

Central Bank Policies and Asset Prices¹
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Keynote Address I
SUERF (The European Money and Finance Forum)/Bank of Finland Conference:
Housing Markets – A Shelter from the Storm or Cause of the Storm?
Helsinki, Finland
June 4, 2009

Introduction

I would like to thank the organizers and hosts, the Bank of Finland and SUERF, for inviting me to speak and participate in this conference. I cannot think of a more timely and important topic than housing markets and their role in the macroeconomy. I am looking forward to the presentations and discussion over the next two days, which will reveal what we know and what we still need to learn about the dynamics of house prices, their effect on the economy and financial markets, and appropriate policy responses.

We are currently suffering through a global financial crisis that has led to a severe downturn in the global economy. There are various opinions about the causes of the situation we find ourselves in, but there is no doubt that the developments in the financial markets and economies throughout the world have very much weighed on our psyche.

Recently, I was fortunate enough to attend the Metropolitan Opera's production of Wagner's Ring Cycle. I am sure many of you are familiar with the story of the Ring. While this was my fourth Cycle, I just couldn't help pondering the story.

In the Ring, the chief God, Wotan, essentially overinvests in housing. He has hired the giants Fafner and Fasolt to build Valhalla – a new residence for the gods – which the gods really couldn't afford. The only way they could finance this project was with a special kind of contract: no payments up front, but a big balloon payment in the end – Wotan will give over Freia, a goddess, to the giants once Valhalla is built. Unfortunately, this was a very poor contract, one that Wotan really hadn't thought through. Once Valhalla was built and it became time to repay the giants, Wotan faced a dilemma. If he handed over Freia, the gods would eventually die because Freia grew the apples that gave the gods eternal youth. That seemed a poor outcome, so, instead, Wotan proposes to change the contract – instead of Freia, he would pay the giants with the Rheingold. Of course, the problem with this new contract is that it involved money that Wotan didn't have – he needed to be bailed out of his bad decision and ends up stealing this gold from the Nibelungen. But this act starts the gods and mortals down a long path of unintended consequences, resulting in the demise of the entire social system as they knew it – the fall of the gods!

¹ The views expressed here are those of the author and do not necessarily represent those of the Federal Reserve Bank of Philadelphia or of the Federal Reserve System.

I couldn't help thinking about the analogies with our current situation. Here was someone, Wotan, who over-invested in housing, had a very poor financing arrangement involving a balloon payment, was bailed out with major repercussions, and the end result was the collapse of an entire society and world order!

Of course, we all are working hard to avoid such a dire outcome in the wake of our own financial crisis. But we are beginning to see the old regime transform into a new one. The financial services industry has begun to restructure itself as major investment banks in the U.S. have become bank holding companies and weaker financial institutions have consolidated into healthier ones. Financial firms are rethinking their business models, and policymakers are rethinking financial regulation. Although it is premature to know exactly what it will look like, we can say with some assurance that the U.S. financial regulatory structure of the future is going to look different from the one we have today.

Wagner's Ring actually ends on a hopeful tone: the demise of the gods but the rise of the mortals. I think that we too should be hopeful about the new financial regulatory regime that will emerge in the aftermath of the crisis. But this is incumbent on us taking the opportunity to think through how we can modify our macroeconomic policies and regulatory policies not only to avoid repeating past mistakes but also to avoid potential future mistakes – this means focusing on the incentives that our policies, both macro and regulatory, induce on the economy and its players.

Today, I would like to talk about central bank policies in the wake of the current financial crisis and economic downturn. I'll start with a review of the policies the Federal Reserve has implemented to address the current crisis. Next, I'll discuss policies intended to reduce the chance of financial instability in the future. This includes both monetary policy and financial regulatory policy. How policymakers should consider asset prices in the conduct of monetary policy is an area where, historically, there have been differences between the U.S. and other countries. What I'll argue today is that in light of recent history, including the tech bubble of the late 1990s and the real estate bubble of the mid-2000s, the U.S. needs to rethink its traditional approach to how asset prices should figure into policy. Of course, I am speaking for myself and my views are not necessarily the views of the Federal Reserve Bank of Philadelphia, the Federal Reserve System, or its Federal Open Market Committee.

