Frederic S Mishkin: Monetary policy flexibility, risk management, and financial disruptions

Testimony by Mr Frederic S Mishkin, Member of the Board of Governors of the US Federal Reserve System, at the Federal Reserve Bank of New York, New York, 11 January 2008.

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In my remarks today, I would like to consider the rationale for greater flexibility in monetary policy during periods of financial disruptions. Before doing so, however, I would like to make not just one, but two important disclaimers. First, as usual, my remarks reflect only my own views and are not intended to reflect those of the Federal Open Market Committee (FOMC) or of anyone else associated with the Federal Reserve System. And second, my comments today should not be viewed as suggesting what policy actions I would be likely to advocate at the next FOMC meeting; rather, my purpose here is to discuss at a general level what can be said about the appropriate framework for monetary policy when we face a financial disruption of the sort that we have seen recently.

I have two reasons for making the second disclaimer. First, in some circumstances, the appropriate near-term path for policy rates can be highly uncertain and may well evolve right up until the time of the meeting, depending on the implications of the incoming data. Second, as I noted in a speech in late November, I think there is too much focus on what decision will be made about the federal funds rate target at the next FOMC meeting (Mishkin, 2007e). What is important for pricing most financial assets is the path of monetary policy, not the particular action taken at a single meeting. For these reasons, I hope the recent enhancements to the Federal Reserve's communication strategy – especially the greater prominence of the macroeconomic projections of FOMC participants – will help shift attention toward our medium-term objectives and our approach in meeting these objectives.[1]

In particular, the Congress has given the Federal Reserve a specific mandate (often referred to as the dual mandate) of fostering the objectives of price stability and maximum employment. Therefore, when the economy faces a disruption in financial markets, monetary policy must aim at balancing the risks to both economic growth and inflation. In the remainder of this speech, I will elaborate a bit further about why financial market disruptions can pose significant risks to the macroeconomy. Then I will explain how the science of monetary policy can help provide a conceptual framework for a systematic approach to managing these risks, and I will briefly discuss how that framework can be useful for understanding the course of Federal Reserve policy over the past few months.

Financial disruptions and macroeconomic risk

Before considering the appropriate policy response to strains in financial markets, it is essential to consider the sources of these strains and the potential consequences for the macroeconomy. In general, the U.S. financial system is an efficient mechanism for channeling funds to individuals or corporations with worthy investment opportunities, because the financial markets are highly competitive and provide strong incentives for collecting and processing information.

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[1] I appreciate the comments and assistance of William English, Andrew Levin, Brian Madigan, Roberto Perli, David Reifschneider, and David Wilcox.

Although financial markets and institutions deal with large volumes of information, some of this information is by nature asymmetric; that is, one party to a financial contract (typically the lender) has less accurate information about the likely distribution of outcomes than does the other party (typically the borrower).[2] Historically, banks and other financial intermediaries have played a major role in reducing the asymmetry of information, partly because these firms tend to have long-term relationships with their clients. Recent years have witnessed the development of new types of financial institutions and of new markets for trading financial products, and these innovations have had the potential (not always realized) to contribute to the efficient flow of information.

The continuity of this information flow is crucial to the process of price discovery – that is, the ability of market participants to assess the fundamental worth of each financial asset. During periods of financial distress, however, information flows may be disrupted and price discovery may be impaired. As a result, such episodes tend to generate greater uncertainty, which contributes to higher credit spreads and greater reluctance to engage in market transactions.

As I noted in another recent speech, financial disruptions are associated with two distinct types of risk: *valuation risk* and *macroeconomic risk* (Mishkin, 2007d). Valuation risk refers to the extent that market participants become more uncertain about the returns on a specific asset, especially in cases where the security is highly complex and its underlying creditworthiness is relatively opaque. In recent months, for example, this type of risk has been central to the repricing of many structured credit products, as investors have struggled to understand how potential losses in subprime mortgages might filter through the various layers of securities linked to these loans.

While valuation risk is relevant for individual investors, monetary policymakers are concerned with macroeconomic risk. In particular, strains in financial markets can spill over to the broader economy and have adverse consequences on output and employment. Furthermore, an economic downturn tends to generate even greater uncertainty about asset values, which could initiate an adverse feedback loop in which the financial disruption restrains economic activity; such a situation could lead to greater uncertainty and increased financial disruption, causing a further deterioration in macroeconomic activity, and so on. In the academic literature, this phenomenon is generally referred to as the financial accelerator (Bernanke and Gertler, 1989; Bernanke, Gertler, and Gilchrist, 1996, 1999).

