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# Financial Stability and Monetary Policy[1]

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## Abstract

The paper gives an overview over issues concerning the role of financial stability in monetary policy. Historically, financial stability has figured highly among central banks' objectives, with policy measures ranging from interest rate stabilization to serving as a lender of the last resort. With the ascent of macroeconomics, these traditional tasks of central banks have been displaced by macroeconomic objectives, price stability, full employment, growth. The financial crisis has shifted the focus back to financial stability concerns. Along with these developments, the shift from a specie standard to a pure fiat money system has widened the scope for central bank policies, which are no longer constrained by legal obligations attached to central bank money.

The paper first surveys the evolution of financial-stability and macroeconomic-stability concerns in central banking and monetary policy. Then it discusses two major challenges: (i) What should be done to assess the relevance of financial stability concerns in any given situation? How should one deal with the fact that systemic interdependence takes multiple forms and is changing all the time and that many contagion risks cannot be measured? (ii) What is the relation between financial-stability and macroeconomic-stability objectives? To what extent do they coincide, to what extent are they in conflict? How should tradeoffs be handled and what can be done to reduce the risk of the central bank's succumbing to financial dominance?

*Key Words:* Financial stability, monetary policy, systemic risk, central banking

*JEL Classifications:* E42, E44, E52, E58

1 Paper prepared for the Federal Reserve Bank of Atlanta Conference on Central Banking in the Shadows: Monetary Policy and Financial Stability Postcrisis, March 30 – April 1, 2015. At the time when this paper was written, I was Vice-Chair of the Advisory Scientific Committee (ASC) of the European Systemic Risk Board (ESRB). The content of the paper does not in any way reflect the opinions of the ASC or the ESRB.

# 1. Introduction

In the fall of 2006, I participated in an evaluation of the work of the financial stability group at the Swiss National Bank (SNB). A legislative reform of 2002 had given the SNB the mandate "to contribute to financial stability" (in addition to ensuring price stability). Our assessment was very positive, but we observed some few structural problems, namely:

- There was little interaction between the financial stability group and the macroeconomics/monetary policy group of the SNB.
- At the level of the Board, monetary policy and financial stability were discussed separately, usually with just a short observation to the effect that there were no serious financial-stability concerns.
- Concerns of the financial stability group that the two Big Banks (UBS and Crédit Suisse) had extraordinarily high leverage did not translate into effective policy discussion.[2]
- There was little interaction between the financial stability group of the SNB and the Swiss Banking Commission, which was in charge of supervision.

At the time, we interpreted these observations as being indicative of difficulties involved in getting people and institutions with different specializations to work with each other, especially when a new unit enters the game, and the financial-stability concerns of this unit do not appear to be urgent. So we suggested that it would be (would have been) useful if the financial stability and the macroeconomics/monetary policy groups had a joint investigation of past episodes where information about the financial system might have been relevant for monetary policy. As examples, we gave developments of the 1980s and 1990s. For example, would it have been possible to avoid the sharp inflation increase of 1989 if monetary policy in 1988 had taken account of the fact that changes in liquidity regulation and in interbank clearing would raise the multipliers for money creation in the banking sector? Had there been early-warning signals that were overlooked? Would it have been possible to avoid the low-growth experience of the 1990s if monetary policy had taken account of the weakness of the banking sector that was due to substantial losses in real-estate and business lending?[3]

What I have seen since then makes me believe that the problems we observed then appear much more generally. By now, after the financial crisis of 2007-2009 and the "euro crisis" that has been with us since 2010, the importance of financial stability concerns for central banks has become obvious, but we still do not have a good idea of how to manage these concerns along with traditional monetary policy.

We have a research agenda with questions, such as: What was the role of monetary policy in the run-up to the financial crisis of 2008 and in the run-up to the "euro crisis"? What becomes

2 Thus, Bichsel und Blum (2005) and Blum (2007) had warned that the Big Banks had used the model-based approach to determining required equity in order to raise their leverage to the order of 50, and they had proposed the introduction of a leverage ratio regulation. In the crisis, their warnings proved to be justified.

3 We also suggested a similar joint *post-mortem* exercise with the supervisor on the 2001 difficulties of Crédit Suisse.

of standard monetary policy when the central bank intervenes to prevent a liquidity crunch, or even a complete meltdown of the financial system? To what extent and how should monetary policy for the post-crisis low-growth economy take account of the weakness of the financial sector? But we do not know enough to answer these questions with any degree of assurance.

The problems run more deeply than just bureaucratic or intellectual specialization and inertia. They also involve issues of political economy, ideology, and power: What monetary or prudential policy is feasible in good times, when nobody wants to hear about the risk of a crisis? What becomes of the traditional monetarist hands-off policy stance when a financial crisis looms and the central bank intervenes to deal it? And, most importantly, who is in charge?

Discussions about these questions sometimes involve differences in ideologies. But even without differences in ideologies, different approaches often involve different modes of thinking: Traditional macroeconomic/monetary policy approaches do not have much room for financial-stability analysis; traditional prudential analysis focuses on the individual institution, rather than the system as a whole, let alone the macroeconomy. And at the level of objectives, it is not clear whether we think of macroprudential policy as a policy designed to protect the financial sector from the fallout of macroeconomic developments or whether we think of it as a policy designed to protect the macroeconomy from the fallout of financial instability.

Two further examples are instructive: When reading the book *Maestro*, Bob Woodward's account of Alan Greenspan's 1980s and 1990s record as Chair of the Federal Reserve, I got the impression that, over time, Greenspan was a master at intervening to counteract the damaging effects of his previous interventions: After the stock market crash of 1987, he flooded the system with liquidity in order to avert a financial crisis. When the expansion of the money supply created strong inflationary pressures in 1988 and 1989, he sharply reversed the policy, raising interest rates again to levels unseen since the early 1980s. When the fallout from this measure threatened to bankrupt the big money center banks in 1990, he again reversed his policy, sharply lowering short-term interest rates and allowing the banks to play the yield curve, using the very large difference between long-term and short-term interest rates to earn record profits four years in a row and rebuild their equity. This stop-and-go routine seems to have been driven by alternating concerns about financial stability and inflation, without much of an attempt to take a comprehensive view.[4]

Currently, the European Central Bank (ECB) is engaging in a substantial program of monetary expansion through open-market purchases. This program is intended to revive economic growth from its current low, in some member states even negative, levels and to counteract the threat of deflation and deflationary expectations. Little account seems to be taken of the possibility that the observed weakness of the macroeconomy might be caused by weakness in the financial sector and that open-market operations at the long end of the market might com-

4 Federal Reserve Policy in the years 2000 – 2008 exhibits a similar stop-and-go pattern, with the added ingredient that, in the election year 2004, as in the election year 1972, interest rates were kept low for longer than can be explained by lags in problem recognition.

press the yield curve even more and thereby reduce the profitability of financial intermediaries, making it difficult for them to rebuild their equity.

As yet, we do not have a conceptual framework for thinking about these issues, about the proper specification of objectives, about the tradeoffs that are involved and about the risks that need to be taken into account. In the following, I will try to lay out some of the issues that need to be considered in developing such a framework. I cannot offer a blueprint, but at least I will try to remove the impediments to clear thinking that are due to semantic ambiguities, limitations imposed by modelling techniques, and, most importantly, an unwillingness to acknowledge certain tradeoffs and certain facts. I begin with an overview over the respective roles of financial-stability concerns and monetary policy in the past. Subsequently, in Section 3, I discuss some of the challenges that must be met.

## 2. Financial Stability and Monetary Policy: Taking Stock of the Past[5]

### 2.1 The Gold Standard Era

Originally, central banks were just banks, albeit banks with a strong connection to governments, serving as depositories for government funds and lending to their governments, working under special government charters and benefiting from government-granted privileges such as the monopoly on issuing notes, sometimes with government mandates to stabilize interest rates. [6] Under the gold standard, monetary policy involved the use of discount rates to influence gold flows and the dynamics of the money supply.

