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Central Banking for the 21st Century: An American Perspective

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Central banks are peculiar institutions with one foot in the private sector and one foot in the government.[1] In the U.S., in particular, the central bank stands out as the extra-constitutional fourth branch of the federal government. It has considerable power which it can exercise without any significant formal review or interference from Congress, the President or any elected officials. It stands outside the American democratic framework with its checks and balances on the exercise of power. The Fed's unique position has withstood repeated challenges to its legality and extra constitutional status and, like central banks around the world, it is viewed as an essential part of the policy framework.

Indeed, modern thinking about central banking gives enormous emphasis to the notion of central banking independence. Only a central bank that is independent of the political sphere will be able to maintain a consistent anti-inflationary policy stance. So, central bankers should have little or no formal political review and should hold office for a long period of time. Some central banks were set up with this independent quasi-governmental status such as the Federal Reserve System.[2] Some evolved in that direction

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[1] Perhaps it is only of symbolic importance but the Federal Reserve has a '.org' web address rather than '.gov'.
[2] Nevertheless, the Fed did not always maintain an independent approach to policy. Prior to the Treasury Accord in 1951, the Treasury essentially set interest rate policy.

such as the Bank of England which was a private institution until it was nationalized by the post war Labor government and not granted its policy independence until 1997.[3]

There are complex reasons why countries have developed these institutions called central banks. Many of them have to do with the historical evolution of both institutions and thinking about the roles of the central banks. In the first part of this essay we will trace the evolution of thinking about the role of a central bank. It seemed to many that by the end of the 20th century a consensus view had emerged. However, as is often the case, just when this happens something comes along to upset the consensus. And, the recent financial crisis has thrown the issue wide open once again. In the second part of the essay, we will provide a framework for thinking about the role of central banks in the post crisis world.

The Evolution of modern central banking

The beginning. The origins of central banks is in the 17th and 18th century when governments needed banks to help finance wars and developed particularly strong relationships with banks that served as the government fiscal agent. Although no one today would suggest that deficit financing is a proper role for a modern central bank, which was their original function of the institutions that became central banks.

Modern notions of central banking date to the 19th century and were most clearly articulated by Walter Bagehot, the founder of The Economist. To Bagehot the unique role of the central bank is as the lender of last resort. The central bank should lend (discount) freely when liquidity is needed. They should lend to banks and anyone else ('to the market' in Bagehot's words) who can present good collateral and they should lend at a penalty rate which provides incentives for borrowers to repay as soon as they are able and for banks to maintain adequate liquidity. That is, solvent but illiquid institutions should have a ready source of cash. The knowledge that the central bank stands there to lend freely will prevent depositor runs and forced fire sales of assets which can start a downward spiral.

The Fed was established in wake of the banking panic of 1907 which was stopped when JP Morgan forced fellow NY bankers to play the role of the lender of last resort. He did not have an easy time organizing an adequate private sector response and the experiences of 1907 were instrumental in bringing the Fed into existence. Nevertheless, the founders and early leaders of the central bank were thinking about roles other than panic avoidance and the lender of last resort function.

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[3] Gordon Brown's most triumphant moment as Chancellor of Exchequer was in May 1997 when he granted the BoE its independence. He announced that the chancellor would no longer meet monthly with the Governor of the BoE to determine interest rate policy, saying that: "I want to set in place a long term framework for economic prosperity....".

There were other less severe disruptions to US credit markets that the central bank sought to ameliorate after it came into existence in 1914. First, in the fall of every year, European buyers of US agricultural exports would borrow dollars to finance their purchases leading to spikes in interest rates and gold flows. The role of the Fed was to provide the liquidity needed (an "elastic currency" in the language of Federal Reserve act) and smooth out interest rate fluctuations. Second, the Fed shared a commitment with other major economies that the Gold Standard with exchange rates fixed to gold should be maintained. This commitment determined its interest rate policies as well as its attitudes towards price change in the post World War I era. Since bank runs do not occur very often, stabilizing credit markets and supporting the gold standard turned out to be the Fed's primary interests. It provided liquidity when needed and was careful not to provide too much.[4] Ironically, by the time the Depression started it seemed to have forgotten Bagehot's original message.