The quality of balance sheets of households and firms comprise a key element of the financial accelerator mechanism, because some of the assets of each borrower may serve as collateral for its liabilities. The use of collateral helps mitigate the problem of asymmetric information, because the borrower's incentive not to engage in excessive risk-taking is strengthened by the threat of losing the collateral: If a default does occur, the lender can take title to the borrower's collateral and thereby recover some or all of the value of the loan. However, a macroeconomic downturn tends to diminish the value of many forms of collateral, thereby exacerbating the impact of frictions in credit markets and reinforcing the propagation of the adverse feedback loop.

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[2] Such asymmetry leads to two prominent difficulties for the functioning of the financial system: adverse selection and moral hazard. Adverse selection arises when investments that are most likely to produce an undesirable (adverse) outcome are the most likely to be financed (selected). For example, investors who intend to take on large amounts of risk are the most likely to be willing to seek out loans because they know that they are unlikely to pay them back. Moral hazard arises because a borrower has incentives to invest in high-risk projects, in which the borrower does well if the project succeeds but the lender bears a substantial loss if the project fails.

Risk management and the science of monetary policy

Given that a financial market disruption can pose significant risks to the macroeconomy, risk management is crucial in formulating the appropriate response of monetary policy. Unfortunately, most existing studies of optimal monetary policy have completely abstracted from considerations of macroeconomic risk, because these studies use specific formulations or approximations which imply that the design of the optimal monetary policy does not depend on the magnitude or direction of uncertainty facing the economy – an implication referred to as certainty equivalence.

To elaborate on these issues, it's necessary for me to proceed at a somewhat more technical level, but I promise to use plain English again later in the speech. In particular, the standard textbook approach to analyzing optimal monetary policy utilizes a *linear-quadratic* (LQ) framework, in which the equations describing the dynamic behavior of the economy are linear and the objective function specifying the goals of policy is *quadratic*. For example, in light of the dual mandate, monetary policy is often characterized as seeking to minimize a loss function comprising the squared value of the inflation gap (that is, actual inflation minus desired inflation) and the squared value of the output gap (that is, actual output minus potential output).

Under these assumptions, the optimal policy is certainty equivalent: This policy can be characterized by a linear time-invariant response to each shock, and the magnitude of these responses does not depend on the variances or any other aspect of the probability distribution of the shocks. In such an environment, optimal monetary policy does not focus on risk management. Furthermore, when financial market participants and wage and price setters are relatively forward-looking, the optimal policy under commitment is characterized by considerable inertia.[3]

Indeed, the actual course of monetary policy over the past quarter-century has typically been very smooth in the United States as well as in many other industrial economies. For example, the Federal Reserve has usually adjusted the federal funds rate in increments of 25 or 50 basis points (that is, 1/4 or 1/2 percentage point) and sharp reversals in the funds rate path have been rare. Numerous empirical studies have characterized monetary policy using Taylor-style rules in which the policy rate responds to the inflation gap and the output gap; these studies have generally found that the fit of the regression equation is improved by including a lagged interest rate that reflects the smoothness of the typical adjustment pattern.[4]

While an LQ framework may provide a reasonable approximation to how monetary policy should operate under fairly normal circumstances, this approach is less likely to be adequate for thinking about monetary policy when the risk of poor economic performance is unusually high. First, the dynamic behavior of the economy may well exhibit nonlinearities, at least in response to some shocks (Hamilton, 1989; Kim and Nelson, 1999; and Kim, Morley, and Piger, 2005). Furthermore, the use of a quadratic objective function does not reflect the extent to which most individuals have strong preferences for minimizing the incidence of worst-case scenarios. Therefore, given that the central bank's ultimate goal should be to maximize the public welfare, I believe that the design of monetary policy ought to reflect the public's preferences, especially with respect to avoiding particularly adverse economic outcomes.

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[3] The now-classic textbook on this topic is Woodford (2003); refer also to Goodfriend and King (1997); Rotemberg and Woodford (1997); Clarida, Gali, and Gertler (1999); King and Wolman (1999); Erceg, Henderson, and Levin (2000); Benigno and Woodford (2003); Giannoni and Woodford (2005); Levin and others (2005); and Schmitt-Grohé and Uribe (2005).

[4] Clarida, Gali, and Gertler (1998, 2000); Sack (2000); English, Nelson, and Sack (2003); Smets and Wouters (2003); Levin and others (2005); further discussion is in Bernanke (2004).

Most of the quantitative studies of optimal monetary policy have also assumed that the shocks hitting the economy have a time-invariant Gaussian distribution, that is, a classical bell curve with symmetric and well-behaved tails. In reality, however, the distribution of shocks hitting the economy is more complex. In some instances, the uncertainty facing the economy is clearly skewed in one direction or another; again, this is likely when there are significant financial disruptions. The Federal Reserve often reports on our judgments regarding the degree of skewness and the associated economic costs by giving assessments of the "Balance of Risks" in the press releases that are issued following FOMC meetings.

