better and cheaper information to assess risks, and much more attention being paid to doing so, and both recent and prospective developments have to be seen in a bright light.

Consistent with this line of thinking, asset prices are high because the risks are low. Growth will buoy equity returns, and will also keep down bankruptcies, thus favouring bonds. Sovereigns also will benefit from a better global growth environment, aided as well by much better macroeconomic policies and choices of exchange rate regimes. As for low implied volatility, if the risks have been much reduced, it is not surprising that the cost of insurance is down as well.

The “second best” approach agrees with some of the above, but asks whether there might not also be some significant downsides, in a world where neither markets nor our understanding is yet complete. Consider an alternative view of monetary policy over recent years. Perhaps low inflation, and low inflation expectations, actually owe more to positive supply side shocks than to the credibility of monetary policy. After all, the growth rates of financial and monetary aggregates have been unusually high in recent years. Moreover, real rates of interest have generally gone down, even as the potential growth rate of the global economy seems to have gone up. From a Wicksellian, or natural rate, perspective, this would imply the potential for either accelerating inflation in the future, or the build-up of dangerous “imbalances” in the economy, or perhaps both. The clear implication of this view is that the future could look like the past, but it need not.

This rather darker perspective also conditions the assessment of structural developments in the financial sector. More complete markets might allow intertemporal optimisation, but if this implies more spending up front, it must by definition imply less spending later. Indeed, access to more diverse sources of credit might even have encouraged “excessive” spending, which could eventually lead to a sharp rebound in the saving rate at some future date. To my

mind, the illusion of “wealth” created by higher house prices, and associated access to collateral, makes this quite likely. It could also be significant that the countries with the most advanced financial systems often seem to have the largest external deficits, a further source of concern for those in the “second best” school of thought.

As for risks being transferred outside the banking system to those who can better bear it, this assertion needs to be qualified. Banks remain hugely important, and their balance sheets continue to expand amid significant uncertainty as to how much credit and liquidity risk they might have retained, either by design or inadvertently. Nor do we even know where the risk that has actually been transferred has gone, or the assessment capabilities of those who might have bought it. Indeed, the “originate and distribute” model which has become so fashionable could actively discourage due diligence on the part of both lenders and borrowers. Together with the search for yield on the part of purchasers, this might have led to a systematic mispricing of risks that will only become apparent in a downturn.

And finally, it is worth noting that we face a whole host of new players, new instruments and new markets, whose future behaviour cannot easily be predicted. Everything has grown larger, more complex, more opaque and faster moving. Unexpected interactions are always possible, but the likelihood is increased by the dominant role played in some markets by just a few large firms, or by a set of hedge funds potentially exhibiting herd behaviour. Clearly, in such an environment, a sudden loss of liquidity could not be ruled out which could fall back squarely on the banking system. And, all of this financial activity depends on a vast complex of computers and software, with associated exposure to operational risk.

Well, which is it to be? Is the bottle half full or half empty? Indeed, it could be that the answer is both: our developing financial system could have made the economy more resilient to small shocks, but potentially less resistant to big ones. Indeed, an interesting test could be coming up if global inflationary pressure proves more persistent and substantial than markets currently anticipate. Similar to the more powerful effects of policy easing referred to a moment ago, the “bang for the policy buck” might also be greater as policy tightens. As low household saving levels and high debt levels collide with higher interest rates, and overvalued asset prices retreat in turn, the implications are not so easy to predict.

Most of the papers prepared for this conference deal with aspects of these issues, in effect the functioning of the financial system under normal conditions. But some attention will also be paid to how changes in financial structure have affected the capacity for crisis management. In a nutshell, the time seems long past when Bill Rhodes or Bill McDonough could make material progress by putting 20 top bankers in a room and appealing to their collective self-interest. Today there are simply too many players and too many divergent interests for that to be possible. It remains to be seen what the alternatives are, but it is certainly appropriate that policymakers and academics should be asking themselves such “what if” questions. Indeed, it is only prudent.

Again, let me welcome you all here to this beautiful spot. And let me thank you again for the contributions already made, in the form of the papers, as well as for the active participation I hope we can count on in the discussions over the next two days. Let us learn as much as we can from this interaction between the central banking and academic communities.

## Remarks on “Coping with financial distress in a more markets-oriented environment”

Donald L Kohn<sup>1</sup>

I am pleased to be part of this BIS annual conference.<sup>2</sup> Consistent with the assignment given this panel, I will be concentrating my remarks on the issue of responding to market distress. Nonetheless, I recognise that the more fundamental responsibility of financial regulators is prevention – or, more accurately, the establishment of supervisory and regulatory structures that reduce the odds that *financial* distress will result in broader *economic* distress.

I start from the premise that systemic effects from financial problems are less likely in today’s market-based financial system than in the bank-based systems of the past. In bank-dominated systems, funding problems at banks or problems for one type of borrower that impinged on bank capital tended to lead to a credit squeeze as banks cut back lending. In more market-oriented systems, the risks are better dispersed, and key intermediaries have more opportunities for diversifying and managing the risks they hold, all of which makes general financial distress less likely. Moreover, a greater variety of alternative channels for advancing funds are available should some institutions be unable to perform their normal intermediary functions. In short, the broad real economy today is more likely than before to be shielded from difficulties originating among borrowers in one economic sector or among one set of intermediaries.

But the financial system of today is still vulnerable to the underlying risks and uncertainties inherent in all financial transactions. Lenders still have incomplete information about their counterparties, and the valuation of assets is still quite uncertain. In addition, the proliferation of new instruments and new players in financial markets adds to the sense that markets could be vulnerable to unexpected developments because of the lack of experience with these instruments and participants under stress.

New-style financial distress is likely to be set off by a large change in asset prices. If large and prolonged enough, such an event can increase uncertainty about the viability of counterparties, induce flight from risk-taking, and trigger sales of assets that tend to accentuate price movements. In the extreme, the market liquidity that participants need to manage portfolio risk can dry up, and the correlations among asset prices that went into calculations of risk management strategies can shift in unexpected ways that increase vulnerability. The 1987 stock market correction and, in 1998, the linked Russian default and Long-Term Capital Management events had many of these characteristics, and I believe that these types of events are more likely to be typical of “modern” episodes of financial distress than are the prolonged banking problems of the sort we faced in the late 1980s and early 1990s. As a consequence, I will base my remarks on our experience in the 1987 and 1998 market episodes.