As discussed by Goodhart (1988), central banks' closeness to the government and their control over much of the specie in their countries contributed to their acquiring a central position in the financial system. In particular, they came to act as banks for other banks, taking other banks' deposits and providing them with liquidity when needed.[7]

In the course of this development, central banks came to take on the role of a lender of the last resort in times of crisis, when other banks could not obtain liquidity in the market. This role was enshrined in Bagehot's (1873) famous prescription that, in a crisis, the central bank should be prepared to lend freely to solvent banks, against good collateral and at penalty rates.

As businesses, central banks could not just pursue whatever mandates they had. With funding by notes that promised payment in specie, they needed to make sure to always maintain their

5 For an extensive account of the evolution of central banks, see Goodhart (1988). Hellwig (2015 a) draws on Goodhart (1988) for background to a discussion of financial stability, monetary policy, and banking supervision in the European context.

6 Goodhart (1988, 114-122) mentions such a mandate for the Banque de France in particular.

7 Goodhart (1988) also points out that this development was helped by their not behaving like ordinary profit-oriented banks and by their abstaining from competing in the other banks' key markets, for lending to non-financial firms and for taking deposits from the public.

ability to fulfil their obligations. As for any other business, this requirement had a liquidity dimension and a solvency dimension. The liquidity dimension required central banks to maintain gold reserves that would be sufficient to meet the demand for conversion of notes into specie. The solvency dimension required them to avoid substantial losses that might endanger their ability to pay, if not immediately, then over time.

However, acting as a lender of the last resort under Bagehot's rule and lending to solvent banks at high rates, could be very profitable. Profitability would also benefit if the support given to the financial system actually managed to forestall a deeper crisis that might have compromised the central bank's other assets.

More generally though, the need to maintain the ability to fulfil their obligations could interfere with the central banks' stabilization functions. The problem is most obvious in the use of high interest rates to protect or expand the central bank's gold reserve. High interest rates served to maintain the convertibility of the central bank's notes, but they also did harm to financial institutions, the overall economy, and the government budget. For example, the very high discount rates used by the Reichsbank in the crisis of 1931 contributed materially to the difficulties of the banking sector and to the subsequent large downturn in bank lending and economic activity.[8]

Eichengreen's (1992) account of the gold standard in the interwar years suggests that the depth of the Great Depression is largely explained by a lack of international cooperation and by the contractive monetary policies that different central banks used to maintain or even increase their gold reserves. The desire to maintain convertibility took precedence over the needs of the macroeconomy; moreover, those central banks that did try to ease their monetary policies, experienced substantial outflows of gold that quickly led them to reconsider their stance.

Similarly, the constraints imposed by the gold standard (and associated legal rules) prevented the Reichsbank and the Federal Reserve from forestalling the banking crises of 1931 in Germany and of 1931 and 1933 in the United States. Whatever financial stability concerns they might have had were preempted by the rules of the gold standard. In the case of the Reichsbank, these rules continued to shape thinking and policy even after exchange controls had been imposed, and the risk of a run on the Reichsbank had been eliminated.[9]

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8 These high interest rates also enabled the Reichsbank to earn very high profits. These profits subsequently enabled the Reichsbank to contribute substantially towards recapitalizing the private banks. See Born (1967, p. 170).

9 According to Eichengreen (1992), the leadership of the Reichsbank worried that any departure from the rules of gold standard might induce a loss of confidence and lead to unconscionable inflation. He shows that countries that had experienced serious inflations earlier on in the 1920s were late in abandoning the gold standard and even after they had done so continued to think about monetary policy in terms of the gold standard, with the result that they were the last to recover from the Depression. In this context, Germany is the exception that proves the rule: The change of leadership of the Reichsbank that was imposed by the Nazis in 1933 also led to a change of thinking and indeed prepared the road for the second hyperinflation, this one from Nazi finance of rearmament and the war through the printing press.

## 2.2. Fiat Money and the Macroeconomic Orientation of Monetary Policy

For central banks, the Great Depression had two major effects: The gold standard disappeared, and thinking about monetary policy became an integral part of the newly developing field of macroeconomics. The two changes were complementary; the macroeconomic orientation of monetary policy was made possible by the fact that central banks no longer had to worry about the convertibility of their currencies into gold.

For the United States, the gold standard was effectively replaced by a pure fiat money system, a paper currency that was not backed by specie or anything else.[10] The Bretton-Woods system of fixed exchange rates did not oblige the Federal Reserve to maintain the exchange rate. Maintenance of exchange rates was left to the central banks of other countries, which were thus operating under a dollar standard. For macroeconomists, the constraints that this obligation implied seemed inappropriate because they harmed or eliminated these central banks' ability to pursue their own macroeconomic objectives.[11] This assessment contributed to the movement towards flexible exchange rates that culminated in the 1973 abolition of the Bretton-Woods system. After that, most countries had pure fiat currencies, without any microeconomic restrictions on the central banks.

The major debates about monetary policy in the second half of the twentieth century have all focused on macroeconomics. What are the respective roles of monetary and fiscal policy in stabilizing aggregate demand? What is the role of monetary policy in reducing unemployment? To what extent is monetary policy driven by the need to monetize government debt? How can we avoid inflationary tendencies from fiscal dominance and establish monetary dominance instead? All these questions involve macroeconomic indicators and macroeconomic aggregates, rather than the details of what central banks do and how the details of what they do feed into the macro-economy.

Without questioning the high quality of the debates, we should also see that they involved a strong ideological element. The Great Depression had raised serious doubts about the viability of a laissez-faire market economy, and the Keynesianism that triggered the development of macroeconomics called for active government policies to promote macroeconomic activity and growth. The monetarist counter-movement was strongly motivated by an aversion to government interventionism and a belief in the strength of a laissez-faire market economy. From this perspective, monetary policy was seen as less harmful, because less discretionary than fiscal policy, but monetary policy itself should also not be too activist. The seeming paradox that, in the debate about the use of inflation to fight unemployment, the opposition to such use of monetary policy came from "monetarists" such as Milton Friedman is easily resolved by

10 Often-heard references to the dollar's being backed by the "full faith and credit of the American government" should be understood as poetry rather than substantive statements. Holders of dollar bills issued by the Federal Reserve have no legal claims against the American government, except possibly to have old dollar bills replaced by new ones.

11 See, in particular, Fleming (1962), Mundell (1962).

observing that the term "monetarist" came from the earlier debates about fiscal versus monetary policy and that the real dissent was about government activism.[12]

For someone opposed to government activism, the very existence of a central bank that issues fiat money is a scandal. Money that can be produced at zero cost and yet has purchasing power provides the central bank – and the government – with the means to intervene at will. It also provides a source of funding that is not subject to parliamentary control or market discipline and that undermines the disciplinary role of the government budget constraint. This reasoning provides the rationale behind Hayek's *Denationalisation of Money* (1976), a proposal to introduce a system without a government-owned or government-licensed central bank, with competing private banks issuing notes that are convertible into real resources as specified in the underlying legal contract. Politically, Hayek's proposal has never had a chance but some of the underlying thinking is still relevant today.[13]

Political abuse of the power to print fiat money has of course been frequent. Such abuses caused not only the many hyperinflations of the 1920s, but also the suppressed hyperinflation in Nazi Germany, where the erosion of the purchasing power of money was hidden by the imposition of price controls and rationing.

In the United States, in the 1940s, the Federal Reserve was mandated by the Treasury to monetize government debt. The Treasury-Federal Reserve Accord of 1951 eliminated this mandate and made the Federal Reserve independent of the Treasury, but then interest rate targeting provided a basis for continued monetization of government debt. Whenever interest rates went up, the Federal Reserve was under strong political pressure to lower them. In the 1970s, at last, this policy induced a Wicksellian spiral of inflation and artificially low real interest rates that was only reined in when, under Chairman Volcker in 1979, the Federal Reserve shifted to targeting the money supply.