In addition, at least in some circumstances, the shocks hitting the economy may exhibit excess kurtosis, commonly referred to as tail risk because the probability of relatively large disturbances is higher than would be implied by a Gaussian distribution. In that light, one element of the recent enhancements to the Federal Reserve's communication strategy is that FOMC participants now provide assessments of the relative degree of uncertainty. For example, in the "Summary of Economic Projections" issued in late November, FOMC participants indicated that the degree of uncertainty regarding the economic growth outlook was relatively high compared to the average degree of uncertainty over the past two decades. This account could be interpreted as a statement that the Committee perceived the tail risk as unusually large.

With a nonquadratic objective function (consistent with the importance of uncertainty for the course of monetary policy) as well as nonlinear dynamics and non-Gaussian shocks, optimal monetary policy will also be nonlinear and will tend to focus on risk management. Policy in this setting tends to respond aggressively when a large shock becomes evident; for this reason, the degree of inertia in such cases may be markedly lower than in more routine circumstances. Indeed, as I will argue, I believe that financial disruptions of the sort that have been experienced in recent months tend to have highly nonlinear effects on the economy. Thus, compared with the standard case, optimal policy may well involve much more rapid adjustment – a pattern that I will refer to as policy flexibility.

Formal models of how monetary policy should respond to financial disruptions are unfortunately not yet available, and this is an area of research that I plan to pursue with Board staff. However, I do have some thoughts about what a systematic framework should look like, and I would like to share them with you without going into any further technical details.

A risk-management framework for dealing with financial disruptions

Although the assumptions behind the LQ framework might be reasonable during normal times, financial disruptions are likely to produce large deviations from these assumptions, making it especially important to adopt a more flexible framework for analyzing the behavior of a central bank that practices risk management. What factors come into play with special vigor during financial disruptions? First, financial disruptions are likely to lead to highly nonlinear behavior because the cost and availability of credit can shift suddenly. Furthermore, even though linear approximations of the financial accelerator mechanism have typically been used in recent quantitative studies, this mechanism is, in fact, highly nonlinear (Levin, Natalucci, and Zakrajšek, 2004). Finally, because financial disruptions, if severe enough, raise the probability of particularly adverse outcomes, the standard approach of employing a quadratic approximation of the objective function may not be sufficiently accurate to convey the extent to which policymakers seek to avoid such outcomes in maximizing the public's welfare.

In light of these risk-management considerations, how should monetary policy respond to financial disruptions?

Periods of financial instability are characterized by valuation risk and macroeconomic risk. Monetary policy cannot – and should not – aim at minimizing valuation risk, but policy should aim at reducing macroeconomic risk. By cutting interest rates to offset the negative effects of financial turmoil on aggregate economic activity, monetary policy can reduce the likelihood that a financial disruption might set off an adverse feedback loop. The resulting reduction in uncertainty can then make it easier for the markets to collect the information that facilitates price discovery, thus hastening the return of normal market functioning.

To achieve this result most effectively, monetary policy needs to be timely, decisive, and flexible. First, *timely action* is crucial when an episode of financial instability becomes sufficiently severe to threaten the core macroeconomic objectives of the central bank. In such circumstances, waiting too long to ease policy could result in further deterioration of the macroeconomy and might well increase the overall amount of easing that would eventually be needed. Therefore, monetary policy must be at least as preemptive in responding to financial shocks as in responding to other types of disturbances to the economy. When financial markets are working well, monetary policy can respond primarily to the incoming flow of economic data about production, employment, and inflation. When a financial disruption occurs, however, greater consideration needs to be given to indicators of market liquidity, credit spreads, and other financial market measures that can provide information about sharp changes in the magnitude of tail risk to the macroeconomy.

Second, policymakers should be prepared for *decisive action* in response to financial disruptions. In such circumstances, the most likely outcome – referred to as the modal forecast – for the economy may be fairly benign, but there may be a significant risk of more severe adverse outcomes. In such circumstances, the central bank may prefer to take out insurance by easing the stance of policy further than if the distribution of probable outcomes were perceived as fairly symmetric around the modal forecast. Moreover, in such circumstances, these policy actions should not be interpreted by the public or market participants as implying a deterioration in the central bank's assessment of the most likely outcome for the economy, but rather as an appropriate form of risk management that reduces the risk of particularly adverse outcomes.

Third, *policy flexibility* is crucial throughout the evolution of a financial market disruption. During the onset of the episode, this flexibility may be evident from the decisive easing of policy that is intended to forestall the contractionary effects of the disruption and provide insurance against the downside risks to the macroeconomy. However, it is important to recognize that financial markets can also turn around quickly, thereby reducing the drag on the economy as well as the degree of tail risk. Therefore, the central bank needs to monitor credit spreads and other incoming data for signs of financial market recovery and, if necessary, take back some of the insurance; thus, at each stage of the episode, the appropriate monetary policy may exhibit much less smoothing than would be typical in other circumstances.

