Systemic Aspects of Recent Turbulence in Mature Markets

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The recent turbulence in mature financial markets appeared out of proportion to the events that triggered it. This experience suggests that both private and public financial institutions should display a much greater awareness of potential financial vulnerabilities and disruptions.

UP UNTIL July 1998, the mature financial markets in Europe and the United States had largely avoided the spillovers from the Asian crisis and remained buoyant. Government bond yields continued to decline and prices in equity markets rose steadily. In mid-July, equity markets began to decline on poor corporate earnings reports and concerns over slowing U.S. economic growth. Interest rate spreads between high- and low-quality borrowers also began to widen in mature markets. This was followed in late August 1998 by a dramatic widening of spreads and severe turbulence in mature financial markets, driven by Russia's unilateral restructuring of GKOs (treasury bills), the withdrawal from other emerging markets, and the near collapse in mid-September 1998 of the highly leveraged hedge fund, Long-Term Capital Management (LTCM).

Dynamic adjustments in emerging markets necessarily entailed adjustments in mature markets, reflecting the latter's important role in financing and leveraging investments in Russia and other emerging markets. But such adjustments would normally be expected to occur relatively smoothly and without the kind of severe financial turbulence that occurred in September and October 1998 in some of the deepest and most liquid markets in the world.

However, the resulting financial turbulence in mature markets appeared out of proportion to the events that triggered it. The Russian restructuring led to large losses, changed perceptions of default and convertibility risk, and affected the balance of risks and returns in international portfolios. Because of the new financial calculus that resulted, internationally active financial institutions appear to have engaged in a wholesale reassessment and repricing of financial risk, accompanied by a rapid rebalancing and deleveraging of international portfolios, accented by risk avoidance, market illiquidity, and extreme price movements. Despite the apparent concentration of turbulence in U.S. markets, internationally active European and Japanese financial institutions were involved in similar leveraged risk taking, in some cases on a very large scale. The negative impact on asset values during the most turbulent subperiod—mid-September through mid-October—was severe enough to trigger fears of significant negative spillover effects on world economic growth.

This severe turbulence raises issues concerning private risk and portfolio management, banking supervision, financial market surveillance, and the operation of the international financial system. The key issue is how very large leveraged positions could build up across a large number of financial institutions to the point where systemic risk was raised to extraordinary levels.

Several features of international financial markets help explain why there was a reassessment and rebalancing of mature market portfolios, but do not explain the severity of mature market turbulence.

- Russia's unilateral debt restructuring challenged investor assumptions about sovereign risk and international support.
- Mature markets financed a significant share of emerging market exposures.
- Many diverse institutions—not only hedge funds—had similar risk exposures and became vulnerable to a widening of interest rate spreads.
- Risk-management models did not prevent vulnerabilities from building up, and portfolio management worsened their unwinding.
- A disorderly unwinding and deleveraging, if it had been allowed to continue to build momentum, would have posed systemic risks in international financial markets.

Impact of the Russian crisis

Why did the Russian crisis create more turbulence in mature markets than the Asian crisis? Despite the uniqueness of Russia and the prevailing perception that Russia was "too big to fail," for many market participants Russia's unilateral restructuring was a sudden and defining event, unlike the Asian crisis, which developed more slowly. It challenged fundamental assumptions about emerging market finance, particularly the belief that countries would not unilaterally restructure sovereign debt, and led investors to question the balance of risks in portfolios. Ultimately, the Russian restructuring triggered capital outflows from many emerging markets, a sharp widening of emerging market spreads, and a drying up of liquidity in international capital markets.

Financing of emerging markets

Some of the immediate impact of the Russian restructuring sprang from the fact that a large share of financing for emerging market investments had been arranged and leveraged in mature markets. Some investors had purchased Russian GKOs on margin. Other Russian and emerging market purchases had been funded in Japan and swapped into local currencies. Mature market positions related to these investments had to be unwound or hedged. Because many of the investments were highly leveraged, downward price adjustments were unusually sharp as investors rapidly liquidated their holdings, which contributed to the speed and intensity of adjustments.

This ultimately posed systemic risks because of its impact on market liquidity and dynamics. Liquidity evaporated temporarily in some of the most liquid markets as risks were repriced and positions deleveraged, for example, in markets for U.S. Treasury securities, U.S. repurchase agreements, and yen-dollar transactions. There were repeated instances during September and October when concerns about liquidity heightened, and markets were dominated by sellers until prices declined enough to bring buyers back into the fray. U.S. dollar markets were particularly vulnerable, in view of the role of the dollar in international financial transactions. Other mature financial systems would also have been at risk had there been an even more disorderly unwinding. The high degree of leverage in mature markets exposed the international financial system to unexpected and unwarranted risks.