In other countries, the freedom provided by the end of the Bretton-Woods regime was used to get central banks to provide direct government funding, For example, in Italy, the Banca d'Italia was legally bound to buy up all government debt issues that the private sector would not buy. This use of the printing press for government funding was a major cause of the high inflation in Italy in the 1970s.

The overall experience of the 1970s was sufficiently negative to provide political support for a return to a more stability-oriented monetary policy. In Europe, this move took the form of exchange rate arrangements in which central banks were effectively called upon to follow

12 On the role of monetary policy compare Friedman (1968) and Modigliani (1977). In this context, it is of interest to observe that the asymmetric information "explanation" of the Phillips Curve in Lucas (1972) rests on the assumption that noise comes from the central bank. If the additional noise came from the real economy, the slope of the "Phillips Curve" in the theoretical analysis would be reversed. When I once asked Robert Lucas about this, I got the impression that having the noise come from the government rather than the real economy reflected his views of how the world works.

13 See for example Vaubel (1985). Winkler (2015) gives an interpretation of Bundesbank President Weidmann's opposition to Quantitative Easing by the ECB as based on Hayekian concerns.

German monetary policy, first the "snake" and then the Exchange Rate Mechanism. German monetary policy was shaped by the Bundesbank, an independent institution with a mandate solely to preserve price stability.[14] With a strong commitment to this mandate, the Bundesbank repeatedly put the brakes on monetary policy even when a recession was already in sight, as it believed that a tough monetary policy was needed to fight inflation and to bring the other participants of the macroeconomic policy game, trade unions and governments, to their senses.[15]

At the request of Germany, independence of the central bank and an exclusive focus on price stability were also written into the Treaty for European Monetary Union.[16] The exclusive focus on price stability stands in contrast to the mandate for maximum employment, stable prices and moderate interest rate that the Humphrey-Hawkins Bill has given to the Federal Reserve in the United States.

## 2.3 Macroeconomic Monetary Policy and Financial Stability

In the macroeconomic debates about monetary policy, neither the problem of financial stability nor the place of the central bank in the financial system played much of a role. These were debates about monetary aggregates and interest rates, unemployment and inflation, and the proper conditions for sustained economic growth.

Yet under the surface, the financial system did play a role after all. For example, how do we assess whether monetary policy is expansionary? What is the role of monetary aggregates? If we look at monetary aggregates, should we look at the monetary base, i.e. the money that has been issued by the central bank? Or should we take account of the fact that, from the perspective of investors, some of the debt instruments that are issued by financial institutions are close substitutes to central-bank money? If we do, which instruments should we consider as money-like and which ones should we exclude?

In their monumental *Monetary History of the United States*, Friedman and Schwartz (1963) focus on the monetary aggregate $M_1$, the sum of central bank money and demand deposits held by non-banks in the economy. They do so on the grounds that the relation between $M_1$

14 Independence of the German central bank was originally imposed by the Allies in 1922 and became part of the rules under the Dawes and Young plans. Independence was re-imposed by the Allies in 1948 and subsequently codified in the Bundesbank Law of 1957. Political support for this arrangement was based on the experience of the two hyperinflations, one in the early 1920s and one under the Nazis. However, without the European Monetary Union, it is not clear how much longer this support would have lasted. The independence of the Bundesbank was questioned by members of the outgoing Schmidt government in 1982 and again by members of the incoming Schröder government in 1998. By that time, however, the independence of the central bank had become part of the Maastricht Treaty and its status had been changed from a simple law to a provision of the constitution.

15 Restrictive monetary policy explains why the recessions of 1974, 1982, and 1992/3 were particularly pronounced in Germany. In each instance, the Bundesbank was fighting the high inflation of the day without taking account that the cycle was already turning.

16 At the time, academic research also suggested that independence of the central bank was conducive to price stability, see Alesina and Summers (1992), Grilli et al. (1991).

and nominal income (or aggregate demand) was very stable over the period they considered. By choosing $M_1$, rather than the monetary base, as their key monetary aggregate, they implicitly bring in the banking system, for $M_1$ depends on the extent to which banks and their customers create deposits.

In their analysis of the Great Depression, this dependence is crucial as Friedman and Schwartz argue that monetary policy was *contractionary* and much exacerbated the economic decline. Over the period 1929, $M_1$ declined by 33 percent whereas the monetary base increased by 15 percent. The difference was due to financial instability, in particular, the various banking crises. These crises induced non-banks to move out of deposits and into cash. They also induced banks to hold higher reserves for their deposits in order to have better protection against customer withdrawals. The increase in the monetary base, i.e. in the money that was provided by the Federal Reserve was insufficient to neutralize these contractionary effects.

As an analytical device, the use of $M_1$ as a measure of monetary policy is problematic because this measure is a compound of different components that depend on the behavior of commercial banks and of non-banks as well as the central bank. As a rhetorical device, however, it enabled Friedman and Schwartz to refute (Keynesian) claims about the ineffectiveness of monetary policy in the Great Depression and to blame the Federal Reserve for having failed to stabilize the "money stock". In the grander scheme of their book, the focus on this monetary aggregate provided them with a basis on which to criticize the practice of targeting interest rates, which the Federal Reserve had used since the Treasury-Fed Accord of 1951.

But there is a paradox involved. Targeting $M_1$ rather than interest rates is consistent with a laissez-faire approach that wants to avoid the distortions of relative intertemporal prices that might be implied by an interest rate policy of the central bank. At the same time, targeting $M_1$ requires an interventionist monetary policy whenever the relation between $M_1$ and the monetary base is unstable, for example in a financial crisis. The criticism that, in the Great Depression, the Federal Reserve did not do enough to counteract the contraction of $M_1$ translates into a call for activist monetary policy at a time of financial crisis. It certainly was understood as such by Chairman Bernanke in 2008.

From different sides of the political spectrum and the academic spectrum, the activism of central bankers since 2007 has been much applauded and much criticized. Applause came from those who would favor monetary activism anyway, as well as those who believed that this was a special situation and that the central banks' interventions prevented a disaster whose damage would have rivalled that of the Great Depression.[17]

Criticism came from Hayekian fundamentalists appalled at the sheer power of an institution that could create trillions of dollars of additional money at the stroke of a pen or, in this electronic age, a push of a few buttons. Criticism also came from monetarists who had forgotten the account of the Great Depression in Friedman and Schwartz (1963), perhaps because such

17 See, for example, Eichengreen (2015)

a crisis had not been seen for decades, perhaps also because such forgetfulness was convenient as a way of avoiding the tension between the call for an interventionist monetary policy in a crisis and an overall laissez-faire approach to macroeconomic policy.

Ordinarily of course, this tension is irrelevant because changes in the monetary base go along with changes in other monetary aggregates so that a policy recommendation of steady growth in aggregates also calls for steady growth in the monetary base. Large increases in central bank money may then be assumed to induce large increases in aggregate demand and large increases in consumer prices. Many of the warnings that were put forward in recent years about the inflationary impact of central bank policies expanding the monetary base have been based on this narrative.[18]

In fact, the large increases in central bank money that we have seen since 2007 have *not* induced similar increases in wider monetary aggregates or in consumer prices. For example, from 2008 to 2013, the monetary base in the euro area doubled, but cumulative growth of $M_3$, the monetary aggregate that nowadays is considered most important, amounted to only 10 percent. Cumulative inflation also amounted only to 10 percent. The discrepancy between the growth rates of the monetary base and of the wider monetary aggregates reflects a change in the behavior of commercial banks. They increased their holdings of central bank money by a lot. The breakdown of money markets in 2008 had taught them that central bank money was a more reliable source of liquidity than interbank borrowing. In the US, this behavior change was reinforced by the Federal Reserve's paying interest on the commercial banks' deposits.