In my view, one lesson of those episodes is that central bank actions to counter financial distress can rely more on macroeconomic policy tools, which carry less potential for moral hazard, than on discount window credit to fund individual banks, which was often used when bank weakness threatened the intermediation process. Among the first responses of the

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<sup>1</sup> Vice Chairman, Board of Governors of the Federal Reserve System.

<sup>2</sup> The views I am expressing are my own and do not necessarily represent the views of my colleagues in the Federal Reserve System.



Federal Reserve in the 1987 and 1998 events was to acknowledge the crisis publicly. Doing so let people know that we were aware of a major event that could possibly undermine economic performance and, implicitly, that we were considering whether and how to respond. We met the extra demands for monetary base that resulted from the flight to quality and liquidity, and we eased monetary policy to counter the economic effects of the decline in asset prices. An important objective of all of these actions was to put a floor under public confidence, in part by reassuring the public that we would act to prevent the crisis from having a lasting effect on inflation and output.

Some observers have asserted that these types of actions themselves carry moral hazard because market participants that expect the central bank to ease policy when asset prices decline will not be as disciplined in their evaluation of assets or counterparties. I don't agree. The goal of policy easing in such circumstances is not to restore asset prices or to guarantee counterparties, but to stabilise the economy. And, in fact, our actions have not restored asset valuations, as any investor in high-tech stocks in the late 1990s can testify. Moreover, Federal Reserve policy should be, and has been, symmetrical in its response to asset prices in the United States. The Federal Reserve raised interest rates in 1999 when the effects of a rising stock market threatened to increase inflation, and we cut them in 2001 when the declines in the stock market and in business spending were leading to recession. Our job is to stabilise the economy and the overall level of the prices of goods and services; asset prices should and do fluctuate in this context to promote the efficient allocation of capital over time.

As the crises unfolded in 1987 and 1998 we also monitored the flow of credit through the financial system. In the process, we did, on occasion, point out to participants their collective interest in avoiding a credit gridlock that would interfere with market functioning. The failure of a single key player to meet obligations or to make credit available under established lines and procedures could cause a cascade of blocked payments that would halt market-making and the clearing and settlement of trades. Impairment of trading would, in turn, accentuate the asset price movement. In effect we used our powers of persuasion to deal with the collective action problem that can arise when uncertainty about counterparties is heightened. But neither in 1987 nor in 1998 did we find it necessary to make a loan, use public money or make public guarantees. Our actions were controversial, especially in 1998, but surely carried a much lower risk of moral hazard than did our lending activities in bank-centred crises in, for example, the late 1980s and early 1990s.

The financial system was subject to another major shock in 2001 and 2002. Some broad indices of equity prices fell more than 50%, risk spreads on lower-rated business credits spiked higher, and the activities of Enron, WorldCom and a few other corporations badly eroded confidence in information being publicly released by businesses. Still, the effectiveness of the central bank in countering the systemic implications of these developments solely by adjusting the stance of monetary policy showed again that macroeconomic responses can be sufficient in many market-based crises.

However, we cannot assume that macroeconomic policy will be sufficient to address future crises, and I would like to address three possible concerns about managing a crisis in a market-based system. The first concern is our lack of knowledge about where the risk is being held. The most scrutinised intermediaries – commercial banks and investment banks – are selling a good portion of the credit risk and market risk arising from extensions of credit. This dispersion and diversification of risk makes the system more resilient. Nevertheless, we do not have much data on the risk positions of many of the buyers, which include a number of lightly regulated entities. This paucity of information is the flip side of the benefits of risk dispersion.

Accurate information is scarce in a crisis. However, the data that would be gathered ahead of time on portfolio or risk positions of the lightly regulated entities I just mentioned would be of limited value. In a crisis, the situation is inevitably very fluid, and those positions are

changing rapidly. Moreover, the very act of collecting information from these entities raises questions about what the authorities will do with it because, unlike with commercial or investment banks, federal agencies do not need to monitor compliance of these entities with capital regulations, nor do the agencies have any authority over the risk positions or risk management procedures of these entities. A potential problem with such “extra-regulatory” information gathering is that it would engender expectations of actions we cannot or are not prepared to take and would thereby distort private decision-making.

Much information will flow to us regulators and central bankers in a crisis. Critical to managing the crisis will be the ability to interpret what we are being told in the fog of crisis, in part because the information is inevitably coloured by the perspectives and agendas of its sources. In turn, the ability to interpret the incoming information requires a deep understanding of the structures and practices of the markets and institutions. Acquiring and maintaining such understanding is a continuing challenge, especially in light of the frequent restructuring and turnover at regulators and central banks.

A second concern is that, given the wide distribution of credit-related instruments, the various systems for working through distress situations may not be as fully developed as they should be. Because uncertainty exacerbates crises, procedures should be established ahead of time for settling contracts when a counterparty or an underlying credit defaults and for working with troubled borrowers to reduce losses. The separation or lack of direct contact between borrower and the ultimate lender is certainly not new in financial markets – after all, that is what bond and commercial paper obligations have always been about, and loan securitisation has been with us for a long time. Nevertheless, the substantial innovation in these markets, the additional layers of intermediaries and the complexity of some of the newer instruments raise questions about how distress situations would be dealt with. We are learning by doing in this area; the private sector is working out procedures as difficulties are encountered – for example, among auto parts makers and in the subprime mortgage market. But regulators may also have a role, by helping the private sector identify potential problems ahead of time and encouraging discussions of how to deal with them.

A third general area for strengthening crisis management involves the handful of intermediaries on which the market-based system is still highly dependent. These core institutions are the principal dealers in over-the-counter derivatives, they are the leading clearing firms, they originate securitised assets, and they provide financing to both borrowers and the ultimate purchasers or lenders. Were they to be impaired in any of these functions, the ability of buyers and sellers to manage risk could be substantially constrained, and the possibility of stabilising flows coming into the market could be greatly reduced.