Impact of institutional diversity

Because of the near collapse of LTCM, and the publicity this attracted, there has been a tendency to exaggerate the role of hedge funds in the turbulence affecting mature markets. In fact, LTCM was unique in its attempt to magnify the value of seemingly low-risk, low-profit gambles by taking very high volume and highly leveraged positions to a greater extent than other hedge funds. However, at the same time, other, much larger institutions—including commercial and investment banks, brokers and dealers, and other institutional investors—also took similar positions, in some cases with considerable leverage. Whereas LTCM was said to have had $80 billion in arbitrage positions in U.S. security markets, commercial banks alone were estimated to have had $3,000 billion in similar exposures. A rapid unwinding of LTCM's portfolios could have affected not only direct creditors and counterparties but also a wide range of other institutions holding similar positions.

While hedge funds are large and leveraged enough to have a noticeable impact on market liquidity when they enter or withdraw from markets, it is doubtful that any single hedge fund, or a small group of such funds, could pose a risk of systemic problems. Rather, the simultaneous and interrelated involvement of many diverse institutions posed the major risks to the system.

Risk-management models

A key issue is why risk-management technologies—models, stress tests, and scenario analyses—and internal control mechanisms did not provide more advance warnings of the system's vulnerability. One reason is that models may provide a false sense of precision, in part because their output depends on human judgment. Another is that models assume that market liquidity will be sufficient to allow positions to be closed out without major price changes or market disorder. Third, since models depend on historical relationships between price movements in many markets, they tend to break down during times of stress and turbulence, when there are structural breaks in relationships across markets.

Threat of systemic problems

Although the unilateral restructuring by Russia was a significant event, the major "wake-up call" for mature market institutions came in early September 1998, when LTCM announced that 52 percent of its capital had been spent on margin calls, only 16 percent of which were related to emerging market investments. This set off rounds of speculation, selling, and concerns in the international markets. Fears that other institutions might be holding similar positions created substantial uncertainty about counterparty risk and generated rumors, which probably contributed to heightened market turbulence. This uncertainty was increased by uncertainty over whether the emerging market contagion would spread to Latin America, particularly Brazil. Market pressures did not ease until the U.S. Federal Reserve's second interest rate cut on October 15.

Looking ahead, it is uncertain how much more deleveraging will occur. Since transaction data are limited, and the reporting of transactions in derivative markets infrequent and incomplete, it is not possible to assess how much leverage is remaining in the system that might lead to more turbulence in the future. From the experience of the bond market turbulence in early 1994—when deleveraging took eight months to complete—it would seem that the process may still take time, although presumably the extreme tensions that developed in September and early October 1998 will not be repeated.

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What is striking about the most recent crisis is that the surprisingly large flights to safety and liquidity, the rapid drying up of liquidity in international capital markets, and turbulence in a wide range of mature markets—defined at times by price disconnects and near seizures in some markets—all appear to have been out of proportion to the factors that triggered them. The concern is not that the reassessments and portfolio adjustments occurred; instead, it is that they were sufficiently violent and widespread that they might have posed systemic risks for world financial markets and significant downside risks to the world economic outlook.

Shortcomings in risk management

As was earlier noted, deficiencies in both private and systemic risk management probably contributed to the recent financial market turbulence.

• In *private markets*, many diverse participants were apparently surprised by sharp adverse price movements in asset markets. This suggests that they engaged in excessive risk taking, excessive leveraging, and, ultimately, an unsustainable structure of financial positions. Also, they may have paid insufficient attention to the interplay of market and credit risk. This confluence of mistakes may have created "an accident waiting to happen."

• On the *public side*, although public systemic risk management during September–November 1998 alleviated the threat of a systemic problem in international markets, two lines of defense—banking supervision and market surveillance—that would ordinarily have protected against the buildup of such a threat did not appear to provide sufficient warning.

Private risk management. As first lines of defense against systemic problems, the internal risk-management and control mechanisms of private financial institutions are designed to prevent them from taking excessive risks that could threaten their capital positions and viability. In view of the extent of losses suffered by a number of large institutions, the degree of surprise associated with those losses, and the reaction of the equity prices for these institutions, these systems appear not to have worked well for many diverse and systemically important institutions, including internationally active commercial and investment banks, proprietary trading desks, market makers, brokers and dealers, and foreign exchange traders and dealers.

When the crisis struck, it was evident that many market participants had not adequately anticipated or understood the risks. Several systemically important institutions appear to have made similar misjudgments in their risk assessments and management and in investment strategies. This suggests that management command and control systems now used by these financial institutions may be flawed. It raises concerns about the adequacy of risk- and portfolio-management systems and operational controls within some financial institutions operating internationally. Systems now in use apparently have not adequately taken account of some of the lessons of the 1994–95 Mexican crisis, while some deeper-seated problems were revealed during the recent turbulence. A more integrated approach to market- and credit-risk management and position taking would have avoided some of this turbulence.