A striking episode is provided by the ECB's Long Term Refinancing Operation (LTRO) of 2011/2012. Under this operation banks received three-year loans at cheap rates from the ECB. The monetary base increased by about a trillion euros, from two to three trillion. Yet, there was no comparable increase in $M_3$ or in consumer prices. The Bundesbank, forever concerned about the inflationary consequences of monetary expansion, suggested that, if the risk of inflation had not yet materialized, the reason must be that, as we know from Milton Friedman, lags in monetary policy transmission are long and variable.[19] By mid-2014, however, the expansion of the monetary base had been completely reversed, again without any recognizable effects on wider aggregates and prices.[20]

To understand this episode, it is useful to recall that, in the second half of 2011, financial markets and financial institutions in Europe were in turmoil. As the extent and the impact of the upcoming haircut on Greek debt became known, concerns about the solvency of European banks had caused market funding to erode. As banks sold assets to get cash, asset prices declined, which exacerbated the solvency concerns. The downward spiral accelerated when, in November 2011, the authorities imposed an increase in equity requirements, to take effect by

18 See, for example Bundesbank (2012), Sinn (2012, 193-196, 2013).
19 Bundesbank (2012), Weidmann (2014).
20 I have yet to see an acknowledgement of this reversal on the side of those who warned against inflation from the expansion.

June 30, 2012, and they did so by fixing a ratio, rather than the absolute amount implied by current holdings, thus contributing to the banks' deleveraging – and to further declines in asset prices. The LTRO stopped this downward spiral as it gave banks and markets an assurance of reliable and cheap funding over a substantial period of time. Subsequently, after market confidence had returned – and market rates of interest had further declined – those banks that had access to market funding were actually eager to repay their LTRO loans as market funding had become even cheaper.

The years since 2008 have made us appreciate again that the financial sector and, in particular, the banking system, plays an important role in the monetary transmission mechanism. Whatever macroeconomic objectives a central bank may be called on to pursue, full employment, stable prices or stable growth, the impact of a central bank's action on its ultimate objectives depends on how those actions translate into behavior in the financial sector and in the real economy. In situations where the financial sector is impaired, the very pursuit of macroeconomic objectives may require the central bank to support financial stability, in particular of course by preventing an implosion of the monetary system that might be associated with a financial crisis.

One may doubt whether the monetary aggregates suggested by Friedman and Schwartz (1963) and their followers are the right indicators for monetary policy and its potential macroeconomic impact. For the Great Depression, the Friedman-Schwartz account has been complemented, perhaps even superseded by Bernanke's (1983, 1995) suggestion that bank defaults and bank closures had such disastrous effects in the Great Depression because they destroyed the information capital that banks had accumulated about their borrowers and thereby damaged the provision of credit to nonfinancial companies. However, if we see the credit channel, rather than the "money stock", as the key to the transmission of monetary policy to the nonfinancial sector of the economy, the conclusion is the same, namely that banks are an important part of the system and that banking crises can have a strong negative impact on monetary transmission and the overall macroeconomy.[21]

## 2.4 The Central Bank as a Lender of the Last Resort in a Fiat Money System

By now, we have come full circle from Bagehot's discussion of the central bank as a lender of the last resort and the breakdown of this role in the Great Depression to a macroeconomic version of monetary policy with a focus on price stability, inflation, and perhaps full employment and back to a concern for financial stability, now on the presumption that, financial stability is a prerequisite for macroeconomic stability or at least the reliability of the monetary transmission mechanism. In the years since 2007, central banks have repeatedly taken on the role of a lender of the last resort, for banks and, at least indirectly, also for governments.

21 On the credit channel, see Bernanke (1995) and Bernanke, Gertler, Gilchrist (1999).

However, central bank support for the financial sector in the crisis departed from Bagehot's rule in many respects. Whereas central banks lent freely, they did so to banks of dubious solvency as well as banks that were clearly solvent; moreover, they lowered quality standards for collateral, and they did not charge penalty rates. For example, the ECB's LTRO was most beneficial for banks with weak equity positions in periphery countries and allowed these banks to borrow at rates far below those that they would have had to pay in the market (if they were able to get market funding at all).[22] What are we to make of this disregard of Bagehot's rule?

Bagehot's rule serves three purposes: First, it protects the central bank from losses. Second, it minimizes moral hazard on the side of commercial banks. Third, it serves to avoid bailouts of insolvent banks. All these purposes are important but the question is whether we shouldn't also consider the benefits of central-bank intervention and the tradeoffs that may result.

Bagehot was writing about a central bank that was operating under the gold standard and needed to maintain the convertibility of its notes. A central bank that issues fiat money need not worry about the possibility of default. Could it be that, in a paper money economy, some departure from Bagehot's rule is actually desirable?

From a Hayekian perspective, merely to ask the question is anathema, promoting an abuse that is made possible by the government's usurping a role in money creation and using its power to impose a kind of money that is not even backed by anything substantial. In this view, the use of fiat money to support an impaired banking system distorts market outcomes and keeps banks alive that really are insolvent and should be eliminated from the system. Implicitly, seigniorage from the creation of fiat money is used to provide illicit subsidies to financial institutions.

Hayekian fundamentalism rests on the assumption that central banking as such is *only* based on government fiat and serves no economic purpose that is independent of the government's interests. As shown by Goodhart (1988), this view does not match the historical evolution of central banks. The role of a lender of the last resort did not initially come about by government fiat but resulted from the inability of the private sector to deal with collective-action problems in crises, in particular liquidity crises. In crisis situations, competitive interests of individual institutions usually stood in the way of collective arrangements that would have allowed the industry to smooth over the crisis. The central bank could step in and help because it was not driven by such competitive concerns, e.g. the aim to take over a failing bank's business.[23]

22 On this point, see Acharya and Steffen (2015).

23 In a comment on Vaubel (1985), Hellwig (1985) points out that fiat money also fulfils an allocative purpose, namely, it serves as a store of value that can be traded back and forth between participants without anybody's having to hold real assets. The point is most obvious in the economizing on specie that becomes feasible as the economy moves e.g. from a gold standard to a paper currency. Because of Pareto-relevant pecuniary externalities, such an outcome may not be obtained by laissez-faire competition. In-

Given the benefits from such interventions, one must address the tradeoff between these benefits and the concerns behind Bagehot's rule. An example may illustrate the issue: In 1931, the German banking crisis began with large withdrawals from Danat Bank and Dresdner Bank, two banks that were known to be subject to substantial risk from bad loans. After the bankruptcy of Nordwolle, a textile company to which Danat Bank was greatly exposed, the withdrawals turned into a run. The Reichsbank provided the banks with liquidity through the discount mechanism even after Danat bank had exhausted its discountable material and even after it had become clear that Danat Bank might be insolvent. On July 9, 1931, this support had to be stopped when the Reichsbank itself ran afoul of rules for the backing of its currency by specie reserves. On July 13, Danat Bank closed its doors, and there was a general run on all German banks. To cope with the situation, the government imposed a bank holiday, which was followed by three weeks in which the payment system was impaired. In the six months that followed, bank lending imploded, GDP declined from ca. 80 percent to ca. 60 percent of its pre-crisis level, and employment declined by another 2 million people.

In this example, developments after the banking crisis were so bad that it would probably have been better if the Reichsbank had been able to continue its support for the banks, including Danat Bank – in violation of Bagehot's rule. At the time, this was not possible because the Reichsbank was constrained by legal rules for the backing of its currency. Central banks today do not have to satisfy such rules.

In terms of the ultimate macroeconomic objectives of central bank policies, it seems clear that, if a catastrophic crisis is looming, then the ability of the central bank to create fiat money at will should be used even if the support benefits banks of dubious solvency as well as banks that are clearly solvent but are caught up in the general crisis. Bagehot's criteria should not be treated as objectives in and of themselves but as means to improving on the central bank's ultimate objectives, which means that they should be abandoned in situations where their application would be harmful for those ultimate objectives.