Perhaps, due to its decentralized structure (a federal system of weak regional banks without any strong core leadership)[5] perhaps due to a lack of clear planning or thinking about its role, the Fed did not fulfill the Bagehot role when banks failures spread in 1932-33. As Friedman and Schwartz documented, the Fed did little to ease credit as the money supply and the price level plummeted. If anything, its perverse actions to defend the gold standard probably helped transmit the crisis abroad. With regard to domestic banks, the post-1929 Fed remained committed to the real bills doctrine. It feared that any expansion of reserves would fund speculation and increase risk in the banking system.

The response to the Depression exhibited little awareness within the Fed of the roles of central banks as they are now widely understood. First, Bagehot had been forgotten by central bankers concerned with risks of lending. Second, the macro economic policy role of the central bank though familiar to the modern observer had yet to be invented.[6]

The introduction of deposit insurance effectively removed the threat of bank panics in the post war period and the Fed began to develop a new role. In the aftermath of the Depression the new academic discipline of macroeconomics emerged. Concern about unemployment dominated economic thinking.

<u>Emergence of macro monetary policy.</u> Macroeconomic stabilization policy in the post War period started with a Keynesian emphasis that downplayed the role of monetary policy and emphasized the role of fiscal policy. However, this balance changed over the

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[4] Fed credit creation was guided by the "real bills" doctrine which said that it should support for lending related to real economic activity and not discount bills that might support speculation.

[5] Benjamin Strong, the first President of the Federal Reserve Bank of New York and the most forceful individual in the Fed died in 1928.

[6] That is not entirely correct – Henry Thornton had articulated much of what we call monetary economics in the early 19th century – but no one gives him much heed.

course of time, particularly after the inflationary episodes of the 1970s. As the Keynesian notion that short run changes in fiscal policy could effectively stabilize the macro economy receded into the background – monetary policy became more and more important.

In addition to the debate between Keynesian and monetarist views of the role of monetary policy, there were intense debates about how to conduct macro monetary policy. One issue was the choice between monetary aggregates (the money supply) and interest rates targets. Another issue was the choice between rules and discretion in using monetary policy. It is worthy of note that throughout all of those discussions the preeminent role of monetary policy was taken for granted.

There were some important changes in Fed operating procedures over the course of the 20th century. In the interwar period, the Fed influenced financial markets by changing its discounting policies with member banks. It changed the rate charged or the policies regarding paper discounted or its willingness to lend to a particular institution. Over time, open market operations conducted with the government securities dealers emerged as the primary means for influencing credit availability, reserves and interest rates. In terms of the aggregate effects, the operating procedure did not matter. Moreover, open market operations using auction procedures were viewed as a much better means of influencing the overall credit market. First, with open market operations, the Fed could interact with all market participants and not just the banks that might be borrowing. Second, interest rates were set in a market oriented fashion based on the outcome of auctions. Third, open market operations could be easily used to alter the volume and frequency of interventions to policy needs and maintain financial market stability.[7]

There was a debate starting in the late 1990s concerning whether asset price inflation and bubbles should be a concern of monetary policy (see Wadwhani (2008)). The debate focused on whether monetary policy should respond to sharp rises in asset prices and take action to prevent the growth (and the burst) of bubbles. In retrospect the debate had important broader implications that were not adequately appreciated. Monetary policy analysis broadly concerned with asset markets would have been paying closer attention to the role of financial institutions and the amounts of leverage. The policy discussions often took too simple a view by asking whether asset prices should be targeted by monetary policy. That is quite different than saying that policy should be concerned with asset prices. Further, policy makers seemed to argue that asset prices only mattered when a bubble occurred. Bubbles are only identifiable as such when they burst. Policy should watch and evaluate asset price movements before a bubble bursts or is even expected. The aim of policy should be to prevent bubbles rather than to just respond to them. The consensus view among central bankers was that monetary policy

[7] The IMF advised emerging market countries to develop government securities markets so that open market operations could be used to conduct monetary policies and the number of countries doing increased dramatically.

should target inflation (the price of produced goods and services) and not be concerned with the prices of assets (housing and equities).