Supervisors and regulators internationally are looking carefully at how these firms manage risk, and are encouraging particular caution when such firms interact with less transparent counterparties. But we also need to recognise that no plausible degree of oversight or caution can insure against every contingency, and attempts to achieve such stability would stifle innovation and impair market functioning. As a consequence, I believe an important objective for regulators is to work on how the obligations of one of these institutions would be unwound if it were to approach failure. Such an unwinding should be conducted to impose costs on owners and uninsured creditors while maintaining reasonably orderly markets. This balancing of objectives is no easy task, but it is one that the Federal Reserve will continue to work on with other regulators in the United States and around the world.

## Remarks on “Coping with financial distress in a more markets-oriented environment”

Armínio Fraga<sup>1</sup>

In the past, financial distress was always a banking issue. Only a few decades ago, financial systems were primarily organised around banks. One key characteristic of such systems was a temporal mismatch between assets (long-term and illiquid) and liabilities (short-term and liquid at par). In this environment, crises were frequently driven by (often sudden) losses in confidence in the system. Generalised bank runs were a key concern, and new lending tended to come to a halt. These crises would typically take place after a phase of fast and somewhat loose growth in loan books.

The response to banking crises almost always included as its key component a cut in interest rates by the central bank, and could also include direct lending by the central bank (acting as a lender of last resort) as well as emergency mergers and acquisitions (to support weak lenders) and concerted lending (to support weak borrowers). Underlying these actions stood a deep concern to keep the payment system functioning.

Nowadays, financial systems are no longer predominantly bank-based. With the booming use of derivatives, securitisation and other risk-transfer mechanisms, complexity has greatly increased and our ability to detect trouble spots has diminished. On the other hand, risks are no doubt better distributed, with assets and liabilities better matched and risk factors being decomposed and allocated to those more capable of bearing them. In addition to banks, we now find pension funds, endowments, hedge funds, private equity funds and other entities all playing important roles in the marketplace. Noteworthy here is the growing direct role played by households in financial markets.

As the organisers of this conference have stated, there is no question that all of this represents a move towards more complete markets, very much along the lines described long ago by Arrow and Debreu. Though this is certainly a most welcome development, there are nevertheless issues to be dealt with. For example, many new products are very hard to price (CDOs, CMOs, SPVs and other such instruments and entities), there seems to be less (and less effective) supervision than in the past (eg investment banks and hedge funds are opaque to most if not all observers) and there is almost no room for coordinated action. The big fear of course is of this new world getting hit by a shock and responding badly as positions are liquidated in disorderly fashion.

In this light, it may pay to review what has happened over the last few years. If we had known seven years ago that the Nasdaq was going to crash, that the Twin Towers would be knocked down by terrorists, that we would see prolonged war in Iraq, that oil prices would soar to \$70 per barrel, and so on, we would have never predicted that the last five years would also exhibit the highest rates of global economic growth on record. Moreover, this took place side by side with low inflation and low volatility of growth and inflation. So good was this performance that it has become known as the Great Moderation.

How did this happen? We are still too close to these events to speak with complete authority, but we can list a few factors: global economic integration, large productivity gains, a more

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<sup>1</sup> Founding Partner, Gávea Investimentos; Former President, Central Bank of Brazil.

market-friendly and capitalist world and greater competition. The fast pace of financial development and innovation we are seeing is part of this process.

What, then, should we worry about? For starters, credit booms and busts remain a concern, even if the risk of a classic bank run is now much lower than in the past. The main issue is still the risk of a sharp contraction in credit, coming from banks as always, but now also from other providers of liquidity such as those noted above. In addition to this classic concern, we must keep a watchful eye on anything that impacts the consumer directly. Here I have in mind the leveraged balance sheets of American households and the potential drop in consumption likely to materialise were housing prices to decline back to historical levels. Lastly, I believe that in this new world of derivatives the old-fashioned concern with the plumbing of payments and settlements must be elevated to a new and much higher level.

What can be done about it? First, some precautionary measures could be implemented, including tightening settlement procedures and standards (this is being done) and extending the range and depth of prudential supervision beyond banks (needs to be discussed). It is important to demand that all financial institutions work with stress scenarios for price fluctuations and liquidity squeezes. This would increase the likelihood of a proper and orderly response were a crisis to materialise. Second, given that financial distress means a credit contraction, there is no substitute for an expansionary monetary policy, as was often followed in the past.

# Remarks on “Coping with financial distress in a more markets-oriented environment”

Sir John Gieve<sup>1</sup>

## Introduction

There has been a striking change in discussions of financial stability over the last 15 years.

I remember the recession of the early 1990s, the last time the Bank of England had to intervene (or, at least, did intervene) to support some banks in order to protect the broader financial system. The mode of intervention may have been a bit unconventional, but the crisis would have been immediately recognisable to Bagehot. In short, in the upswing of an economic cycle, a number of banks lent too much particularly in the UK property market; in the downswing, a spate of defaults led to a reassessment of credit risk and some marginal banks faced a withdrawal of wholesale funding. As usual, the immediate problem appeared to be a liquidity mismatch between their long-term loans and their short-term deposit base rather than underlying solvency. The question the Bank faced was whether their failure could start a spiralling loss of confidence in other banks and whether that justified pre-emptive action.

We have seen other traditional banking crises since then – in the Far East and in Sweden for example. But the focus of the current concern over financial stability has moved on, as illustrated by the six prime risks we identified in our most recent Financial Stability Report:

- (a) Following 9/11, we now give more attention to business continuity and operational risks.
- (b) With the growing integration of capital markets across the world, we now give more attention to international spillovers and to the role of the giant LCFIs.
- (c) With the rapid development of new products and markets, we now pay more attention to capital markets; we talk of low risk premia and global imbalances rather than simply about bad debts in systemic commercial banks.

Today I want to discuss this last point and consider whether we are right to think that something fundamental is changing in the role and business model of banks and, if so, how that will affect the form and effects of financial stress. In particular, I argue that the growth in capital markets and the shift in the business models of the biggest banks may presage a future in which there is a greater zone of stability in financial systems – but where crises occur, they may develop faster and be larger and more complex than they were in the past.