Some criticisms of central bank interventions in the financial crisis of 2007 – 2009 and again in the euro crisis have focused on the possibility that these interventions might cause losses for the central banks. Warnings of such losses have also figured prominently in the legal and political disputes about the ECB's open-market purchases of government debt. If the securities purchased lose in value, the argument goes, say because a government defaults, the loss will ultimately be borne by taxpayers. Even if there is no need to recapitalize the central bank, any losses on assets acquired by the central bank will detract from the profit distributions that can be made to the central banks' owners, i.e., ultimately the taxpayers.[24]

Such warnings reflect a profound misunderstanding of the wealth effects of money creation in a fiat money system. Using newly produced fiat money to acquire risky assets provides a

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deed, as suggested by Friedman (1969), a tax-financed subsidy to money holding may be needed to implement an efficient allocation.

24 Bundesbank 2012, Sinn 2013, Weidmann 2014.

windfall to the central bank and, ultimately, its owners. The windfall does not appear on the central bank's balance sheet because the new money issue is listed as a liability. However, if one looks at the expected discounted present value of cash flows associated with the different positions, it is clear that the expected discounted present value of cash flows from the acquired assets is positive and the expected discounted present value of cash flows ("debt" service) associated with the newly issued money is zero. Any losses that are subsequently made on the acquired assets detract from the windfall but cannot make the net return from the asset acquisition negative.[25]

The real victims of such interventions would not be taxpayers but the holders of money and of assets denominated in units of money because the additional money may have an inflationary impact. Any intervention to support the financial system must be balanced against the other objectives of the central bank, in particular the objective of price stability. However, in a true crisis situation, price stability is usually not much of an issue. If financial institutions are weak and endangered, lending and investment are likely to be constrained, aggregate demand is likely to be weak, and consumer prices are likely to be subject to deflationary rather than inflationary pressures.

## 2.5 Interim Summary

The results of the discussion so far can briefly be summarized as follows.

- Since the nineteenth century, concerns for financial stability have been on the agenda of central banks, partly because private arrangements did not work, partly because acting as a lender of the last resort could be profitable, and partly because central banks had a stabilization mandate.
- However, under the gold standard, and later the Bretton-Woods system of fixed exchange rates, such stability concerns had to be subordinated to the need to maintain convertibility or the need to support the exchange rate.
- Since the Great Depression, monetary policy has been governed by macroeconomic mandates, for price stability, full employment, stable growth, or stable interest rates, which on the surface have nothing to do with financial stability.
- Some financial stability concerns are, however, implicit in macroeconomic mandates because the impact of monetary policy on the macroeconomy depends on the functioning of the financial system, in particular private money creation and lending by the banking sector.
- The scope that central banks have to deal with stability issues, macroeconomic or financial, has been greatly increased by the shift to a pure fiat money, first in abandoning the gold standard and, later in abandoning the Bretton-Woods system of fixed exchange rates.
- Shifting to a pure fiat money has also raised concerns about the unrestricted power of the central bank (and possibly the government that stands behind it) to appropriate resources

25 Hellwig (2015 b). The *locus classicus* for this discussion is of course Patinkin (1965).

merely by printing money. Such concerns have motivated the search for rules that would constrain the use and prevent the abuse of this power.

– However, any mandates for macroeconomic or financial stability may require discretionary interventions, in particular discretionary interventions in a crisis. From a welfare perspective, such interventions are desirable if the prospective damage from leaving the system alone is very large.

# 3. Challenges

The preceding discussion does not say anything about *how* monetary policy should take account of financial stability. The examples given in the introduction show some of the difficulties involved. As yet, we do not have a clear understanding of how these difficulties should be dealt with. In this second half of the paper, I will discuss two major challenges:

– Understanding what is going on.
– Clarifying objectives and strategies and avoiding financial dominance.

## 3.1 Understanding What is Going On

Monetary and supervisory authorities must develop an understanding of what is going on in the financial system and what are the implications of ongoing developments for monetary policy and financial stability. This is *not* a once-for-all exercise but a challenge that must be met over and over again as the financial sector is forever changing.

In 2008 and since, the question has often been raised why economists did not see the crisis coming. Some, like Rajan and Shiller, have become heroes because in 2005 and 2006 already, they warned of risk developing in US real-estate markets. However, even these heroes did not warn of the follow-on effects that the real-estate crisis would have.

Indeed, these follow-on effects were not even recognized when the real-estate crisis was well underway and understood. The IMF's Global Financial Stability Report of April 2007 contains a very good analysis of the real-estate and subprime-mortgage crisis but concludes with the assessment that these developments in this relatively small segment of the global financial system were unlikely to cause major harm for the worldwide economy. In June 2007, the Annual Report of the Bank for International Settlements (BIS) echoed this analysis and sent the same message.

Monetary policy reflected this (lack of) understanding. Short-term interest rates in the United States were kept high until the systemic nature of the crisis had become clear, in August 2007, a year after real-estate markets had begun to turn down and the system of mortgage securitization had begun to sputter. The ECB actually *raised* its interest rates in the summer of 2008 when the systemic crisis was well under way, and it did so again in the summer of 2011 even though at that time the euro area was again hit by a systemic crisis.

I am not mentioning these past failures because I want to put blame on the institutions involved but because it is important to understand the reasons for these failures. Regardless of what the strategy for monetary policy may be, it is important that the central bank should understand what is going on. To get to that point, we must reflect on what went wrong in the past.

I see three reasons for the lack of understanding in the run-up to the financial crisis:[26]

– Observers did not think in systemic terms. The assessment that subprime lending was only a small segment of the global financial system was quite correct. Indeed, the assessment of losses that was given at the peak of the crisis in the fall of 2008 was not larger than the losses that had been recorded in the Japanese crisis of the 1990s or the losses that had been feared in the S&L crisis in the United States in the early 1990s.[27] The subprime crisis differed from these earlier crises in that the mortgages had been securitized and the mortgage-backed securities (MBS) and collateralized debt obligations (CDOs) were held by financial institutions worldwide, usually in the trading book, which required immediate writedowns as market prices declined, and usually with very little equity.
– The scope of contagion risk was unknown. About $ 1000 billion of MBS and CDOs were held in special purpose vehicles (SPVs) of regulated financial institutions, conduits and structured-investment vehicles (SIVs). When MBS and CDOs were downgraded in August 2007, funding for these vehicles evaporated, the sponsoring banks had to take these securities into their own books, and found that they had too little equity. The resulting deleveraging process contributed to the downward dynamics of asset prices in the year that followed. In August 2007, the overall size of the positions held in SPVs came as a surprise. The practice had been known but nobody appreciated its scope, let alone the systemic impact that a breakdown of funding for these SPVs would have. From what I have come to understand, the numbers would actually have been available but they were not collected and analyzed.
– The relation between monetary policy and the financial system had not been thought through. This criticism applies in the run-up to the crisis, when the looseness of monetary policy greatly encouraged the subprime-lending boom.[28] It also applies to the central banks' initial reactions in 2007 and 2008. In August 2007 and later, they understood the immediate liquidity concerns but they failed to recognize the extent of the crisis until well into 2008. In the case of the ECB, the delay in understanding was enhanced by the notion

26 For an extensive account of systemic risk in the crisis, see Hellwig (2009).

27 The IMF's Global Financial Stability Report of October 2008 gives a number of $ 500 billion for losses from subprime-related securities (on a total volume of $ 1200 billion of subprime mortgages that had been securitized). The IMF's total estimate of losses in that crisis is much higher, but the difference is due to systemic follow-on effects that had not been considered initially.

28 In 2003/2004, when the Federal Funds rate stood at roughly 1.5 percent, the margin between (fixed-rate) subprime mortgages and money market borrowing amounted to 500 to 600 basis points. In Hellwig (2009), I had suggested that investors were eager to go into mortgage-related securities, MBS and CDOs, because they wanted to benefit from this huge spread. As shown by Acharya, Schnabl and Suarez (2013), however, the SPVs that invested in such securities with funding from the money market only earned about 10 to 30 basis points. The remainder seems to have gone to the mortgage banks, investment banks, rating agencies, and law firms that engineered the securitization. This observation may explain why risky lending to homeowners developed so differently from risky lending to corporations; see Demyanyk and Van Hemert (2009).

that you can use interest rate policy to pursue price stability and unorthodox measures, such as changing the rules for lending to banks, to support the financial system.[29]

Since the crisis, we have all learnt that we must think in systemic terms. In the European Union, the European Systemic Risk Board (ESRB) has the task to do precisely that and to provide the relevant authorities with appropriate warnings and recommendations when systemic risks loom.[30] However, understanding systemic risk is more easily said than done. If the task is approached with the traditional tools of either central bankers or microprudential supervisors, there is a danger of falling into a routine of ticking off items on a dash board without seeing what is actually going on. We must recognize that systemic risk transcends the scope of macroeconomic modelling as well as the supervisors' assessments of individual institutions.