Although the intermediate targets and operating procedures varied from the 1970s to the 1990s, it was clear that the central focus of central banking was on macro economic stabilization. By the 1990s – economic policy in the US was monetary policy. And the policy was conducted by picking the appropriate target for short term interest rates, specifically the inter bank borrowing rate – the Fed funds rate. And no one was better at doing this than Alan Greenspan who guided the Federal Reserve for 19 years. The monetarist emphasis on aggregates receded from view, as financial sector innovation made velocity for the standard aggregates less and less predictable.

Federal Reserve's approach to policy. This section will focus on the Federal Reserve in the Greenspan-Bernanke era in order to show how the narrow focus on macro policy led to policy culture that overlooked the important developments that ran up the to crisis.

To begin, start with the monetary policy targets used by the Fed. In the 1990s, inflation targeting swept through the central bank world but was resisted by the Fed. Vocal proponents of inflation targeting included Fredrick Mishkin who served on the Federal Reserve Board from 2006-08. Greenspan eschewed formal inflation targets in favor of a broader discretionary approach to policy decisions. Nevertheless, the Fed's policy reports began to give increasing prominence to its inflation forecast and once it began publishing longer term inflation forecasts, these numbers were widely viewed as its inflation target.

As for asset prices, Greenspan and Bernanke both argued against any role for asset prices in policy setting. In regard to bubbles, Greenspan (1999) told Congress that policy should "mitigate the fallout when it occurs." This has led famously to the notion that the role of the central bank is to mop up after the bubble bursts. Similarly, Bernanke (2002) said "'leaning against the bubble' is unlikely to be productive in practice." Other central bankers seemed to agree that the policy tightening needed to prick a bubble would have to be large enough to push an economy into recession. The danger of false positives – tightening when there really was not a bubble – was viewed as too great to warrant any concern ex ante about bubbles.

As I noted earlier, this emphasis on bubbles was misplaced. Central bankers chose not to be concerned with bubbles for these reasons and as result, policy makers paid little attention to significant developments. Asset price increases are more often than not associated with increased lending, increasing leverage ratios and weakening financial institutions. By choosing to ignore asset price inflation, the Fed chose to ignore these other developments as well.

The narrow view of macro targets weakened any connection between monetary policy making and the health of financial institutions. Similarly, the focus on open market operations as the sole tool of policy reduced the importance and emphasis on the

Fed's connection to individual financial institutions. Moreover, with increasing liquidity of the fed funds and government securities markets, banks had less need to utilize central bank lending facility. The typical volume of borrowing through the discount window dropped to miniscule levels. The central bank and the banking system were less intimately connected which made the whole idea of the lender of last resort atrophy.

There were some exceptional episodes late in the 20th century where LLR facility showed signs of life. Discount lending was invaluable in a handful of emergency situations such as the days of the 1987 market crash, the Bank of New York computer failure that halted clearing in the government bond market and the aftermath of 9/11. Y2K disruptions were widely anticipated and the Fed took concerted action to encourage use of its lending facilities although those fears never materialized. The Fed was concerned that the LLR facility would atrophy from lack of use and not be available when such emergences arose. It introduced some procedural changes, to little effect, to encourage banks to make greater use of discount lending which was often less than $100 million.

Although macro monetary policy was the dominant concern, and surely the public face, of the Fed, it, like many other central banks, continued to have supervisory responsibilities as well. First, the Fed always had a role in the supervision of national banks (a task that it shared with other regulators) and legislative changes regarding bank holding companies extended the Fed role. Second, it had responsibility for the integrity, efficiency, and accessibility of the payments and settlement systems.