## Changes in financial intermediation

I am aware of the dangers of exaggerating the importance of recent trends, and banks remain the primary intermediary between short-term savers and long-term borrowers. But I do think the long period of macroeconomic stability and rapid financial innovation has made very significant changes to the shape of the financial sector.

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<sup>1</sup> Deputy Governor, Bank of England.

- Banks are earning lucrative fees without taking on large permanent credit risk exposures by distributing syndicated loans directly to institutional investors. Indeed, institutional investors (including hedge funds) now account for a 70% share of the US and European syndicated leveraged loan market compared to around 40% in 2000 (**Chart A**).
- Banks are also securitising assets already held on their balance sheets to free up funds and capital and to reduce the liquidity mismatch between assets and liabilities. Between 2000 and 2006, for example, global issuance of RMBSs increased six-fold, with the growth driven mainly by the giant international complex financial institutions (**Chart B**).
- Banks are buying credit protection through the credit derivatives markets to reduce concentrations of risk in their loan portfolios. According to the BBA global credit derivatives survey, the outstanding net amount of credit protection bought by banks was \$3 trillion in 2006, of which \$2.2 trillion was attributed to hedging of loan books (**Chart C**).

The network supporting this activity is complex.

For example, CLOs are now important vehicles in the leveraged loan market (**Chart D**), with global CLO issuance rising to just under 9% of leveraged lending in 2006 from less than 2% in 2000. Furthermore, support for CLOs and other securitisations emanates from various sources, including hedge funds, insurers, pension funds and banks.

It seems clear that, at least in the longer term, these developments should improve the stability of the financial system by pricing risk more accurately and distributing it both more widely and more appropriately.

But a switch from the “lend and hold” to “originate and distribute” business model carries some new risks, especially in the short term.

## “Getting to know you”

First, and as Darrell Duffie has reminded us, there is a true transitional risk while the new relationships and the new products and markets are not fully understood. This is not primarily about what regulators and central banks know, but what market participants understand, and it need not reflect a lack of diligence, but rather real limitations on what can be known about how these markets may behave under stress.

## Incentives and information

Second, while banks now have greater capacity to manage their risks more efficiently, balance sheet management has also become unbundled from borrower relationship management. So the incentives to assess credit risks and to monitor and foster relationships may be reduced, and at a time when borrowing constraints have been relaxed. Recent events in the subprime housing market illustrate these dangers. The longer the chain from originator through securitiser and CDO designer to the final holder of the risk, the greater the dangers of loss of information and misaligned incentives.

Third, the lucrative fees that can be earned by banks by participating in the structured credit business may have led to a relaxation of credit standards. Fuelled by competitive pressures, credit risk may not be adequately reflected in the pricing of instruments. In essence, firms may be placing concerns over income forgone ahead of the potential losses arising from a

downturn in the credit cycle, reflecting a reluctance to rein in risk-taking activity before competitors do so.

## Connections between banks and other financial institutions

When financial institutions are linked together by their claims on each other – whether through the interbank market, the payments system or the sale of credit protection – greater connectivity clearly makes for wider distribution of risks and lowers the probability of individual default. The wider and deeper the financial integration is, the greater this effect and the lower the systemic risk is. Franklin Allen will be addressing this issue in much greater detail tomorrow.

But risk-sharing can also become risk-spreading. Greater interconnectedness increases the potential for contagion to spread because it increases the chance that institutions withstanding the effects of an initial problem will be exposed to defaulting counterparties, making them vulnerable to a second-round default. Such network interactions are likely to be non-linear and, if so, the impact on system losses may be substantial.

Speed is of the essence in such circumstances. If there is time, large shocks to the financial system can be accommodated. Reactions to the recent Argentine default illustrate this point in an international setting. But when shocks arrive in rapid succession, forcing decisions to be made with increasingly inadequate information, the normal mechanisms for redistributing losses could be overwhelmed.

## Reliance on liquidity

Hyun Shin's paper this afternoon showed nicely that when the assets of financial institutions are marked to market, balance sheet changes affect asset prices and vice versa. This well documented loop can amplify shocks to the financial system. To an increasing extent, banks and other financial players are managing risk by hedging cash exposures in the derivatives markets. Since few of these hedges are perfect, they rely on being able to change positions as markets move and they depend therefore on the continuing liquidity of new as well as established markets.

Gauging the extent of market liquidity is, therefore, critical to assessing the likely scale of future financial distress. Recent work at the Bank suggests that, overall, financial markets are very liquid at the moment (**Chart E**). But the degree of liquidity in some key markets, notably those for credit risk transfer, has yet to be tested under stress, and perceptions of their liquidity may prove unfounded.

What might determine liquidity in the credit risk transfer markets? At root, it hinges on the opportunity cost to the banks of carrying loans and information about the quality of these loans. Banks could be shedding risk because the information they have about their projects is negative. Or they may be seeking more preferable outside opportunities, shedding risk despite having positive information about their projects. Clearly, credit transfer markets are more likely to be liquid the greater the confidence participants have in them as an efficient form of price discovery.

## Role of rating agencies

The commoditisation of credit has, in large part, been facilitated by the availability of rating agency assessments.

Problems may be stored up for the future, however, if the models used by rating agencies are found to be unreliable during times of stress. Many of these models – particularly for more complex products such as CDOs of CDOs – have not been tested in a downturn. Moreover, the growing reliance of rating agencies on income from product designers may complicate the incentives they face.

Understanding what the assessments mean is also not easy. Different products with the same credit rating can have very different risk characteristics as the range of credit spreads illustrates. The credit spread on a AAA-rated corporate bond, for example, is less than 10 basis points, compared to around 200 basis points for a constant proportion debt obligation. **(Chart F)**. It is not clear that these different risk characteristics are well understood by the less sophisticated investors in the market.

## Conclusion

The rapid financial innovation experienced in recent years is changing the way in which funds are intermediated between borrowers and savers and the nature of the risks facing the financial system. We should not lose sight of the risk of traditional runs on banks as defaults follow overlending at the top of the cycle. In the emerging system, however, disruption of liquidity in capital and derivatives markets and the behaviour of non-bank financial institutions are more likely to be important factors in determining whether or not shocks turn into systemic events.