There are many mechanisms of contagion, and their number is probably growing. At this point, I can think of the following mechanisms:[31]

- *Contractual dominos:* The Lehman Brother bankruptcy imposed a loss on the Reserve Primary money market mutual fund and caused it to "break the buck".
- *Disappearance of contracting opportunities:* When Lehman Brothers went bankrupt, it ceased to act as a market maker for many derivatives that other participants had been counting on for their risk management. When Reserve Primary broke the buck, investors whom it had counted on to fund its operations withdrew their funding. When investor withdrawals forced money market funds to reduce their activities, banks such as Dexia or Hypo Real Estate that had relied on the money market to fund the assets needed for the excess coverage for their covered-bond issues, had severe liquidity problems.
- *Information contagion:* When Reserve Primary broke the buck, investors inferred that other money market funds might also have problems so those funds also suffered runs. When Lehman Brothers was not bailed out, investors inferred that government support of banks could not be taken for granted and withdrew wholesale money market funding.
- *Fire sale externalities:* If financial institutions react to problems by selling assets, they exert downward pressure on the prices of those assets. Price declines force those institutions that also hold these assets to take writedowns, at least if they hold the assets in their trading books, and to register losses, which may force them to take defensive actions as well. Between August 2007 and September 2008, we saw such effects driven by deleveraging in response to a lack of equity; in September and October 2008, the process was driven by a scramble for cash and became torrential.
- *Credit Crunch Contagion:* If banks in difficulties reduce their lending to the real economy, investment and aggregate demand are negatively affected. This development in turn can feed back into nonfinancial firms' debt service to banks and into bank profits.

29 See Hellwig (2015a).

30 From May 1, 2011 to April 30, 2015, the author has been first Chair and then Vice Chair of the Advisory Scientific Committee and in this function was also a member of the General Board of the ESRB.

31 For a systematic discussion, see Hellwig (2014 a).

In practices, these different mechanisms are likely to appear at the same time, with interactions that very much magnify the systemic effects. For example, the Lehman bankruptcy had a direct domino effect on the Reserve Primary money market fund. Reserve Primary's losses triggered two interdependent runs, the run of money market fund shareholders on the money market funds and the run of the money market funds on the banks, in particular, US investment banks. The breakdown of money market funding caused a scramble for cash by banks, with fire sales of assets that much depressed asset prices, inducing stock market losses on the order of twenty trillion dollars in the course of a few weeks. As a metaphor for this process, the term "system meltdown" is very apt.

The overall complexity of the potential interactions between the different contagion effects is awesome. Any notion that we can predict these interactions in advance is illusory. The following observations elucidate some of the difficulties involved in analyzing systemic-risk:

- Different processes occur on different time scales. Standard macroeconomic analysis works with a notion of a "period" as referring to a quarter or even a year. Asset market adjustments, however, occur in real time, so fast that there is no scope for relying on flows of new profits or new savings to balance disequilibria at the level of stock variables. So far, the problems associated with differences in time scales have prevented macroeconomists from properly integrating financial developments into their quantitative models.
- Some of the contagion effects are highly contingent. For example, a bank's fire sales will have different effects depending on whether the other market participants are jittery or exuberant. In the LTCM episode in 1998, fire sale externalities were feared to be extraordinary because markets were so jittery. This contingency, i.e., markets being jittery and reacting dramatically to asset liquidations, can hardly be assessed with any degree of reliability *ex ante*.
- Patterns of risk allocation in the financial sector change over time and so do the mechanisms by which systemic risks may realize. Many of the banking crises of the early 1980s and the early 1990s were due to different institutions' being similarly exposed to certain macro shocks, in particular the fallout from interest rate increases. By 2007, direct exposures to such macro shocks were limited because, after the crises of the 1990s and with the advent of Basel II, banks had begun to hedge these risks to get them off their books. System risk then was hidden in correlations, correlations between underlying risks and counterparty credit risks in hedge contracts, or correlations between the jitteriness of markets and the institutions' risk exposures.
- If systemic effects are hidden in correlations, the individual institutions' balance sheets and risk models do not reveal the systemic risks. There may in fact be no data for such an assessment at all.
- If data are available at all, the data series are short and nonstationary. Moreover, many of the risks change in endogenous ways. For example, the counterparty risk of a credit default swap with AIG depends on how many other such contracts AIG has written and how the risks for which these contracts provide insurance are correlated.

These difficulties should *not*, however, be taken as an indication that there is nothing to be done. They should, rather, be taken as an indication that we need to think again about the questions we ask in order to understand what is going on. Going back to the years 2004-2007, here are a few questions that might have been asked but were not:

- Theory predicts that institutions with long-term liabilities, such as insurance companies and pension funds, should have a comparative advantage in holding long-term securities.[32] Why then did such a large part of the output of the securitization industry find its way into the portfolios of banks and their off-balance-sheet vehicles, rather than insurance companies and pension funds?
- Theory predicts that there may be negative incentive effects from securitization unless the originating or the securitizing banks hold on to the equity tranches.[33] Why then were so many equity tranches traded? Or: Was there any substitute for the disciplining effects associated with holding on to the equity tranches?[34]
- What were the causes and what were the potential risks of the growth of short-term wholesale funding of banks? What were the causes and what were the potential risks involved in the growing dependence of banking institutions on money market funds?
- What were the causes and what were the potential risks of the decline in equity funding of banks?[35]
- With an intermediation chain leading from final investors to money market funds, from money market funds to structured-investment vehicles holding CDO's, from structured-investment vehicles holding CDOs to SPVs holding MBS and creating CDOs, from SPVs holding MBS to SPVs holding mortgages and creating MBS. From SPVs holding mortgages to mortgage banks and from mortgage banks to homeowners, who was bearing the risks associated with maturity transformation, liquidity transformation and lending? To what extent might participants be fooling themselves as the complexity of the chain served to hide those risks?[36]

If these questions had been posed and answered in 2005, we might have obtained an idea about the actual system risk exposure much sooner than we actually did.

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32 For an extensive discussion, see Hellwig (2009).

33 See Hellwig (1994 a, 1998).

34 Before, the early 2000s, this seems to have been the role of the guarantees that Fannie Mae and Freddie Mac, the government-sponsored enterprises, provided, along with the quality standards that they imposed for the securitization of prime mortgages. When the investment banks entered the business, focusing on subprime and not providing any guarantees, these safeguards disappeared. For an extensive discussion, see Hellwig (2009).

35 For Europe, ASC (2014) shows that, just in the years 1998 – 2007, there was a substantial further decline in equity funding of the largest banks. Whereas in 1998, equity below 4 percent of total assets was the exception (and the two banks involved needed government support in the crisis), by 2007, equity above 4 percent of total assets was the exception, and some of the major banks had equity below two percent of total assets.

36 For an example of misperceptions about risk, see Gorton (2010). Gorton claims that subprime mortgages did not involve significant maturity transformation because the contract was bound to be renegotiated after a short period of time. This assessment neglects the correlation between interest rate movements and defaults resulting from the fact that the borrower might be unable to pay higher rates of interest. For a discussion of the problem see Hellwig (1994 a,b, 1995).

Methodologically, the approach taken in these questions is *not* to start from a fixed model, but to look at new developments, in particular developments that run counter to theoretical intuition and to try and find out what is the underlying story. In other areas of applied economics, e.g. in competition policy, we take it for granted that there is no one-size-fits-all model and that we first have to find out, from the little material we have, which model or set of models might be relevant or, more crudely, what is the *story* behind what we see.