Federal Reserve Actions to Address the Financial Crisis

The Federal Reserve's objectives are set by the U.S. Congress. The Fed is charge by Congress with conducting monetary policy "so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates."² The last of these follows on from the first two, and so the Fed is often said to be charged with a dual mandate of price stability and maximum sustainable growth or employment. Economic research over the past 25 years indicates that price stability is the main way in which monetary policy can achieve its other goals.

The benefits of price stability are well known. Price stability allows the economy to be more efficient and thereby operate at its full potential. Because inflation and deflation are ultimately monetary phenomena, only the central bank can deliver on the goal of price stability. But in the wake of the current financial crisis, the issue of financial stability has come to the forefront. As a central bank, the Fed is expected to help promote financial stability by providing liquidity when needed to help stem financial disruptions and prevent their spread outside of the financial sector.

Many of the actions taken by the Federal Reserve in this regard have been unprecedented.

² See Section 2a of the Federal Reserve Act (12 USC 225a).

The fed funds rate, which is the rate at which banks lend reserve balances at the Fed among one another, usually overnight, is the usual tool of monetary policy in the U.S.

The Fed has lowered the fed funds rate from 5.25 percent in September 2007 to a range of 0 to 25 basis points in December 2008, and the FOMC has made clear in its statements that it expects economic conditions to warrant holding the federal funds rate low for an extended period. Taking the rate down to essentially zero is unprecedented and the Fed's monetary policy has entered a new regime. As the FOMC statement first indicated in December, the focus of policy now is to sustain the size of the Fed's balance sheet at a high level.

The Fed also responded to the crisis by implementing a number of unprecedented lending and liquidity programs. These differed by the types of borrower and the types of collateral on which the lending was based. Some of these programs fall under the traditional lender-of-last-resort role of central banking, like the Term Auction Credit Facility for banks and the Primary Dealer Credit Facility. Because of the global nature of the crisis, the Fed has coordinated with other central banks to provide liquidity via swap agreements.³

The Fed has established other programs targeted to particular credit markets that it has deemed as critical outside of the banking system, like the commercial paper market, money market mutual funds, and asset-backed securities.⁴

Another set of actions were intended to avoid potential spillovers from a disorderly unwinding of contracts triggered by the failure of systemically important financial firms. This includes the Fed's support in the sale of Bear Stearns to JP Morgan Chase and loans to AIG.

Finally, the Fed has begun large-scale purchases of mortgage-related securities and longer-term Treasuries. The intention is to try to restore stability to the market for housing and home mortgages.⁵ The announcement of these programs had an impact on mortgage rates.

³ Two types of swap lines have been established – dollar liquidity lines and, more recently, foreign-currency liquidity lines. The dollar swap lines are authorized with the European Central Bank and the central banks of Australia, Brazil, Canada, Denmark, England, Japan, Mexico, New Zealand, Norway, Singapore, South Korea, Sweden, and Switzerland. The foreign currency swap lines are authorized with the European Central Bank and the central banks of England, Japan, and Switzerland.

⁴ These programs include the Commercial Paper Financial Facility (CPFF), the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), the Money Market Investor Funding Facility (MMIFF), and the Term Asset-Backed Securities Loan Facility (TALF). This latter facility is intended to free up the flow of credit to consumers and small businesses, and it has been expanded over time to accept new types of collateral. Acceptable collateral now includes U.S. dollar-denominated cash asset-backed securities backed by newly or recently issued student loans, auto loans, credit card loans, loans guaranteed by the Small Business Administration, loans or leases relating to business equipment, leases of vehicle fleets, floor plan loans, and mortgage-servicing advances, commercial real-estate loans, and insurance premium finance loans. On May 19, 2009, the Federal Reserve announced that in July certain high-quality commercial mortgage-backed securities issued before January 1, 2009 (legacy CMBS) would become eligible collateral for TALF loans.