We should welcome the innovation in capital markets which allows greater dispersion of credit risk away from the heart of the banking sector to a wide range of other institutions which play a less pivotal role in the financial system. That should enable the system to handle a greater range of shocks and provide a greater zone of stability.

However, as new markets and products are developed we are likely to face some transitional problems because their behaviour under stress cannot be known.

In a world where banks and financial institutions are more dependent on trading and hedging where they need to mark to market, financial crises that do develop are also likely to develop more quickly than in a world in which a bank facing bad debts had time to consult its regulator and auditors about the appropriate provisions.

In a world of greater interconnections, a crisis is also likely to be bigger and more complex and international than in the past.

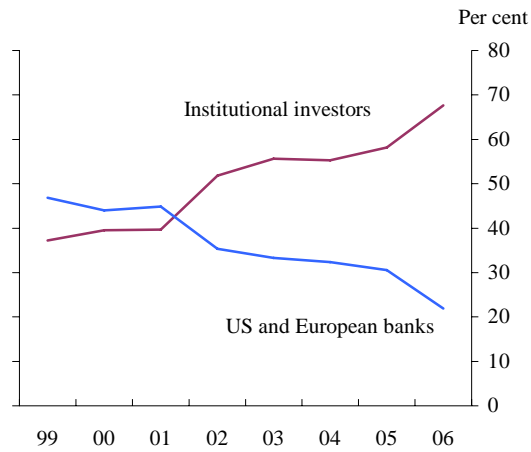
Finally, the speed of innovation and globalisation still seems to be accelerating. This is bound to bring greater uncertainties, and places a higher premium than ever on effective international coordination of contingency planning and crisis management.



# Annex 1

Chart A

## Investor shares of US and European leveraged loan markets<sup>1</sup>

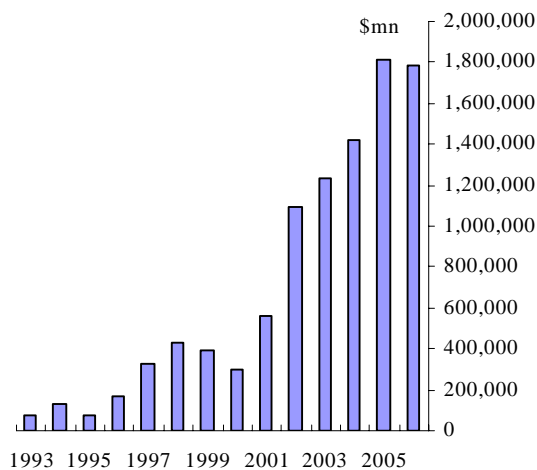


<sup>1</sup> Shares weighted by European and US leverage loan market volumes.

Sources: Standards & Poor's Leverage Commentary and Data, and Bank calculations.

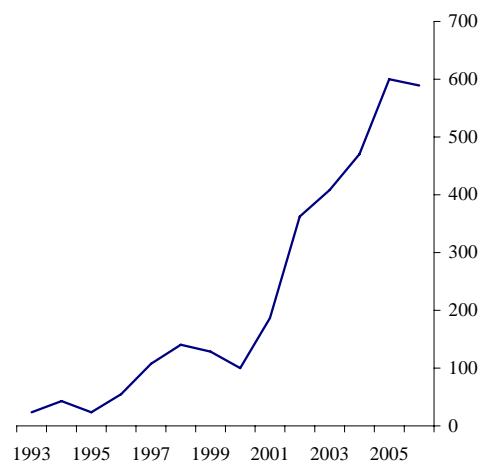
Chart B

## Global issuance of RMBS



Source: Dealogic.

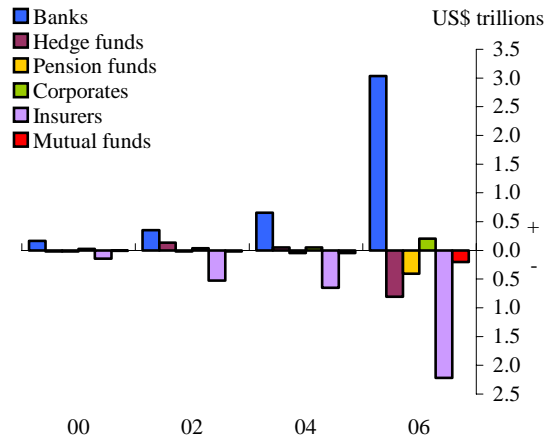
## Global issuance of RMBS indexed to 2000



Source: Dealogic.

Chart C

**Outstanding global amounts of credit protection bought by institution<sup>1</sup>**

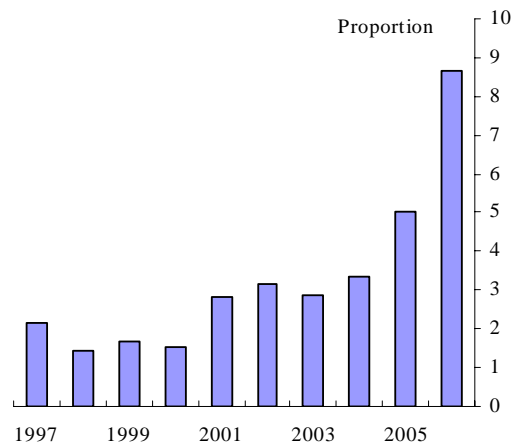


<sup>1</sup> Amounts netted across long and short positions.

Sources: BBA and Bank calculations.