In the practice of the different authorities, some of the studies of the IMF and the BIS come close to what I am suggesting. The newly created macroprudential authorities should engage in this kind of work. However, so far, much of what they do is too mechanical, focusing on various indices, e.g. for credit growth or for developments in real-estate markets, and on certain risks to individual institutions, e.g. risks from foreign currency lending to non-financial borrowers or from large-scale short-term funding. As yet, I have not seen much on potential second-round systemic effects. Nor have I seen anything on the question how different developments fit together and where the unseen risks might be hidden.

Development of a capacity and a routine for such work is important. It is also important that such analyses should be done without dependence on the powers that be in central banks or supervisory authorities, powers that may have too much of an interest in making sure that the results of the analysis conform to their policy choices or to the regulatory instruments over which they have control. Before one can sensibly talk about the appropriate policy or the appropriate mix of instruments, one first needs to understand what is going on. In situations where policy makers and supervisors are tempted to be complacent, the unit or institution that is charged with the analysis of systemic risk and more generally risk to financial stability ought to be given a role of devil's advocate, questioning the assumptions behind the complacency in order to enable an early recognition of problems.

Much of the preceding discussion has focused on systemic risk in a crisis. The basic idea, however, applies in normal times as well, in particular in the context of what is the role of the financial system in the transmission mechanism for monetary policy. Three examples may illustrate the point:

In the 1970s, institutional and technological innovations reduced the demand for money in the sense of $M_1$, so that the stable relation between $M_1$ and aggregate demand that Friedman and Schwartz (1963) had postulated was no longer observed. Among the reasons were sophisticated cash management systems that firms used to economize on cash, as well as investors shifting out of demand deposits with banks and into money market funds, which offered close substitutes for demand deposits but were counted in $M_1$. The Federal Reserve's slowness in appreciating this development contributed to the inflation experience of those years.

The Swiss examples mentioned in the introduction are also pertinent. Surprisingly large inflationary pressures in 1988/89 were due to the fact that the Swiss National Bank had underestimated the implications of changes in the banking system for the impact of changes in the

monetary base on money creation by commercial banks. In the 1990s, the Swiss National Bank's underestimating the effects of its restrictive monetary policy on economic growth seems to have been related to the failure to recognize the macroeconomic impact of the weakness of commercial banks after the interest hike of 1990 and the problems in real-estate and SME loan performance.

Turning to the current situation, I wonder to what extent the weakness of lending and growth that we observe in many countries might be a reflection of debt overhang and financial-sector weakness. Since the crisis, private households, nonfinancial companies and governments have had substantial debt overhang, debt that was incurred with expectations of growth that failed to materialize and that was not written down through bankruptcy, resolution, or restructuring procedures. Meanwhile financial institutions have somewhat reduced their leverage but remain weak because of remaining risks from the crisis and of low profitability of ongoing activities.[37] If this assessment were correct, the current low interest rates, as well as devices that flatten the yield curve, such as forward guidance and open-market purchases of long-term securities, might delay the recovery.

## 3.2 Clarifying Objectives and Strategies, Avoiding Financial Dominance

Central banks need to be clear about their objectives and about their strategies. With multiple objectives, there is a question about (possibly contingent) priorities and tradeoffs and about accountability.

The side-by-side of financial-stability and macroeconomic concerns leaves open the question of which of them should have priority. In some situations, the question is moot because there is no conflict. For example, a central-bank intervention that forestalls an acute financial crisis will also serve macroeconomic objectives such as protection of the monetary transmission mechanism, full employment, or price stability (in this case, avoidance of deflation). The ECB, which does not have an explicit financial-stability mandate, justified its interventions in 2008 and again in 2011 and 2012 by referring to the need to avoid deflation and the need to maintain the viability of the monetary system. These arguments make sense but, if they are taken literally, they can become dangerous.

Macroeconomic and financial-stability objectives are sometimes aligned and sometimes in conflict. The two sets of objectives are aligned if the financial system is on the verge of an acute crisis that can cause a lot of damage and pull down the entire economy. They are also aligned if aggregate demand is rapidly expanding and the financial system is increasing its risk exposures; in this case, monetary-policy measures and macroprudential measures that slow down the expansion can serve both sets of objectives, except that a slowdown may be

37 In their study of European banks, Acharya and Steffen (2015) observe that the weaker a bank's equity position is, the more likely it is to rely on ECB funding and the more likely it is to use this funding to lend to its sovereign or to invest in securities markets, rather than lend to nonfinancial companies.

unpopular, so central banks and macroprudential authorities may not want to take these measures.

The two sets of objectives can be in conflict, however, if the economy and the financial system are both weak, but no acute crisis is looming. In this case, the pursuit of macroeconomic objectives might call for an expansion of bank lending so as to stimulate investment and aggregate demand. However, avoiding banks' getting more deeply into trouble might require the very opposite, a defensive strategy with reduced lending, possibly also with high margins that might enable the banks to earn profits enabling them to repair their balance sheets. In such situations, there is a need for setting priorities; this is particularly important in continental Europe where banks are central to the financial system and monetary policy works primarily through its effects on bank lending.

In raising this issue in discussions with policy makers in positions of responsibility, I have received four answers:

– We must respect the financial sector's own needs and must not use macroprudential or other instruments to turn the financial sector into a tool of macroeconomic stabilization.
– We must do precisely that, i.e. turn the financial sector into a tool for macroeconomic stabilization, especially in the euro area, where monetary policy applies to all countries alike, and macroprudential regulation is the only means for dealing with country-specific problems.
– There is no conflict because, if the economy is doing badly, the financial sector will be doing badly as well.
– There is no conflict because, if the problems in the financial sector are not cleaned up, the economy will never recover.

These statements are mutually incompatible. Having them side by side makes clear that the problem needs more thorough thinking. There are in fact two issues: First, should the financial sector be treated as a tool for macroeconomic stabilization? Second, how should we deal with the fact that economic activity and financial-sector health depend on each other?

On the first issue, we should recognize that, if we induce financial institutions to take risky actions because we hope that such actions may contribute to stimulating the macroeconomy, then we must also be prepared to support those institutions if the risks turn out badly. The ECB's Targeted Long-Term Financing Operation (TLTRO), announced in the fall of 2014, offers cheap long-term loans to commercial banks on condition that the funds from these loans are used for lending to the real economy (rather than lending to sovereigns or investing in securities markets, as happened with the funds from the 2011/12 LTRO).[38] In fact, commercial banks have not been eager to make use of this offer, perhaps because they do not need the funding, perhaps because they see little scope for earning suitable returns, including risk premia, from expanding their lending to the real economy. Suppose however, that they did

38 See Acharya and Steffen (2015).

take up the ECB's offer, and that, despite the increase in lending, the real economy continued to go down, and those loans went sour. Wouldn't the ECB have some sort of co-responsibility for the damage? And wouldn't the ECB feel morally compelled to help the commercial banks in overcoming the difficulties from the adverse developments?

Such an arrangement can be dangerous. Not so much because, in the end, the need to support banks from the fallout of risks taken under the influence of the central bank is in conflict with the central bank's macroeconomic objectives; quite likely, the fallout from the risks has a macroeconomic dimension because the macroeconomy itself is doing badly. The real danger comes from the moral hazard that arises if commercial banks get a sense that the central bank will always support them. The proverbial "Greenspan put" is deemed to have contributed to the financial crisis by fostering such moral hazard. The emergence of the term "Draghi put" in connection with the ECB's interventions in 2012 raises the question whether the bailout experiences of the crisis haven't reinforced the moral hazard effect.

The underlying issue is one of governance. In a market economy, participants are free to do what they want, but they must bear the consequences. Governments and central banks can set the rules, in particular, the rules of prudential regulation, but they should not impose any particular business strategies. If central banks interfere with the commercial banks' choices of business strategies, providing the banks with an explicit or implicit promise of support if things go wrong, the two sets of institutions may develop a give-and-take routine that defies any notion of accountability and responsibility. In this symbiosis, the commercial banks may be asked to help the macroeconomy and in turn be subsidized by implicit guarantees. Moral hazard effects of such an arrangement may well become uncontrollable.