The biggest pre-crisis bank failure in the US was Continental Illinois which was taken over by the deposit insurer (FDIC) in 1984. The Fed stood ready to lend in order to avoid any contagion effects but the fall out from the failure was less than feared. However, that experience and the failure of the Bank of New England in 1991 brought to light a problem which diminished the role of the LLR of function. Discount lending to a weak institution provided the non-insured depositors with the opportunity to leave.

Thus, two features of central banking in the US came to the fore in the 1980s and 1990s. First, macro policy was the primary role of the central bank. Second, deposit insurance made bank runs and panics an historical curiosity. Deposit insurance coupled with mechanisms for bank resolution made the LLR function seem obsolete. At this time there was still limited inter-connectedness in a banking industry that was largely regional which made any thought about systemic failure largely irrelevant. At the end of the 20th century monetary policy and banking policy seemed disconnected.[8] Lending through the discount window was viewed as an emergency facility for individual banks and seemed unconnected to stabilization policy or any other macroeconomic issue.

[8] The UK took this very seriously and in 1997 established the Financial Services Authority that removed all bank supervisory functions from the BoE, a move that is now widely regretted.

Although it was understood that the LLR function was there to make sure that systemic risks did not arise, there was with one exception very little concern about such problems. The private sector bailout of LTCM, a large US hedge fund that suffered losses in the Russian crisis, was initiated by the Federal Reserve because of concern about systemic implications of its failure. Nevertheless, a few generations of financial sector stability resulted in little concern about contagion and systemic risks.

As we move into the 2000s, policy makers were aware of some of the pressures building in the financial system. First, Ed Gramlich a member of the Federal Reserve Board from 1997-2005 warned repeatedly about mortgage market problems and published a book "Subprime Mortgages: America's Latest Boom and Bust" in 2007. Second, Greenspan began talking about the "froth" in housing markets.[9] But, the overall view was that housing issues were either local or sectoral or outside the purview of policy makers. The Fed had no direct responsibility for regulating the Government supported mortgage entities (i.e. Fannie and Freddie) although there were probably ample indirect ways in which policy makers could have sounded alarm bells.

As the 20th century came to a close, there were structural changes underway in the financial sector that had much greater implications than was knows as they occurred.[10] First, regulatory changes in the US enabled the banks to extend the scope of their activities. It is only in this period that the American banking sector became so concentrated and a handful of nation wide banks emerged as the dominant forces in the industry. Second, technology and regulatory changes came together to enable the development of the shadow banking system. Highly leveraged non-bank institutions with short term liabilities and illiquid longer term assets grew very rapidly. My topic here is not to investigate the role of the Fed in the recent crisis.

We have shown that the Fed, and central banks generally, have chosen different roles at different times. Even the role of the lender of last resort was viewed very differently over the years and the understanding of that role colored policy decisions. The example we gave earlier was the use of discount lending by the Fed during the Depression era bank failures. In fact, you might say that since Bagehot published *Lombard Street* in 1873, central banks never fully developed their lending role. If Bagehot's view had prevailed, the Fed might have been less concerned with the risk of lending and would have been willing to lend aggressively whenever collateral was available. In contemporary times, the emphasis on macro economic policy goals pushed the lender of last resort function to the margins and left the Fed poorly prepared to see a developing crisis. Of course, once the crisis began the Fed quickly realized the power of the lender of last resort to support individual institutions and, perhaps for the first time, to

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[9] E.g. In his June 9, 2005 testimony to the Joint Economic Committee of Congress, he said that "The apparent froth in housing markets may have spilled over into mortgage markets."

[10] Ross Levine (2010) chronicles the regulatory decisions and the structural changes that emerged in the 15 years before the crisis and contributed to it.

combat systemic problems.[11] Cecchetti and Disyatat (2010) show how the role of the lender of last resort changed in the course of the recent financial crisis to address a variety of problems. Liquidity problems can affect clearing (central bank liquidity), individual financial institutions (funding liquidity) and financial markets (market liquidity).