Chart D

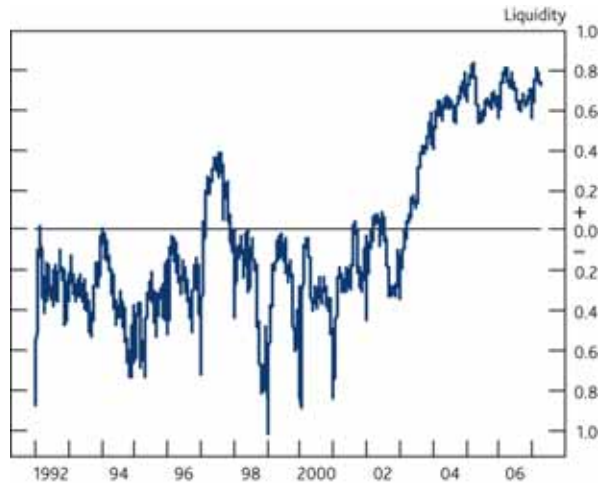
**CLO issuance as a proportion of leveraged lending**



Source: Dealogic.

Chart E

**Measuring financial market liquidity<sup>1</sup>**



<sup>1</sup> Simple, unweighted mean of the liquidity measures, normalised on the period 1999–2004. Data shown are an exponentially weighted moving average. The indicator is more reliable after 1997 as it is based on a greater number of underlying measures.

Sources: Bank of England, Bloomberg, Chicago Board Options Exchange, Debt Management Office, London Stock Exchange, Merrill Lynch, Moody's Investors Service, Thomson Datastream and Bank calculations.

Chart F

**Ratings properly understood?**

**Spread-for-rating comparison<sup>1</sup>**

Ratings	Underlying	Indicative spread (basis points)
AAA	Corporate bonds	<5
AAA	UK credit card asset-backed security (ABS)	15
AAA	iTraxx series 6, 6% to 9% standard tranche <sup>2</sup>	22
AAA	Commercial mortgage-backed security	25
AAA	Cash-flow collateralised debt obligation of mezzanine ABS (average life seven to nine years)	32
AAA	Constant proportion debt obligation (CPDO)	200

<sup>1</sup> From JPMorgan Chase & Co. (2006), *Understanding CPDOs and Credit Derivatives Handbook*, December.

<sup>2</sup> Under typical assumptions. iTraxx is the name of a family of credit default swap index products covering regions of Europe, Japan and non-Japan Asia. The constituents of the indices are changed every six months. The series referred to in this table is the European investment-grade series.

Source: JPMorgan Chase & Co.

# Remarks on “Financial system and macroeconomic resilience”

Yi Gang<sup>1</sup>

I would like to thank the BIS, especially Bill and Claudio, for inviting me to this seminar.

## I. Financial intermediation through institutions or markets

In China, financial intermediation occurs mainly through banks, accounting for close to 85–90% of the total annual flow, with other financial sources such as bonds and stocks accounting for 7–10% and 2–5%, respectively. By the end of 2006 the ratios of M2, stocks, bonds and bank deposits to GDP were 170%, 75%, 40% and 170%, respectively. Accounting standards, corporate governance, regulation, market discipline and institutional investors are areas that need to be strengthened.

## II. Towards market completeness

Recently, China has made progress in credit risk transfer activities, including the development of MBSs, ABSs, etc. This has implications for monetary policy. First, banks sell the best loan packages securitised to their clients who want to invest in wealth management products, which reduces the amount of loans outstanding. Second, by selling off loans, banks reduce their outstanding loans, to satisfy either capital adequacy requirements or the central bank window guidance for loans.

Most of the problems discussed in the paper occurred in China. If banks are indeed laying off a significant fraction of the risks in their own loan portfolios, then they do not have any incentive to continuously provide complete information. In this case, the good side is that the risks have reduced, the bad side is that there is an information asymmetry and efficiency problem. Those who purchased loan portfolios might not be as efficient as the bank in collecting the information and managing risks. In the other case where the risks are not truly separated from the bank, the risks are still within the bank and would behave the same as if the loans were still on their balance sheet.

## III. Accounting and financial system behaviour

There are three layers of liquidity in China. First, excess reserves represent the bulk of high-powered money. Sterilisation occurs through OMOs, repos, issuing central bank bills or selling government bonds to reduce the amount of excess reserves, controlling loanable funds available. The second layer is M2 (broad money). The third layer is the liability side of financial institutions' balance sheets.

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<sup>1</sup> Assistant Governor, People's Bank of China.

#### **IV. Coping with financial distress in a more market-oriented environment**

This is of great importance for the market-oriented environment, especially in China, which is transforming from a centrally planned economy to a market economy. Whenever there is a crisis, people would like to depend on the government to solve the problem in an administrative way – ie, the government would pay off 100% to depositors, meaning explicit unlimited insurance. This would induce moral hazard and greater potential financial risk. Our goal is to minimise moral hazard. Programmes to protect the beneficiaries of insurance and capital market investors have already been established in China, and an explicit and limited deposit insurance programme is under discussion.

#### **V. Risk transfer to households and macroeconomic resilience**

Before 1997, Chinese banks made loans only to firms, not to individuals or households. When I moved to the PBC, one of my first jobs was to produce documents for home mortgage loan instruction. Right now, there are over RMB 2 trillion in home mortgage loans to millions of households, accounting for more than 10% of total loans outstanding. Other types of loans, like car and consumer loans, were also developed, which helped to facilitate the housing reform process. In China today, over 85% of urban households own their apartments, which is probably the highest percentage in the world. And in rural areas, almost 100% of households own their homes.

#### **VI. Financial system: shock absorber or amplifier?**

Both theoretical analysis and empirical evidence suggest that the financial system can be either a shock absorber or an amplifier. When there is panic or contagion in the market, the supervisory authorities need to intervene; however, in the case of asset prices, it is difficult to act. As for the central bank in China, our policy stance is that we concern ourselves with asset prices, but do not act in response to asset price changes unless they have an impact on the CPI.

## Concluding panel comments

Stanley Fischer<sup>1</sup>

The main theme for this conference was established in the opening remarks by Bill White, who posed the question of whether the massive changes we have seen in the financial system in recent years have been unequivocally welfare-enhancing. The answer to a question as unequivocal as this must be “no”. But then Bill gave us a choice:

- The “first best” view, which says that the answer is essentially yes, not only because monetary policy has improved over the past two decades, but also because financial developments have led to: (i) risks being transferred to those institutions and individuals who can bear them best; (ii) banks’ balance sheets accordingly being less vulnerable to shocks; and (iii) higher asset prices, which in part reflect the greater efficiency of risk allocation.
- The “second best” view, which says that the markets have grown larger, more complex, more opaque and faster moving, and that a host of problems and their dire consequences will be revealed when the system is exposed to shocks – as it inevitably will be.