⁵ The FOMC has approved purchases this year of \$1.25 trillion in mortgage-backed securities guaranteed by the government-sponsored mortgage companies Fannie Mae, Freddie Mac, and Ginnie Mae, and \$200 billion of debt issued by Fannie Mae, Freddie Mac, and the Federal Home Loan Banks. It has also approved purchases of up to \$300 billion in longer-term Treasuries by autumn.

The rate on a traditional 30-year fixed rate mortgage has recently fallen to near 5 percent from about 6.5 percent last fall.

So far, the effect on the market has mainly been via refinancings, which can help a household's balance sheet by lowering its monthly mortgage payment. There hasn't been much effect on new mortgage originations.

The considerable expansion in the Fed's balance sheet is a main focus of policy in the current environment and falls under the general category of quantitative easing policies. These policies, which have been used by other central banks (most notably the Bank of Japan between March 2001 and March 2006), come into play when the nominal policy rate has reached zero and further stimulus is required. These policies expand the amount of bank reserves beyond that needed to keep the funds rate at zero.⁶

The current Fed credit programs run contrary to long-standing Fed practice of trying to minimize its effect on the allocation of credit across market segments. The Fed has directly intervened in markets that are under stress and in which private-sector intermediation has been reduced. These programs are intended to increase the flow of credit in the economy. This has not only increased the size of the Fed's balance sheet but has also changed the composition of assets on its balance sheet – indeed that was the intention and Chairman Bernanke has called these policies credit easing to distinguish them from quantitative easing, which is gauged by the size of the balance sheet (or equivalently the amount of excess reserves). The end result of all of the Fed's policy actions has been an extraordinary expansion in the Fed's balance sheet – from \$873 billion in assets as of July 11, 2007 to \$2.2 trillion in assets as of May 20, 2009 and a decline in the proportion of U.S. Treasury securities on the balance sheet over the same time period from 91 percent to 27 percent.

This does pose some challenges going forward. Once financial markets normalize and the outlook for the economy improves, the Fed will have to begin shrinking its balance sheet by withdrawing the extraordinary amount of liquidity it has provided to the markets and raising the federal funds rate in order to maintain price stability. Some of the assets on the Fed's balance sheet are shorter term assets, like the loans to financial institutions, the central bank liquidity swaps, and the purchases of commercial paper. These will unwind naturally as they mature and the facilities are scaled back as financial conditions normalize. However, other assets like mortgage-backed securities are longer term, and the Fed will need to consider appropriate exit strategies. Selling the assets is one possibility. However, the Fed would need to do this in a way that doesn't disrupt the market. The Fed's authorization to pay interest on reserves, which went into effect last October, gives it a tool for raising the fed funds rate even with a large balance sheet. The rate the Fed pays on excess reserves should set a floor on the fed funds rate, since banks should be unwilling to lend reserves in the interbank market at a rate below the rate it receives from the Fed on excess reserves. Chairman Bernanke has discussed other possibilities for draining reserves from the banking system, including having the U.S. Treasury resume its recent practice of issuing supplementary financing bills and keeping the proceeds at the Fed or having the Fed issue its own bills as some other central banks do.

I am less concerned about the mechanics of exiting than I am about being able to identify when it is appropriate to exit. It is unlikely that risk spreads on financial assets will return to the levels we saw before the crisis, nor would we want them to if risk was being under-priced in the lead-up to the crisis.

⁶ Theoretically, increasing excess reserves can stimulate the economy by affecting asset prices. It can signal that the central bank intends to keep interest rates low for a long period. The reduction in expected future short rates leads to lower long-term risk-free rates, which is transmitted to other household and business borrowing rates, if financial markets are functioning well.

Timely exit that is consistent with the Fed's meeting its obligation to promote price stability and foster maximum employment seems to me to be greater challenge.