Turning to the interdependence of economic activity and financial sector health, the question of how to deal with a situation when both are weak should really be treated as a question about sequencing. Should we first clean up the financial sector, hoping that once this is done, prospects for economic recovery will be greatly improved? Or should we delay a financial-sector cleanup, hoping that, as banks are kept going, their continued lending will soften the downturn in the real economy? An immediate cleanup of the financial system may sharpen the current recession but bears the risk that a full recovery may be much delayed.

When faced with this dilemma, most authorities tend to go for delaying the cleanup. Forbearance seems to offer some hope that financial-sector problems might disappear on their own and that the current credit crunch and recession will be softened. However, the empirical literature on the subject suggests that such softening of the current credit crunch and recession through forbearance towards banks may have a large cost in the form of an even bigger credit crunch and recession in the future.[39]

39 For a systematic discussion, see ASC (2012) and the literature cited there. In discussions about the subject, the Latin American Debt Crisis of the 1980s is often cited as a counterexample, the argument being that in 1982 many of the major banks in the US and Europe may well have been insolvent and the system was better served by delaying the necessary writedowns until around 1990, by which time the banks were

The two alternatives may loosely be described as the Swedish and the Japanese strategies for dealing with the crises of 1992. The Swedish authorities intervened promptly to clean up their banking system; the cost was a very sharp recession, the benefit a very quick recovery. In contrast, the Japanese authorities' forbearance towards their banks has contributed greatly to the low growth of the Japanese economy over the past two decades. For example, forbearance of the authorities towards the banks involved allowing the banks themselves to exercise forbearance towards their loan customers so as to avoid writedowns on those loans that might show the banks to be insolvent. Such forbearance towards loan customers however, possibly with a provision of further funds that these customers needed for payments, contributed to low growth because it made entry of new, more innovative firms more difficult as the incumbents with whom these firms would be competing were supported by the banks.[40]

Thinking about the problem is complicated by the fact that financial-sector weaknesses typically involve stock variables and that, if one relies on natural flows of new profits, it takes time to repair weaknesses in stock variables. For example, in the early 1990s, when US monetary policy allowed banks to earn large margins from maturity transformation, it took about two years of high profits for banks to get clearly out of the range where their solvency could be said to be in doubt; during these two years, the recovery of the real economy was stalled.

For faster repairs of bank balance sheets, the problems have to be addressed at the level of stock variables, through immediate recapitalization or through a resolution procedure imposing writedowns on legacy assets as well as the banks' shareholders and creditors. Recapitalization tends to be strongly resisted by incumbent shareholders and management;[41] entry into a resolution procedure may be resisted even by the authorities if they fear that such a measure might have damaging systemic repercussions.[42] However, if neither approach to dealing with the problem at the level of stock variables is used, the weakness of the financial sector can persist for quite a long time.

The notion that financial-sector weakness may disappear on its own, without a cleanup, can actually be self-defeating. If problems are due to excess capacity in the industry preventing banks from earning appropriate margins, then a strategy of closing one's eyes in order to avoid bank resolution and bank closures may cause the excess capacity to persist so that the

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much better capitalized. As stated, the argument overlooks the very large flows of money that the major Latin American debtors made to their creditors in the second half of the 1980s, much of it funded be official lending to these debtors.

40 See Hoshi and Kashyap (2004, 2010)

41 As explained by Admati et al. (2013), this resistance is largely due to a debt overhang effect implying that the new funds from the recapitalization benefit incumbent debt holders as well as shareholders, with the consequence that the market value of total equity rises by less than the amount obtained by the recapitalization. Admati et al. (2012) shows that recapitalization can actually be used to address balance sheet problems at the level of stock variables. If banks raise equity through rights offerings and if they use the proceeds to buy other marketed assets, the net cash flows into the banking sector that are involved are small; all that happens is a reshuffling of the set of financial instruments that allocate rights to the returns of real assets in the economy.

42 For a systematic overview, see ASC (2012), for an assessment of current resolution regimes, see Hellwig (2014 b).

root cause of financial-sector weakness is not addressed. In such a situation also the Greenspan strategy of allowing banks to earn high profits in order to rebuild equity will not work.

In this context, it is pertinent to observe that banking in Europe is still characterized by low profitability. This low profitability reflects the large capacity growth that European banking has seen and the increased intensity of competition since the 1990s. It may also reflect the flatness of the yield curve, at which point we must think about the effects of monetary policy measures such as forward guidance and quantitative easing on the profitability of banks. We thus come back to the conflict between the macroeconomic stability objective of making credit to the real economy plentiful and cheap and the financial stability objective of allowing banks to repair their balance sheets so as to better serve their macroeconomic functions in the future.

At this point, we do not have a good conceptual framework for dealing with this conflict and handling the implied tradeoffs. Thinking about the conflict in terms of tradeoffs may actually be problematic because, for reasons given in the preceding subsection of this paper, the authorities are unlikely to have very good information about the actual state of the financial system. With insufficient information, one should not go for fine-tuning of tradeoffs.

With due caution, the following may seem like a reasonable agenda for proceeding:

- In normal times, let monetary policy serve its macroeconomic objectives without paying much attention to financial stability.
- At the same time, make sure that microprudential, macroprudential and monetary authorities understand what is going on in the financial system as well as the monetary system.
- If risks in the financial sector are building up, consider the use of macroprudential regulation to restrain the buildup. Targeted tools such as bounds on loan-to-value ratios and interest-to-income ratios in real-estate finance may ease the task of monetary policy in such situations.
- In an acute crisis, allow for financial stability concerns to take precedence and support the financial system.
- At the same time, make sure that solvency problems in the financial sector are not allowed to linger but are addressed right away even if there is a fear that the cleanup of the financial sector may exacerbate the weakness of the real economy.
- Try to address the financial sector weaknesses at the level of stock variables, in particular, bank equity so as to avoid the slowness of a recovery that relies on profit flows. Imposing recapitalization, inside resolution or outside, will be fought by the industry but is very likely needed to get out of the current mess.
- Think about monetary-policy measures and about macroprudential measures in a comprehensive way, considering their effects on both the macroeconomy and the health of financial institutions.

This agenda actually minimizes the explicit support for financial stability that monetary policy should give, assigning much of the task instead to macroprudential regulation and to recap-

italization and resolution measures when the financial system is weak. In a serious systemic crisis, too-big-to-fail policies intended to keep the system going are unavoidable and are in fact desirable. However, recognizing the need for such support in a crisis should not become a pretext for having central banks to always stand ready to support the industry. Moreover, central bank support should not be abused to avoid necessary cleanups.

Without such limitations on the financial-stability mandate of the central bank, there is serious risk of monetary policy succumbing to financial dominance, where central banks take financial-sector doings as fixed and adapt their monetary strategies to minimize systemic damage from financial-sector risks. And there is a serious risk of hidden fiscal dominance if financial-stability concerns induce the central bank to provide plentiful and cheap funding to weak banks, and these banks use the central-banking funding to lend to their governments, a constellation that has characterized the euro area, at least in 2012.[43]

For central banks not to be exposed to a risk of financial dominance, we need strong arrangements for prevention, high equity requirement and macroprudential arrangements that make a crisis unlikely, and we need strict rules for imposing cleanups. We also need to avoid a regime in which the central bank makes private institutions subservient to its macroeconomic needs while assuring them of support if risks turn out badly. Such a regime would exacerbate moral hazard. Financial dominance then might become unavoidable and might persist for a long time.

43 See Acharya and Steffen (2015). In 2012, the carry trade involved in borrowing from the central bank and lending to one's own government could be very profitable, with margins of 400 or so basis points. Since then, the success of the ECB's OMT program, though never used, has eroded the greater part of these margins.

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