

David Clementi: Maintaining financial stability in a rapidly changing world - some threats and opportunities

Speech by Mr David Clementi, Deputy Governor of the Bank of England, at the launch of the Oxford Centre for Computational Finance, University of Oxford, 10 October 2001.

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Introduction

It is a great pleasure to be here this evening, and to be part of the launch of the Oxford Centre for Computational Finance. Responding to new types of risk demands an increasingly sophisticated combination of technology and intellectual thought, and I can think of few places as well suited to this exciting and challenging task as Oxford. As an honorary Fellow at Lincoln College, I know that the drive for excellence remains as high as ever, and I have to say that I look back at my time here as an undergraduate with great affection. That was some time ago, of course - back in the 1960s, when a photocopier or calculator was pretty high tech - and if you knew the current prices of equities on the exchange you had a five minute information jump on most of the market. The world today of course is much more complex and the risks correspondingly more difficult to analyse.

What I'd like to do tonight is to cover three main topics. First, I want to explain the Bank of England's role in financial stability issues, and discuss some of the threats to that stability which have emerged recently. I want to say a little about the tragic events of September 11th, which have further underlined the complex nature of the world we live in. Second, I would like to look at some of the ways in which formal models of market and credit risk of the type you will be studying here have already influenced the design of our regulatory regimes. Much has been achieved here, but much also remains to be done, and the current state of the art by no means captures every type of risk run by financial firms. So, third, I want to talk about some other safeguards which will continue to be necessary to improve the chances of maintaining financial stability.

The Bank of England's role in financial stability

The maintenance of stability in the overall financial system is one of the Bank of England's three core tasks - the other two being responsibility for monetary stability, and promotion of the efficiency and effectiveness of the UK financial system. That concern for system-wide financial stability does not reflect a paternalistic belief that central banks know better than the markets - indeed market disciplines have a very important role to play in maintaining stability. Rather, it derives from the fact that some types of problem which initially affect only individual financial institutions may subsequently threaten the stability of the system as a whole. This contagion may not be fully in any individual firm's interests - or powers - to resolve, and it is this 'gap in the market' which creates the need for public involvement via central banks. Fortunately, banking crises do not occur every day of the week. But they do happen: an IMF study counted 54 across the world between 1975 and 1997, of which 12 were in developed countries. Such crises can have enormously harmful effects: recent Bank of England analysis suggested that, over the past quarter century, total output losses during banking crises have averaged around 15-20% of GDP in the countries in which they occurred.

Whilst the Bank has responsibility for maintaining systemic stability, the day-to-day supervision of individual banks and other financial firms in the UK has been the responsibility of the Financial Services Authority (FSA) since 1997. Co-ordinating our system-wide perspective with the FSA's supervision of individual institutions and the Treasury's legislative responsibilities is essential to the smooth functioning of the new arrangements. A Memorandum of Understanding, signed by the Bank, the FSA and the Treasury in October 1997, sets out our respective responsibilities, both in 'normal' times, and in a crisis. And we work hard to foster these relationships, helped by the fact that I am a member of the FSA Board and Howard Davies is a non-executive director of the Bank. The three institutions also get together each month in the so-called 'tripartite Standing Committee' to exchange information and discuss current threats to financial stability. I say once a month, but we meet more frequently than that when needed, as we have done for example over the past few weeks.

What are some of those threats as I speak here today? We are, of course, still working our way through the implications of the dreadful events in the United States last month. Uncertainty about the near-term outlook increased quite markedly following the attack, and this - together with the

possibilities of supply-chain and market disruption, particularly in the US - contributed to some sharp adjustments in equity values. A number of sectors most closely affected by the terrorist attacks - in particular air travel and insurance - were badly hit. More recently, equities have rallied somewhat, suggesting that some of the earlier concerns may have been overdone. But the market is still clearly lower than it was at the start of September.

These factors have potentially important implications for the inflationary outlook, and therefore for monetary policy. The Bank of England's Monetary Policy Committee - in common with a number of other central banks around the world - reduced interest rates last month, citing in our press release the increased risks of a further slowdown in world growth. Interest rates were cut by a further quarter of a per cent following our meeting last week, and you will be able to read about our reasoning for this decision when the minutes are published on 17 October.