Monetary Policy and Asset Prices

The severity of the current financial crisis, which led to a sharp downturn in economies throughout the world, calls out for us to consider how policy – both monetary policy and regulatory policy – might be used to prevent a similar crisis from happening again.

One thing that we've learned from the current episode is that financial imbalances can build up even in a low-inflation environment. Given this, it is natural to ask how central bank policy should respond to these imbalances.

Asset prices, like house prices and stock prices, are conceptually different from the prices of current goods and services. Asset prices are forward looking and reflect market participants' expectations about the value of the assets' future stream of services. They affect the economy through several channels. Asset prices provide signals about future supply and demand and signals about profitable investment opportunities. They affect the cost of capital to firms and households. They affect household wealth and thereby affect consumer spending. Because asset prices convey information about current and future economic conditions, they should be considered by central bank policymakers.

The traditional strategy of the Federal Reserve has been that monetary policy responds to asset price movements – whether driven by fundamentals or not – only to the extent that those movements contain information about inflation and output growth. If asset prices become misaligned with fundamentals and an unsustainable rise in asset prices occurs, then monetary policy should be used to mop up the consequences of the correction, but it should not try to limit the size of the misalignment as it develops.⁷

Others have argued for a more activist approach: monetary policy might be used to take extra action to try to stem a developing imbalance.⁸ That is, monetary policy should lean against rises in asset prices that are judged to be unsustainably high. Indeed, in 2003 and 2004, some members of the Monetary Policy Committee of the Bank of England favored leaning against the strong rise in house prices (see Ahearne, et al., 2005).

The difference in these two approaches has often been illustrated by policy reaction functions. According to the traditional view, the central bank's reaction function relates the nominal policy rate to (forecasts of) the deviation of inflation from the policymaker's goal and the output gap:

$$i = r^* + \pi + \alpha(\pi - \pi^*) + \beta(y - y^*),$$

where i = nominal interest rate,
 r^* = equilibrium real interest rate,
 π = inflation rate,
 π^* = inflation goal,
 y^* = \ln (potential output), and
 y = \ln (output).

⁷ See, e.g., Bernanke (2002), Bernanke and Gertler (2001), and Kohn (2006 and 2008).

⁸ See, e.g., Cecchetti, et al. (2000), Cecchetti et al. (2005), and Borio and Lowe (2002).

According to the activist view, the reaction function would also include an asset price term:⁹

$$i = r^* + \pi + \alpha(\pi - \pi^*) + \beta(y - y^*) + \gamma(q - q^*),$$

where q = asset price, and
 q^* = asset price based on fundamentals.

The argument against the activist approach centers on two points. First, it is difficult to identify an asset price bubble, by which I mean an asset price deviating from the level implied by the fundamental factors driving the price. Economists think of prices as being determined by the fundamentals of supply and demand, but for asset prices, many of these fundamentals are not observable. A rapid increase or decrease in asset prices might very well be based on changes in fundamentals. For example, if market expectations about future conditions change, perhaps because of new information, current asset prices should adjust to reflect that change because these prices are forward looking. Thus, it is difficult to determine whether a rapid increase or decrease in asset prices is based on fundamentals or whether it is a misalignment that for some reason has not been arbitrated away. There could be many false positives when a central bank looks for asset price misalignments.

As an illustration, early in this cycle, some models suggested that housing was overvalued, while others suggested that prices were justified by fundamentals.¹⁰ Because of the difficulty in identifying a bubble, monetary policy's attempt to lean against a misalignment may not be timely enough to do any good. Given the lagged effects of monetary policy on the economy, it could even do harm if the effect comes after the misalignment has already started to unwind.

The other point often made is that monetary policy may not be an effective tool against bubbles even if such misalignments are detectable. Interest rates affect the fundamental values of assets; whether they affect the speculative portion is not clear. We still do not know how much of a role the low interest rates in 2003 played in promoting the surge in house prices and the run-up in conventional and subprime mortgage debt. Would higher interest rates have curbed overly optimistic expectations of continued price appreciation? Would they have curbed increased risk-taking by businesses and households?¹¹ It is difficult to say. Moreover, monetary policy is a blunt instrument that will affect more than just the market experiencing the asset price imbalance.