This is not the time to analyze the Fed's imaginative responses to the crisis, which are described by some as heroic and successful and by others as disastrous precedents; instead I will turn back to the original question posed. What is a central bank supposed to do?

Central Banking in the 21st Century[12]

Central bank functions fall into three areas: monetary policy, the supervision and regulation of individual financial institutions, and systemic regulation of the financial sector as a whole. This latter function includes both the traditional concern for the functioning of the payments system and a new set of concerns about system-wide risk arising from the increased complexity and interconnectedness of financial institutions and markets.

Monetary policy. Very few would argue with the idea that monetary policy aimed at economic stabilization should rest in the hands of an independent central bank. Although there are those (such as the American Congressman, Ron Paul) who advocate the abolition of central banks, economists have shown that independent central banks achieve lower and less volatile inflation rates than those that are beholden to governments in power, and that they do so at no long-run cost to economic output.

The central bank can use its tools to guide the economy toward goals set forth by the government. In the United States, the Fed has a dual mandate to maintain stable prices and full employment. Many other central banks -- the ECB is a notable example -- have a single mandate to maintain price stability. A central bank influences interest rates and the growth of money and credit in order to attain its specified goals. An independent central bank can pursue these goals without concern for an election cycle that might tempt elected policy makers to pursue short-term goals such as unsustainably high employment and real growth with little concern for longer-run inflationary implications.

[11] From August 2007 to September 2008, the Fed shifted the composition of its balance sheet dramatically by reducing its holding of government securities and increasing credit to financial institutions through various new lending facilities. In the following several months, it increased the size of its balance sheet by a factor of three.

[12] This section draws on chapter 2 ("The Power of Central Banks and the Future of the the Federal Reserve System" by T. Cooley, K. Schoenholtz, G.D. Smith, R. Sylla and P. Wachtel) in Acharya et. al. (2010).

Some argue that the function of a central bank should begin and end with the macro objectives of monetary policy, and that any other obligation would distract the central bank from achieving its primary goal of economic stabilization.

However, this approach ignores important links between monetary policymaking, financial regulation, and prudential supervision that favor a wider role for a modern central bank. Monetary policy may create weaknesses in the financial system that can create both regulatory issues and systemic stability issues. The obvious example of this is the monetary policy pursued by the Fed in the early 2000s. The Fed funds rate was kept very low for a very long period of time. There was genuine fear of price deflation which warranted this policy stance but in retrospect it seemed to also have led to a low interest rate environment and rapid credit expansion which increased leverage throughout the economy. Such a macro policy does not necessarily imply that systemic problems will arise but the emphasis on macro meant that no one within the Fed or elsewhere was even asking whether macro monetary policy would have such systemic consequences.

Supervision and regulation. As noted earlier, Bagehot introduced the idea that the central bank should serve as a lender of last resort to the financial system. The monetary policy role of central banks grew out of their lending activities as early central banks discovered that their lending influenced credit availability, interest rates and gold flows even before macroeconomic policy became an acknowledged function. Indeed, one of the first and rather successful policy efforts of the new Federal Reserve System was the provision of funds to counter seasonal funding shortfalls associated with the agricultural cycle that lingered into the early 20th century. When special liquidity problems threatened the operation of the banking system, the central bank also would act as the lender of last resort. It is only logical that such a lender should have sufficient information about borrowers to be able to make sound loans. Thus, it is no accident that the lender of last resort also played a role with bank regulatory and supervisory functions.

Some economists have claimed that the lender of last resort role for central banks is obsolete. In the modern world, well developed financial markets with liquid securities markets and an active interbank market, there should be no such thing as an illiquid but solvent firm and no need for a traditional lender of last resort. Solvent firms should always be able to arrange financing on the interbank market or the repo market. Anna Schwartz (1992) examined the history of discount lending by the Federal Reserve and concluded that it had moved irreparably away from Bagehot's conception. She argued that the distinction between lending to provide liquidity and lending to prop up insolvent institutions had become unclear although the Fed never acknowledged as much. Further, she was concerned (perhaps with prescience) with the use of central bank lending to provide capital loans to non-banks. Her recommendation was that the discount window be abolished. She argued that any liquidity needs could always be satisfied with open market operations. The need for targeted lending responses when failing institutions can create a systemic problem was simply not entertained.