It is tempting to blame the shortcomings in the application of modern quantitative approaches to risk assessment, in part because the technical details of models, their sensitivities to assumptions—including the assumed probabilities of adverse events in stress testing—and excessive risk tolerance limits introduce uncertainties. But an equally important shortcoming may be in the human judgment required to implement these technologies and to assess the economic and financial environment. Also relevant are the incentives within institutions to maximize short-term gains and individual bonuses—at times at the expense of the firm's overall risk exposure and longer-term profit. Greater diligence, especially surrounding creditor and counterparty relationships between the major financial institutions and the hedge fund LTCM, was probably called for. There also seemed to be systemic components that contributed to the virulence of the mature market turbulence that few, if any, participants fully anticipated. Accordingly, the market turbulence, and the issues raised by it, needs to be examined at the systemic level.

Public risk management. Financial supervision and regulation is an important line of defense against systemic problems. While it is unlikely that any supervisory system could have identified these problems as they were developing, it seems plausible that some of the excessive risk taking and leveraging could have been avoided if home national supervisors, and those responsible for market surveillance, had known more about the buildup of both balance-sheet and off-balance-sheet positions, leverage, and the aggregate amount and distribution of risk taking in the markets.

Another line of defense is financial market surveillance. For example, the U.S. Federal Reserve's involvement in the market means that it had continuous access to market intelligence and information. It decided a private rescue of LTCM was needed and, by facilitating this, was able to fence in one aspect of the ongoing turbulence and ease liquidity pressures.

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Probably no system of market surveillance, in particular of the U.S. financial system, could have accurately foreseen what unfolded during September and October 1998. However, the bouts of turbulence, illiquidity, price disconnects, and other features of the sharp dynamics strongly suggest that the instability that erupted in the aftermath of the flight from emerging markets in mid-1998 may have been partly the result of pressures that accumulated over a long period of time, in particular during the long "bull" runs in fixed-income markets. The potential risks associated with these developments—which could have been triggered by some event that threatened the positions held by the large and diverse group of financial institutions—clearly should have received greater attention. Market behavior during the summer and fall of 1998 suggests that there may not be sufficient disclosure and transparency for even the most sophisticated players to know enough about the credit and counterparty risks they are taking.

Warning signs were present almost two years ago when some central banks suggested that equity valuations were beginning to look unsustainable (irrational exuberance), credit risk spreads were unusually narrow and compressed, and loan covenants and nonfinancial terms were being relaxed. With the benefit of hindsight, it is possible to detect that absent from these concerns were warnings that the degree of (off-balance-sheet) leverage was potentially becoming excessive, that credit extension to high-risk enterprises (hedge funds) was widespread and also possibly excessive, and that there was an excessive amount of position taking on the presumption that mature market credit risk spreads would narrow once the "Asian contagion" dissipated. This suggests that there should be a more heightened awareness about potential financial vulnerabilities and disruptions when they are least expected—when economic and financial conditions are favorable, and, in particular, when expansions in economies are reaching a mature stage. It is at the top of business and credit cycles that credit risk spreads narrow, there are strong incentives to improve asset returns through leverage, and bank capital appears ample.

Conclusion

The recent turbulence suggests that financial markets can be adversely affected by the financial institutions' reactions to market pressures, stress, and turbulence, particularly when they hold highly leveraged positions. A number of important financial institutions active in the international arena made mistakes. In many cases, management command and control systems should be reassessed. Greater disclosure of the activities of financial institutions can enhance the ability of the public and private sectors to assess financial risks and their causes. Likewise, private risk-management systems could also benefit from greater disclosure and should be reassessed to take account of recent experience.

Many features of the international financial system—including the integrated and complex nature of financial position taking, institutions, and markets—were reflected in the market turbulence. In particular, strains affecting the linkages of financial positions across national and international markets revealed problems in the way the international financial system can perform in the face of financial turbulence.

The role of banking supervisors and those responsible for market surveillance in warning about the accumulation of increasing levels of risk and leverage in the mature markets is also an issue of concern. It was argued in light of the Asian crisis that no one could see through the opaque Asian financial structures and markets. Yet the markets and institutions that experienced the turbulence are the most open and transparent in the world. Why then were potential dangers not more accurately perceived at an earlier stage?

The experience of the recent turbulence suggests that neither private market participants nor the institutions in charge of prudential supervision and market surveillance have a full understanding of the ever-changing structure and dynamics of the international financial markets. This is not, of course, an entirely new problem, nor can there be a complete and final solution. But the difficulties revealed by recent financial market turbulence testify to the urgency of continuing efforts to improve the performance and enhance the stability of the international financial system. F&D

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