Frankly, for several reasons, I think the divisions between the two sides in this debate have been overstated. Financial instability can lead to macroeconomic instability and vice versa. Thus, I don't think the simple policy reaction function is that useful in thinking about the issue. Both sides agree that monetary policy should not target asset prices. Both sides agree that asset prices play an important role in the monetary policy transmission mechanism, potentially affecting both aggregate demand and inflation. When asset prices rise, both sides agree that the central bank would want to respond if the wealth effect generated by the rise is large enough to affect aggregate demand. Moreover, the cost of consuming housing services is included in inflation measures, and in some countries, including Australia, Canada, New Zealand, and Sweden, this cost is based on house prices.

⁹ Of course, this is simplistic. First, these are behavioral rules meant to describe how a central bank behaves and not necessarily optimal policy. Also, as Bean (2003) points out, if it is optimal to take asset prices into account when formulating monetary policy, this may result in an optimal policy rule that is quite different from these simple Taylor-type rules. I use the rules here for illustrative purposes of the different approaches.

¹⁰ See Kohn (2008).

¹¹ See Kohn (2008) for further discussion of these points.

Both sides also agree that the central bank has a responsibility to promote financial stability. Cecchetti, et al. (2005) argue for a more activist policy but acknowledge that the central bank should not respond to small misalignments in prices, which are difficult to detect and wouldn't be expected to be very destabilizing to the economy. One might say that these small deviations wouldn't be expected to affect forecasts of output and inflation, while larger ones would. Imbalances in credit and financial markets are risks to price stability over the medium and longer term. Indeed, the current crisis threatened deflation. Looking at it this way, there is little difference in the two viewpoints – it is a matter of degree and nuance. The policy reaction function could be thought of as the traditional function but with the influence of asset prices on inflation and the output gap explicitly acknowledged (with the other variables influencing these goal variables suppressed):

$$i = r^* + \pi + \alpha(\pi[q] - \pi^*) + \beta(y - y^*)[q].$$

Monetary Policy and Asset Prices Reconsidered

I think both points made by supporters of the traditional view are true – it is hard to measure the extent to which asset prices are misaligned with fundamentals, and it is difficult to assess the effect of monetary policy on the causes of the misalignments. But it is not clear to me that this means policy should not consider asset prices more explicitly than heretofore. The policy response should depend on the type of asset price, the duration of the misalignment, and the potential spillovers imposed on the rest of the economy should the run-up collapse.

This means it is essential that central bank policymakers monitor and be more aware of asset price dynamics. The work that will be discussed at this conference is a good foundation. The current crisis has challenged some widely held notions about asset prices – we have learned that arbitrage does not always work to cure an imbalance. Indeed, given the number of examples of asset bubbles we have seen historically, some argue that the presumption should be in favor of the existence of asset bubbles (Cecchetti, 2005). Some imbalances are long-lived, so policymakers may be able to detect these types of bubbles. For example, the run-up in house prices appears to have been operating for a considerable period of time.

Housing investment as a share of GDP rose from about 4.5 percent in 2003, near its average since 1987, to 6 percent in 2006. The most severe asset price misalignments have historically been those that involve rapid credit expansion in the banking system. This type of indicator can and should be monitored. Gruen, Plumb, and Stone (2005) suggest that policymakers need to know about the stochastic process driving the bubble in order to formulate appropriate policy to offset it – but this does not necessarily mean no action. Their work suggests that the case of tightening to offset the expansionary effect of an asset price bubble is stronger when the probability of the bubble's bursting on its own is lower, when the probability of its bursting is interest sensitive, when the costs imposed on the economy rise with the size of the bubble, and when the demise of the bubble is likely to be over an extended period rather than a rapid correction. Christiano, et al. (2008) show in a model with sticky nominal wages that an inflation-targeting central bank or one that follows a traditional Taylor rule to set monetary policy could inadvertently feed a boom. In their model, leaning against the wind and tightening when credit growth is strong would yield better economic outcomes.