The first best view has in the past been attributed to Alan Greenspan, though his views are more nuanced than that.<sup>2</sup> The second best view has been expressed vividly by Warren Buffett, who has referred to derivatives as “financial weapons of mass destruction, carrying dangers that, while now latent, are potentially lethal”.<sup>3</sup> The papers at this conference by Martin Hellwig, Darrell Duffie, Hyun Shin and Tobias Adrian, and Franklin Allen and Elena Carletti, all reflect concerns about the financial system that are closer to the second best than the first best view of recent developments.

Extending the main theme, (i) a panel of current and former central bankers discussed the implications of recent structural changes in the financial system for crisis management; (ii) we heard interesting presentations by Robert Merton and Robert Shiller respectively on the possibilities of the further use of modern financial techniques and instruments to improve the well-being of households and countries; (iii) questions were raised about the effectiveness of monetary policy when bank balance sheets are better hedged and less affected by interest rate changes; and (iv) there was some discussion of whether the international implications of the development of financial markets have made the world a more dangerous place.

I will take up issues (i), (iii) and (iv) in turn.

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<sup>1</sup> Governor, Bank of Israel. This is an edited version of comments presented at the concluding panel discussion at the Sixth BIS Annual Conference on “Financial System and Macroeconomic Resilience”, Brunnen, Switzerland, 18–19 June 2007.

<sup>2</sup> See, for instance, A Greenspan, “Risk transfer and financial stability”, a speech delivered to the Federal Reserve Bank of Chicago’s 41st Annual Conference on Bank Structure, 5 May 2005: “Two years ago at this conference I argued that the growing array of derivatives and the related application of more sophisticated methods for measuring and managing risks had been key factors underlying the remarkable resilience of the banking system, which had recently shrugged off severe shocks to the economy and the financial system. At the same time, I indicated some concerns about the risks associated with derivatives ...”.

<sup>3</sup> From his March 2003 letter to Berkshire Hathaway shareholders, as quoted at [www.telegraph.co.uk](http://www.telegraph.co.uk), 3 March 2003.

## I. First or second best?

Where should we stand on the key issue of whether recent financial developments have improved economic performance? As Bill White notes in his opening remarks, the evidence to date is reasonably favourable to the first best (Greenspan) view. There were many crises during the past decade that could have set off a global financial crisis – the Asian and other emerging market financial crises of the 1990s and the first years of this decade, the high-tech boom and bust of 2000–03, the world recession of 2001–03, corporate scandals and bankruptcies, the Iraq war, the global war on terror and frequent terrorist incidents around the world – yet no major financial crisis took place in an industrialised economy during that period. To be sure, the world came close following the Russian crisis in August 1998 and the LTCM crisis soon after. But thanks in part to decisive action by the Fed in October 1998, and also to the New York Fed's intervention a few weeks earlier in the LTCM crisis, that potential crisis was overcome.

Let me make three comments about that period. First, it is reasonable to believe that some of the responsibility for the good performance of the global economy over the last two decades lies with improved monetary policy, in essence through the application of explicit (for the formal inflation targeters) and implicit (in the case of the Fed and the ECB) inflation targeting.

Inflation targeting has one simple but critical achievement to its credit: it has pinned down expectations about medium- and long-term inflation. This means that the view sometimes espoused in the 1970s that inflation was a random walk is no longer plausible. With medium- and long-term inflation expectations tied down, nominal wage demands are likely to be more stable, as are long-term nominal interest rates. These features are part of the Great Moderation, which is probably also partly due to the effects of the entry of the products of Chinese and Indian labour into international trade.

We heard several references during the conference to the Greenspan-Bernanke put, the view that the commitment of the Fed to stabilise the economy through anticyclical monetary policy reduces the downside risk of holding assets and – it seems to be implied – thereby encourages excessive risk-taking. Whether the risk-taking is excessive depends on what is regarded as a neutral monetary policy. If neutral monetary policy is one of keeping nominal interest rates constant and not reacting to economic shocks, then there is a sense in which a central bank's countercyclical policies encourage the holding of risky assets. But if the central bank's activist monetary policy is in practice successful in stabilising the real economy, then there is nothing normatively excessive about the risks that market participants willingly take in the light of that commitment – rather, asset holders are merely recognising the fact that monetary policy can moderate the cycle.

My second comment is in regard to the role of derivatives. During the Asian and later financial crises, we at the IMF were generally told by market participants that our analysis of a particular problem was flawed because we did not take sufficient account of the impact of derivative contracts. There were crises in which derivatives played a role – particularly the Russian crisis in 1998 and the Korean crisis of 1997–98. But in neither case did the presence of derivative contracts fundamentally change the nature of the crisis, though in the Russian case it may have increased the damage caused by the crisis. To be sure, both the gross and net market values of derivatives outstanding are much higher now than they were a decade ago. But it is nonetheless suggestive that the presence of derivatives did not have an obvious impact on the scale of the emerging market financial crises of the 1990s.

Third, when one considers the LTCM case, which could be called the first derivatives crisis,<sup>4</sup> it is striking how familiar the story of the rescue operation is: a heavily leveraged financial institution (banks are also typically highly leveraged) gets into severe difficulties that may have systemic implications. The central bank calls in the main creditors and suggests that the creditors and the financial system will be better off if the creditors act to prevent the failure of the institution in trouble. A financial package is assembled, credit is eased after the immediate liquidity crisis is over, and the potential crisis passes, leaving signs of turbulence and recriminations in its wake, but not a major crisis.