The window was not closed down but, as noted earlier, the Fed's discount lending virtually disappeared in the late 20th century. It only seemed useful when liquidity was

needed to solve operational problems – e.g. the BNY computer failure, the anticipated Y2K problems that never happened, market closures in the few days following 9/11. In the recent crisis, central bank lending was called upon to address a variety of problems as noted earlier. The emergence of these roles suggests that the development and refinement of central bank lending functions for the future is needed.

Conceivably, the supervision and regulation of individual banking institutions need not be a central bank function. In some countries, it is housed in other government agencies. We already noted that in the UK all bank supervision was moved from the BoE to the FSA. The ECB has no role in bank supervision which is done at the national level. And in the United States the Fed has always shared these functions with state and national agencies responsible for chartering banks, as well as with the deposit insurance agency.

However, as long as the lender of last resort continues to be an important central banking role, it is crucial that the lender be able to obtain timely information about any potential borrower. This is a key ground of the argument that the central bank should have a role in bank supervision and regulation. The central bank needs to know its customers. The role of the lender

One might argue that the real issue is effective communication between the Federal Reserve and any other agencies with supervisory authority. In practice, however, instances where the role of supervisor and lender of last resort have been separated – such as in the United Kingdom, where the Bank of England acts as lender of last resort and the Financial Supervisory Authority oversees the potential borrowers – have highlighted how difficult it is to communicate effectively in a crisis. As a result, the Conservative Party in the UK has proposed eliminating the Financial Supervisory Authority and returning bank supervision to the Bank of England.

The benefits of linking the lender of last resort and the role of supervision go beyond the advantages of rapid communication. The skills and expertise developed in the course of regulation and supervision may help the lender of last resort to innovate when necessary in a liquidity crisis. For example, the rapid, emergency introduction of several new Fed lending facilities during the crisis of 2007-2009 (e.g., the Treasury Auction Facility, the Primary Dealer Credit Facility) would have been difficult in the absence of extensive hands-on experience in the financial system on the part of Fed.[13] Similarly, experience in regulation and supervision may be critical for the development and informed use of so-called macro-prudential powers, which aim to curb systemic financial threats.

[13] The fact that central banks had little connection to the shadow banking system was a contributory factor to the panic that occurred at the height of the crisis. Unclear legal authority (see below) and lack of knowledge of their activities made intervention to lend or support shadow banks in both the US and Europe uncertain.

Against this background, it is important to distinguish among the types of organizations to be supervised. The lender of last resort role probably is of greatest relevance in dealing with institutions whose instability would pose a direct threat to the financial system as a whole. It is possible for a wide array of small financial institutions to pose such a systemic threat if they face a common exposure that makes them collectively vulnerable. In the US, the thrift crisis of the early 1980s is the usual example although it really did not present the truly systemic risks of financial melt down that we faced in 2008-09. Moreover, the experience of the recent crisis suggests that large, complex financial institutions (LCFIs) are more likely to be sources of systemic disruption. For this reason, there would appear to be a stronger case for linking the lender of last resort to the supervision of LCFIs than to the supervision of other financial institutions.

The Federal Reserve and its district Reserve Banks are naturally reluctant to give up their supervisory role over any banks, including smaller ones. Bank regulation is a major activity for the district banks. Ensuring the soundness of banks large and small is viewed as integral to economic health of the regions they serve. Confidential information obtained in the course of supervising banks can be of use in setting monetary policy, especially when it helps policymakers to anticipate demand for and supply of credit. Nevertheless, the case for Fed supervision of smaller banks is less compelling than the case for supervision of large, potentially systemic financial institutions – including nonbanks.[14]

Systemic risk regulator. Although systemic risk is not a new idea, the notion of an explicit systemic-risk regulatory function is new. Addressing systemic threats was an implicit function of the Fed because its lender of last resort facility was the only tool available tool to respond to systemic risk problems. When clearing failures, Y2K concerns, or the terrorist attacks of 9/11 threatened the operation of the financial system, the Fed's discount window was the tool available to address the problems.