I do think we should take the measurement issue seriously, but the difficulty in identifying and measuring asset price dynamics cannot be the sole argument against taking asset prices more explicitly into account, because serious measurement issues surround the other variables in our objective function. For example, many policymakers rely on measures of the output gap (the deviation between actual output and potential output) as a guide for policy. Yet work by Orphanides and van Norden (2002) show the pitfalls of

depending too much on the output gap. They find that ex post revisions of the output gap are of the same order of magnitude as the output gap itself, and it's particularly hard to measure the gap near business cycle turning points. The high-inflation episode of the late 1970s reflected expansionary monetary policy based on estimates of a substantial output gap that turned out to be incorrect. Similarly, inflation, a key variable of interest to monetary policymakers, is difficult to forecast and some inflation measures get revised over time, like the PCE measures the Fed focuses on. This complicates monitoring and forecasting inflation and setting appropriate policy with the goal of achieving and maintaining price stability, but no one would argue that this means central banks should not do it.

Speaking of measurement, it is also important to remember that whether a policymaker should intervene or not depends on the expected improvement in future economic conditions from taking action against a growing imbalance. In the case of the current collapse in the housing market, policymakers underestimated the breadth and depth of the negative impact this would have on the rest of the economy and financial system. To the extent that we mismeasured the impact, there is a larger potential gain to more careful monitoring of asset prices and being open to taking offsetting action. Indeed, given what we know now, the effect of the housing price dynamics would have affected our forecasts for output and inflation, and so action could have been justified under the traditional view.

I think phrasing the debate in terms of whether or not the central bank should pop a bubble has exaggerated the difference in views and is somewhat beside the point. Financial crises can arise from high levels of optimism about the economy, which can lead to a rapid expansion in credit, which feeds into higher asset prices and lower cost of capital, which then leads to further credit and economic expansion, and so on. Eventually, if the expectations turn out to be overly optimistic, investments won't pay off, there can be a collapse in confidence, credit supply falls, and there is a rapid decline in prices and pullback in credit.¹² This need not be a bubble – the optimistic expectations formulated may have been based on the information available at the time. But the rapid rise in prices can lead to a bubble by generating behavior that is consistent only with continuing rises in prices – e.g., as asset prices rise, lenders may begin to lower credit standards and rely on further appreciation of asset prices to cover any potential credit losses rather than on the ability of borrowers to repay. This can continue until losses start to overtake the asset price appreciation. Whether the original rapid rise in asset prices was generated by a bubble or not is less important than the point that asset price dynamics can yield undesirable outcomes for the economy. The central bank needs to assess whether the risk of macroeconomic and financial system instability has risen and not whether or not there is a bubble.

The costs exacted on the global economy from the current crisis lead me to conclude that when there are a sufficient number of signs that financial imbalances are building up, e.g., significant increases in asset prices, credit growth, and leverage, policymakers should consider using monetary policy even if these imbalances have not yet affected current measures of inflation and output. I do not view this as being at odds with those who say that monetary policy should respond to asset prices only insofar as they affect our outlook for inflation and output growth. Monetary policymaking is forward looking, and significant financial imbalances should affect our forecasts or at least the risks surrounding our baseline forecasts. Policymakers must balance the risks to future price stability and output growth posed by not taking action with the risks posed by taking action, given the difficulties of identifying whether a rapid change in asset prices is sustainable or not. In order to make this assessment, we must develop our macroeconomic models to explicitly incorporate asset prices.

Financial Regulatory Policy and Asset Prices

¹² See Mishkin (2008).