All this sounds encouraging or perhaps complacent. But there are many open questions that justify the concerns of the second best view. These concerns relate to the spectacular proliferation of complex financial instruments, the volume of trade in them and their mind-boggling face value.<sup>5</sup> There are two sets of concerns. The first is the “plumbing risk” – the question of what could go wrong in a financial crisis in which a series of interlocking contracts begins to unwind. It is easy to describe a massive crisis that develops as a result of the failure of a relatively small player in a chain of derivative contracts to honour its obligations. These stories are similar to those that central bankers tell about the possibility that the payment system could seize up as a result of the failure of a subset of transactions to clear. Much of the concern in the case of derivatives is reduced by the existence of netting agreements which, if most contracts are for hedging purposes, would significantly reduce the extent of any future derivatives crisis. For exchange-traded contracts, exchange rules are also likely to reduce the plumbing risk. There has not so far been a plumbing crisis associated with the failure of a company to meet its derivative obligations, though that risk was certainly one of the reasons for the New York Fed’s intervention in the LTCM crisis. Similarly, there has not yet been a significant financial crisis caused by the breakdown of a payment system.

Nonetheless, concerns over the potentially massive effects of a failure in such systems justify the attention these potential problems receive from regulators and those responsible for the relevant systems.

The second set of concerns relates to the reallocation of risks that takes place as a result of hedging through derivatives, particularly on the part of the banks. For example, when a bank hedges through a CDO (collateralised debt obligation) or a CDS (credit default swap), where does the risk go? The data suggest that, on net, some goes to institutions better able to hedge the risks through their balance sheets – for instance, insurance companies. This suggests that the transaction improves the overall allocation of risk. But it is also possible that many derivative contracts are generated by differences in accounting rules among institutions (for instance, mark to market versus historical cost accounting) or by differences in regulations. That does not necessarily lead to a better allocation of risks. And of course, the increased leverage that generally becomes possible as a result of the use of derivatives also contributes to an increase in risk.

Further, there are concerns that the real risks in some derivative contracts are not understood by at least one side of the transaction – this was certainly alleged in some cases that came to light following the Asian crisis. This is a case of asymmetric understanding rather than asymmetric knowledge. In this regard, the role and the performance of the rating agencies received a great deal of critical attention at the conference.

Where does all this leave us? First, it seems clear that risk is generally better allocated in a modern financial system than it was before the derivatives explosion. Second, it is also clear

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<sup>4</sup> The reference here is to the frequent description of the emerging market financial crises of the 1990s as the “first financial crisis of the 21st century”.

<sup>5</sup> As quoted, for instance, in the paper by Darrell Duffie presented at this conference.



that the derivatives explosion brings with it new risks and issues, and that those responsible for the operation of the financial system have to contend with those risks and try to reduce them, by improving the plumbing, by removing regulatory and other distortions that may generate unnecessary and non-risk reducing derivative activity, and by trying to ensure that participants in these markets are well informed and understand the risks they are taking.

That is to say, we are in a (relatively) new and exciting world, in which both the first best and second best views are essentially correct, and in which anyone who neglects either of those views risks distorting reality and the economy.

## **II. Related issues**

### **The effectiveness of monetary policy and the lender of last resort**

Financial market developments of the last few decades have increased the role of capital markets and reduced the role of banks. What are the implications of these developments for the effectiveness of monetary policy and for the role of the central bank as lender of last resort?

Monetary policy does not seem to be less effective today than it was several decades ago – if anything, it appears to be more so. The financial markets are very sensitive to central bank interest rate decisions and to expectations about monetary policy changes. The immediate impact of interest rate changes on the balance sheets of financial institutions and households is probably greater and more far-reaching than it was when the banks were the main financial institutions – that is to say that the bank lending channel is no longer the main transmission route for monetary policy. This contention is at odds with the concern that was expressed at the conference that the effectiveness of monetary policy might have been reduced as a result of bank lending playing a less central role in the economy.

Don Kohn, in his panel remarks on how to respond to financial crises, argued that the expansion of the role of financial markets had made the task of managing a financial crisis easier. The discount window, through which a bank can receive Fed credit, has become less important, and generalised monetary policy responses more important. With respect to 1987 (the stock market crash), 1998 (Russia/LTCM) and 2001–02 (the end of the high-tech boom and 9/11), the Fed's response in each case was to provide liquidity to the market and to cut interest rates. In each case, the Fed's actions appeared successful, even if some believe that in both 1987 and 1998 the liquidity expansion contributed to subsequent inflationary difficulties.

What the Fed did in these cases is fully consistent with modern views on how the lender of last resort should behave. In a financial crisis, the lender of last resort is supposed to provide liquidity to the market, rather than to an individual institution in trouble. Individual institutions should be dealt with in a way that contains the panic – typically by keeping small depositors as whole as possible – while trying to minimise moral hazard, typically by ensuring that losses are borne by equity owners and others who are not small depositors. Sometimes the “too big to fail” phenomenon gets in the way of the theory of best practice. But the key facts here are that the essential aspect of the actions of the lender of last resort relates to its market activities, and that in many – though not all – cases it is not necessary for the central bank to deal with individual institutions when it has to stem a crisis. This is to say that the view that the capital markets' much greater role in the financial system does not necessarily make the role of the lender of last resort more difficult appears to be correct.

However, the greater role of complex financial instruments does make the task of the supervisors of the financial system more difficult. As far as the banking system is concerned, the Basel II approach, which emphasises risk management by banks and methods of supervising systems and tools of risk management, is an appropriate response to the

changing structure of the financial system and banks' balance sheets. But the long delays in getting Basel II in place bear witness to the difficulty of building the necessary supervisory and management infrastructure for dealing with banks in the new financial world. And newly important financial institutions, such as hedge funds and private equity, pose regulatory difficulties that still have to be dealt with.

### **International implications**

In his comments, Y C Park argued that the international financial system has become more dangerous as a result of the growing scale and complexity of international financial flows. Financial sector liberalisation does expose the financial system to foreign shocks that in an earlier time might not have affected the economy. But by easing the entry of foreign firms and their technical capacities, capital account liberalisation also brings technological progress that contributes to the efficient operation of the economy.

Despite the rapid increase in international capital movements, there have not been any major emerging market financial crises in the last few years. No doubt that owes much to the remarkable growth performance of the world economy over the last five years. But it is also a result of countries learning the lessons of the crises of the 1990s, by improving their fiscal and monetary policies, allowing exchange rate flexibility, strengthening their financial systems and building up their reserves.

However, the robustness of the international system to major shocks remains to be tested.