The Federal Reserve also had the authority to lend widely (that is, to nonbanks) in times of widespread financial exigency in order to manage a systemic threat. These extensive powers were granted to it in the 1932 amendment of the Federal Reserve Act and revised later on (see Fettig (2002)). On occasion there were suggestions that the Fed use these lending powers to provide funds to non-banks, such as at the time of the Chrysler bankruptcy in 1970 and when the US airlines faced serious problems after 9/11. However, the Fed resisted such suggestions (although there was a short loan to the FDIC bank insurance fund in 1991) until March 2008. The emergency lending powers were hardly known and little understood because they had not been used after the 1930s.

With the benefit of hindsight, we see that the evolution of discount lending authority in the 20th century gave the Fed a valuable tool for responding to systemic risks as it did in 2008. Emergency lending does take the central bank's focus away from

[14] Alan Blinder (2010, p. 132) agrees that Fed supervision of small banks is less than compelling and "peripheral to its core mission."

monetary control and there are still some who would argue for against any other role for central banks. However, the recent crisis demonstrated the importance of having an institution that can respond quickly to systemic risks.

The need for a systemic risk regulator that can respond to emergencies does not mean that the central bank must play that role and have an obligation to monitor and prevent the rise of systemic risk. It is well suited to do so because of its existing connections to the financial system and, as the recent crisis highlights, it is valuable to one authority unambiguously responsible for responding to systemic risks. Interestingly, the recent financial reform legislation in the US (the 2010 Dodd-Frank bill) partially removes the Fed from that role by setting up an interagency Financial Stability Oversight Council as the systemic regulator.

A systemic-risk regulator should have influence that stretches out in multiple directions. First, the systemic regulator needs to augment the oversight and supervision of institutions that are so large and interconnected that any insolvency would create systemic problems. Second, it must be able to address systemic problems that can arise from smaller institutions facing a common vulnerability. For example, the 2008 run on money market funds, none of which was individually sufficiently large or interconnected to present a systemic risk, threatened the financial system. These funds, part of the so-called shadow banking system, lacked deposit insurance and automatic access to the lender of last resort were vulnerable because funds can be withdrawn at face value with little or no notice and assets are not always liquid.

Third, the systemic regulator must have authority over the shadow banking system including any new institutions or instruments that may create new systemic risks. An important contributor to the crisis was shadow bank institutions – such as broker-dealers – that are dependent on the collateralized repo market. The systemic regulator should have the authority to regulate such risk-laden market funding practices, in addition to the behavior of any institution that can generate systemic risks.

Fourth, economic conditions can give rise to systemically risky activity. Rapid credit expansion, the deterioration of credit standards and asset price bubbles are all macro problems that can give rise to systemic weaknesses. For example, the extended period of low interest rates in the early 2000s promoted rapid credit expansion and some of the excesses, particularly in the mortgage markets, that generated the crisis. Thus the phrase macro-prudential regulation arose to reflect the post crisis realization that monetary policy needs to stay cognizant of the systemic stability implications of policy.

For these reasons, systemic risk and the regulation, supervision and oversight of individual financial institutions are closely linked. The monitoring of each financial institution individually is not sufficient for avoiding systemic problems. Thus, the systemic risk regulator should be a powerful entity. It should have explicit regulatory authority over systemically important institutions (the LCFIs). In addition, it should be able to rein in the systemically risky activities of any financial institutions – shadow banks, hedge funds, insurance companies, for example -- including ones that are not

otherwise subject to regulatory oversight. If the behavior of any financial institution creates systemic threats, the regulator has reason to be concerned.