Of course, while policymakers may need to react aggressively to financial market information that indicates a significant shift in macroeconomic risks, monetary policy would typically move back toward a more incremental approach once the risks to the macroeconomy have returned to more usual levels.

Risk management and the anchoring of inflation expectations

An important proviso to my discussion thus far involves the other part of the dual mandate, price stability. A central bank must always be concerned with inflation as well as growth. As I have emphasized in an earlier speech about inflation dynamics, the behavior of inflation is significantly influenced by the public's expectations about where inflation is likely to head in the long run (Mishkin, 2007a). Therefore, preemptive actions of the sort I have described here would be counterproductive if these actions caused an increase in inflation expectations and the underlying rate of inflation; in other words, the flexibility to act preemptively against a

financial disruption presumes that inflation expectations are well anchored and unlikely to rise during a period of temporary monetary easing. Indeed, as I have argued elsewhere, a commitment to a strong nominal anchor is crucial for both aspects of the dual mandate, that is, for achieving maximum employment as well as for keeping inflation under control (Mishkin, 2007b).

How can a central bank keep inflation expectations solidly anchored so it can respond preemptively to financial disruptions? The central bank has to have earned credibility with financial markets and the public through a record of previous actions to maintain low and stable inflation. Furthermore, the central bank needs to clearly indicate the rationale for its policy actions. Policymakers also need to monitor information about underlying inflation and longer-run inflation expectations, and if the evidence indicates that these inflation expectations have begun rising significantly, the central bank should be prepared to hold steady or even raise the policy rate.

The Federal Reserve's recent monetary policy decisions

The framework I have outlined here can be useful in understanding the rationale for the recent decisions of the Federal Reserve and our policy approach going forward. Yesterday, Chairman Bernanke provided a detailed discussion of economic and financial developments and of the Federal Reserve's policy strategy, so here I will just relate some key points of his discussion to the major themes that I have emphasized today.

First, we are proceeding in a *timely* manner in countering any developments that might threaten economic or financial stability. The FOMC has not been basing its decisions solely on the incoming flow of economic data; for example, the sequence of interest rate cuts was initiated last fall even though growth in the gross domestic product had been quite strong in the third quarter. Rather, our policy approach has reflected the rapid deterioration of financial market conditions, which has contributed to a worsening of the economic outlook and the emergence of pronounced downside risks to economic growth and employment.

Second, in my view, the Federal Reserve has been acting and will continue to act *decisively*, in the sense that our policy strategy reflects the evolution of the balance of risks and not simply a change in the modal outlook for the macroeconomy. The disruption in financial markets poses a substantial downside risk to the outlook for economic growth, and adverse economic or financial news has the potential to cause further strains. In that light, the Federal Reserve's policy strategy is aimed at providing insurance to help avoid more severe macroeconomic outcomes.

Third, because we recognize that financial and economic conditions can change quickly, the Federal Reserve is prepared to respond *flexibly* to incoming information. Of course, in making its decisions, the Federal Reserve also gives careful consideration to the outlook and risks associated with the second aspect of our dual mandate, namely, price stability. Because longer-run inflation expectations appear to have remained reasonably well anchored, in my view, the easing of the stance of policy in response to deteriorating financial conditions seems unlikely to have an adverse impact on the outlook for inflation. Nonetheless, we will continue to monitor incoming data on inflation and inflation expectations, especially given the potential risks to price stability that are associated with the rapid increase in energy prices and the depreciation of the dollar. In short, the FOMC will determine the future course of monetary policy in light of the evolution of the macroeconomic outlook and the balance of risks to our objectives of maximum employment and price stability.

Conclusions

The monetary policy that is appropriate during an episode of financial market disruption is likely to be quite different than in times of normal market functioning. When financial markets experience a significant disruption, a systematic approach to risk management requires policymakers to be preemptive in responding to the macroeconomic implications of incoming financial market information, and decisive actions may be required to reduce the likelihood of an adverse feedback loop. The central bank also needs to exhibit flexibility – that is, less inertia than would otherwise be typical – not only in moving decisively to reduce downside risks arising from a financial market disruption, but also in being prepared to take back some of that insurance in response to a recovery in financial markets or an upward shift in inflation risks.

Finally, while I have argued that monetary policy needs to be decisive and timely in responding to a financial market disruption, a lot of art as well as science is involved in determining the severity and duration of the disruption and the associated implications for the macroeconomy (Mishkin, 2007c). Indeed, assessing the macroeconomic risks to output and inflation in such circumstances remains among the most difficult challenges faced by monetary policymakers. Furthermore, a central bank may well be able to employ non-monetary tools – such as liquidity provision – to help alleviate the adverse impact from financial disruptions. All of these considerations must be taken into account in determining the most appropriate course of monetary policy.

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