In other ways, though, the aftermath of the attacks on the US has highlighted the robustness of the international financial system. Although several firms suffered grievous losses of staff and destruction of equipment, overall the market place was back up and functioning remarkably quickly. I think there were a number of reasons for this. In the first place the Federal Reserve System did an excellent job in making the necessary liquidity available to markets, both in the United States and in other financial centres through swap arrangements with the ECB, the Bank of England and other central banks. Second, the authorities and systems providers were able to keep the main payment systems (Fedwire and Chips) open during and after the evening of September 11th itself. This was a significant achievement, enabling the huge daily volume of dollar payments to be made, including of course substantial dollar flows from the foreign exchange and other dollar markets based in London. Equally impressive was that most of the big firms affected were using their back-up contingency sites very quickly, allowing them to continue in business with a minimum of obvious disruption. Some of those contingency sites were in New Jersey, others put increased volumes through their London office. In New York itself, connectivity of telephone traffic was initially badly affected because of the routing of so much traffic through connections located downtown. But this problem was short lived. Overall, we salute the US firms and the US authorities for their actions, achieved at a time which for many involved was one of acute personal anxiety.

There are a number of lessons for firms based in this country. All of those firms, including in particular those providing key infrastructural services, will want to review the robustness of their contingency and back-up plans.

Risk modelling and regulatory capital

That takes me to my second topic this evening. The damage to physical infrastructure in the US represents an extreme example of a particular type of risk - "operational risk" in the jargon of financial regulators. But the more general question of risk measurement and risk management has assumed a central position in both private and public sector efforts to reinforce the stability of the financial system.

From the regulators' point of view, perhaps the first attempt to answer this question at a global level came with the 1988 Basel Accord, which required that all internationally active banks should - at a minimum - carry capital equivalent to 8% of risk weighted assets. The risk weights were very broad brush, and related only to credit risk. Set against the background of a concern about decline in the capital held by banks in the late 1980s, however, the Accord was a clear success. The average capital ratios of G10 banks rose substantially in the following ten years, and a more level playing field was established between banks based in different countries. That success was due in no small measure to the Accord's simplicity. But over time it did become clear that the lack of very precise differentiation between different kinds of borrower was introducing serious distortions by opening up gaps between the capital required for regulatory purposes and the 'economic' capital suggested by banks' own increasingly sophisticated risk management systems.

Another weakness in the 1988 Accord was the lack of any proper treatment of market risk - that is, risk associated with fluctuations in interest rates, exchange rates and so on. The intensive application of information technology and advances in the theory of finance drove significant improvements in the ability of larger banks to measure and manage market risk during the 1990s. Of particular importance was the development of 'Value at Risk' (VaR) models, which allowed banks to calculate measures of the aggregate risks being run on entire portfolios. Using the latest thinking on how to price individual assets, and exploiting data on past movements and correlations in asset values, these models provide

estimates of the statistical distribution of value for an entire portfolio of marketable assets. Estimates of the amount of capital at risk can then be read off from the lower tails of these distributions.

VaR models have proved enormously useful to firms in managing the day-to-day risk on parts of their business. And the Basel Accord was modified in 1996 to allow VaRs to be used as an input to the regulatory capital calculation for market risk. But care is needed, not least because these models tend to be least robust in precisely the circumstances of most interest - ie those rather rare cases in which losses are very large, hidden away in the lowest parts of the bottom tail of the probability distributions. The evidence suggests that such events are not well captured by the normal distributions typically used in standard risk models. Markets tend to behave in highly non-linear ways - moving within relatively narrow ranges for long periods, but then adjusting quite sharply. Sometimes these adjustments can be related to clear external events - such as the World Trade Centre attack. But often there is no such trigger. The types of circumstances that generate these outcomes are not particularly well understood. This is, I believe, a central theme of the recent work of some of your founder members, and it is one with significant operational as well as theoretical implications.

I noted a few minutes ago that the original Basel Accord had given rise to a number of distortions between economic and regulatory capital. This problem came to a head during the course of 1990s as banks increasingly engaged in so-called 'regulatory arbitrage'. Better credits, over-weighted by the Accord, were progressively being securitised, leaving relatively poorer credits on the banks' balance sheets. And banks were getting little allowance for risk reductions achieved through portfolio diversification and the use of risk mitigation instruments.

To address these issues, the Basel Committee has proposed a new Accord which would allow firms to use externally or internally generated credit risk ratings to differentiate more precisely between different risks. There would also be a significant expansion in the recognition of collateral, credit derivatives and guarantees as means of reducing overall risks. These proposals are currently under discussion by central banks, regulators and market practitioners. Given our financial stability responsibilities, the Bank of England has been closely involved in this process. A team led by Patricia Jackson at the Bank has been providing technical and policy support to the Basel Committee, and we hope to have an agreement in the course of next year.