Thus, monetary policy, regulation of financial institutions and macro prudential regulation are tightly linked together. As a result an argument can be made for giving the central bank a role in all three. Even if we view macro policy to be the primary function of the central bank, it needs to monitor financial institutions because no macro policy can succeed without financial stability. And since economic stability goals cannot be attained without a modicum of financial stability, the macro economic and macro prudential roles are tied together. The micro regulatory role is tied in as well since large complex institutions as well as panics among smaller institutions can have systemic implications.

Conclusion

As the 20th century drew to a close there seemed to be a consensus view of central banking. A central bank was a politically independent entity that was responsible for monetary control. Other functions were peripheral at best. For example discount lending was a useful emergency facility but really just a remnant of historical banking functions. Bank supervisory activities were also peripheral and could just as soon be located elsewhere. The crisis of 2007-09 changed these views forever by bringing the prudential and regulatory roles of central banks to the forefront and showing the interdependence of the roles.

I have made, I hope, a reasonably compelling case for a central bank with broad interrelated functions. First, central bank should be able to conduct monetary policy without political interference. Second, it should serve as the LLR to provide liquidity in emergency situations and third, it should have a role in monitoring systemic risks and responding when they might emerge. That is a rather large remit for one government agency. But it is inevitable due to the connections among these functions.

As a result, central banks central banking is pulled into the realm of politics as the border between monetary policy and fiscal policy becomes blurred. Consider the following. In 2008, the Federal Reserve sold billions of dollars of government securities from its portfolio and used the funds to finance some new corporations – the Maiden Lane corporations (the NY Fed is on Maiden Lane) which bought assets from Bear Stearns, AIG etc. - and to create new funding facilities such as those used to support the commercial paper market. Is this a proper role for the central bank or has it crossed the line into the realm of government? If Congress wants to buy a bank or nationalize a corporation or bail out GM or funnel funds to the commercial paper market, it has the right to do so. It passes legislation and appropriates funds. The government would have to fund such expenditures and, as you can imagine, it would do so by selling bonds – a fiscal activity. Indeed, buying GM was a fiscal activity by the US government. But, that is exactly what the Fed did when it 'bailed out' Wall Street. Has the central bank, in the name of the LLR and systemic risk, usurped the role of Congress and the President to

conduct fiscal policy – decide how much the government will spend, what it will be spent on and how expenditures should be financed?

The crisis of 2007-09, however, suggests that a broad the role of the central bank that encompasses macro policy, supervision and regulation of banks and systemic risk (or macro prudential) oversight is warranted. Although everyone agrees that monetary policy is a central bank concern, there are wide differences of opinion regarding the extent to which it should also have responsibility for the supervision and regulation of individual financial institutions and for systemic regulation of the financial sector as a whole. It is my contention that strong linkages among the three functions of a central bank are sufficiently compelling to warrant giving the central bank broad authority in all three of them. As a consequence, central banks may be more political institutions than before.[15] Policy makers were aware that their innovative responses to the crisis increased the political involvement of the central bank. At the height of the crisis, in March 2009, the Fed and the Treasury issued a statement outlining their respective roles and the distinction among them. Goodfriend (2010) suggests that a new 'accord' is necessary to formally define the boundaries of Federal Reserve credit or lending policies.

It is fascinating how little attention has been addressed to these issues in the past. It just did not seem to warrant the bother. But, the questions will linger for a long time – the role of central banks warrants a lot more attention. For sure, the late 20th century ideal view of central banks is gone forever. The notion of an independent agency with the remit of monetary control is much too limited to be realistic. Inevitably, the central bank has other functions which drag it back into the political arena. Exactly how the 21st century central bank ought to be designed is an open question worthy of more attention.

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[15] Meltzer (2010) argues that the Fed has always been subject to political influence. The idea of an independent insulated central bank was to some extent a caricature favored by advocates of mechanical monetary policy rules.

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