I titled this talk central bank policies because I believe that in addition to monetary policy, prudential supervision and regulatory policy has an important role to play in ensuring financial stability. The current crisis has revealed significant weaknesses in the financial regulatory structure in the U.S. A major problem is the lack of a resolution mechanism for nonbank financial institutions that are systemically important. The U.S. has a procedure for resolving systemically important commercial banks. But a large share of financial intermediation now takes place in nonbank firms, and the existing bankruptcy law in the U.S., which covers these firms, makes no provisions for systemic considerations. Being able to resolve the failure of systemically important financial firms in a way that limits systemic risk will help limit the moral hazard that leads to poor risk-taking decisions when firms think they cannot fail. Creating better incentives for risk-taking can help limit financial imbalances from building in the first place.

Bank supervisors are currently working on improving their assessment of the risk management practices at banking organizations. Former Riksbank Governor Bäckström (2002) argues that typically during a financial crisis, perceptions of risk are not independent of the credit and asset price cycle itself. Perceived risk falls as collateral values rise with asset prices, but actual risk rises as credit standards fall and leverage rises. This does seem to have been a factor in our recent crisis.

Financial regulation and supervision in the U.S. generally takes a micro-prudential approach that looks at individual institutions rather than the system as a whole. However, risks across institutions and across markets can become highly correlated, making the financial system as a whole more vulnerable to external shocks. A more system-wide approach to supervision – a macro-prudential approach – would be a productive complement to our current supervisory and regulatory structure. One of the benefits of the recent Supervisory Capital Assessment Program in the U.S., the so-called stress test, was that it looked at the large banking organizations all at the same time, applying the same standards and macroeconomic scenarios. Monitoring of large and rapidly rising exposures and correlated exposures across firms and markets is necessary. Along these lines, a better understanding of the degree to which our capital regulations and loan-loss provisioning practices increase the pro-cyclicality of credit extension is needed. In order to monitor risks, a macro-prudential supervisor or systemic risk authority would need the right to obtain information about key financial market participants from their regulators or directly from these participants if they are not subject to regular supervisory reporting. It would also need the powers to address identified systemic risks, in coordination with other supervisors.

It is still an open question as to how the systemic risk authority should be integrated with the other financial supervisors in the U.S. Given the interrelationship between monetary stability and financial stability, I believe that the Federal Reserve, which already has micro-prudential supervisory duties, should play the major role in macro-prudential supervision. Its responsibilities and powers with respect to macro-prudential supervision would have to be well-defined to ensure accountability and to make sure they do not clash with the Fed's responsibility for price stability and sustainable economic growth. It also has to be understood that while more focus on macro-prudential supervision and regulation might limit the number and extent of financial crises, it is not reasonable to expect that crises will be eliminated.

Conclusion

Central bankers are currently examining the lessons to be learned from the recent financial turmoil and economic downturn. The housing cycle has had a broad and deep impact on the economy and has revealed structural problems in our financial system. Monetary policy in the U.S. and abroad has taken unprecedented steps to stem the financial crisis, and policymakers are considering the types of financial regulatory reforms that will help promote financial stability.

Given the importance of asset prices in this episode, I believe central banks need to increase their monitoring of asset prices, credit, leverage, and other potential signals of financial instability so that they

are better able to detect growing imbalances. Policymakers are not going to know for sure that asset prices are misaligned, at least within the timeframe within which they can do something about it. But I'm not sure this is very much different from our current regime in which our policies are forward looking and conditional on the economic outlook. I don't believe monetary policymakers should react to every signal that a potential asset price imbalance may be emerging, but I do think they should be open to reacting to emerging financial imbalances if there is sufficient evidence that the imbalance is likely to have a sizable negative impact on the economy.

Because monetary and financial stability are intertwined, responsibility for both must reside in the central bank. In my view, this means that the central bank should bear much of the responsibility for macro-prudential regulatory and supervisory policies, which have an important role to play in preventing financial instability. In the U.S., the Fed already has some responsibility for contributing to financial stability, but making that responsibility more explicit might be helpful in focusing more internal discussion and internal research on these issues. By mobilizing the highly skilled staffs at central banks around the world, I am hopeful that we can learn which policies are most effective for avoiding financial instability and mitigating its impact on the economy when it does arise.

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