The new Accord does not, however, go to the point of recognising VaR-type models for measuring credit risk on portfolios as whole. At present, these models are not judged to be sufficiently robust to form the basis of a regulatory regime. A central issue is the sheer lack of information. Many types of loan have no publicly visible price, so the models lack a large and reliable data base. The behaviour of loans under different scenarios, and the correlations between different assets - both key inputs to any VaR model - have in many cases to be assumed rather than measured. And testing the ex post performance of the models is difficult. Where credit instruments lack market prices, model predictions can only be compared to data in the event of defaults, which are relatively rare. Investment horizons are usually so long that it would take many years to gather sufficient data for a statistically reliable test.

Credit risk models have clearly improved banks' understanding of the risks they face, and are slowly being implemented into their own internal systems. But the main challenge here in the next few years will be to refine the operation of these models, and seek answers to some of the questions I have raised. This is a fascinating research agenda, and I have no doubt that academics will treat these questions as challenges rather than causes for despair!

Ensuring adequate safeguards for the system as a whole

That leads me to my final topic tonight - how, given our imperfect knowledge, we design a regulatory capital regime which adequately captures the full range of risks run by financial firms.

There are, first, a number of important points which remain unresolved in the discussions on the new Basel Accord. One issue relates to the appropriate overall level of capital in the banking system. Overall capital, as with many regulatory issues, is at root a public policy choice about the balance between safety and economic efficiency. Higher capital requirements increase the costs of financial intermediation. Against this, the total pool of capital coming out of the new Accord must be large enough to protect the system against reasonable levels of risk.

Second, we need to be sure that the new rules do not give rise to movements in bank capital which excessively reinforce cycles in the real economy. Bank capital is inherently somewhat procyclical. In an economic downturn, banks will increase provisions and tighten loan standards. In some

circumstances, this could reduce the supply of credit, intensifying the decline in activity. But the introduction of a regime in which regulatory capital is linked to ratings could amplify that effect to the extent that those ratings themselves deteriorate rapidly in a downturn. There are various ways round these problems of procyclicality, but they will need to be resolved before the new Accord can be finalised.

I have talked a lot about the structure of public regulation. But it is also important to remember the powerful role that effective market discipline can play in maintaining financial stability. Both the new Accord, and a number of other, broader international initiatives, put substantial emphasis on improving the disclosure of information by financial firms. Disclosure of an appropriate kind should help the market distinguish clearly between well-managed and adequately capitalised banks on the one hand, and their less sound counterparts on the other. This should act as a spur to the weaker firms to improve their performance. Disclosure should also help to reduce uncertainties, which may mitigate the tendency of financial markets to lurch into periodic self-fulfilling crises. It is certainly arguable that greater, and earlier, disclosure of the exposures of Long-Term Capital Management, for example, could have avoided the problems seen in world financial markets following its collapse in the autumn of 1998.

I would like to end by raising a couple of questions about the future shape of financial markets. The first is the extent to which we should be integrating both our analysis of risk and our approach to regulation between the insurance industry on the one hand and capital markets on the other. Quite apart from the increasing institutional interlinkages, the extent of risk transfer now going on between different parts of the financial sector demands a consistent approach to capital requirements across the sector as a whole.

A second issue is the need to reflect liquidity conditions in determining the appropriate level of capital. If an asset can be disposed of quickly - that is if there is a robust liquid market for the asset concerned - the capital needed to guard against unexpected price movements will be less than if the prospective holding period is long. Liquidity conditions can of course vary dramatically not just between different instruments but over time and understanding how and why they vary will, I think, be an important area of investigation for the future.

Conclusion

That concludes a quick summary of some of the financial stability issues relating to risk and capital levels that we at the Bank of England are working on at the moment. Central bankers are by their nature a worrying breed (in both senses of the word!), and commentators often note the regularity with which the Monetary Policy Committee says that it finds the outlook 'more than usually uncertain'. Well - if ever there were a time when that phrase were true, it is now. I have spoken a little tonight about operational risk, and then about different types of financial risk. These are all areas where I believe this Centre can make an important contribution. The Bank of England is a voracious consumer of such analysis and expertise, and I very much hope that we will retain a close working relationship going forward.

Thank you for asking me here this evening - I wish you all the best in your future work.