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# Price and Financial Stability in Modern Central Banking

Although the first central banks were created more than three hundred years ago, it was not until the mid-nineteenth century that central banks were given the monopoly power to issue banknotes and to act as lender of last resort. Thereafter, central banks played the role of liquidity provider and lender of last resort. These tasks were intended to allow a proper functioning of the payment system, so financial stability was implicitly a major concern for central banks. Over time, central banks moved toward achieving price stability, from monetary stability to controlling inflation. Financial stability became a secondary goal, if a goal at all.

This has not been the case in emerging market economies, which have been affected by recurrent financial crises. Indeed, financial crises like those of Chile in the early 1980s or in Mexico and Asian countries in the 1990s are not radically different from the recent crisis in advanced economies. The complexity may have changed, but the original causes had many similarities.[1] Some years ago it was much more frequent to find central bankers concerned about financial stability in emerging countries than in advanced ones. However, as a consequence of the global financial crisis, the issue of financial stability has reemerged as a top priority for policymakers.

In this paper, I discuss the issue of price and financial stability in central banking. I first explore the conduct of central banks in achieving price stability, in particular in the context of inflation targeting, and then move on to how the financial stability mandate has to be included as a key component of modern central banking. I end with a few concluding remarks.

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1. Reinhart and Rogoff (2009).

## Central Banks and Price Stability

As mentioned above, central banks in advanced economies have long been focused mainly on ensuring low inflation. Moreover, some scholars and practitioners argued that price stability should be the only objective of central banks, so that the goal would be more credible and monetary policy more effective in achieving stability. How exactly or operationally to achieve this target was an open question, however. Some central banks tried to target monetary aggregates, others to peg nominal exchange rates, and others to use an eclectic mix of indicators. Two decades ago, some central banks started conducting monetary policy targeting a specific value or range for the inflation rate. This trend started with New Zealand in 1990 and was followed by Canada, the United Kingdom, Australia, and Sweden in the early 1990s. This is a case in which policy development led academic advances. Progress on the academic front provided further impetus to the adoption of inflation targets as new models were developed to provide the theoretical underpinnings of inflation targets and the basis to conduct empirical work.[2]

This view was further justified by the success of monetary policy around the world in providing stability, not only on the inflation front, but also in activity and employment. The evidence that output volatility declined significantly in the United States after the mid-1980s was first reported by Kim and Nelson and later called the Great Moderation by Stock and Watson.[3] Several factors could be behind this trend, such as technical progress, better policies, deeper financial markets, and sheer good luck. Although there is no final verdict, evidence points to the role of better macroeconomic policies.[4] Emerging market economies also enjoyed a Great Moderation, but it came in the second half of the 1990s, much later than in developed economies. This coincided with the time in which inflation was conquered, supporting the hypothesis that it was good policies rather than good luck.[5] It is easy to discredit the Great Moderation in the current juncture. However, the resilience of emerging market economies to the global crisis was impressive. Indeed, emerging markets had a recession, but much milder than in the past and with a remarkable recovery. This was, of course, the consequence of much better macroeconomic management.

2. Galí and Gertler (2007).
3. Kim and Nelson (1999); Stock and Watson (2003). A predecessor was Taylor (1998), who called this period the long boom.
4. Galí and Gambetti (2009).
5. De Gregorio (2008).

The case of Chile illustrates this point. The economy did suffer a recession, but the size of the initial impact and the speed of the recovery were quite different from previous episodes. From the second quarter of 1998 to the second quarter of 1999, during the Asian crisis, Chilean GDP fell by 4.1 percent. Returning to the initial GDP level took one year. The unemployment rate more than doubled between the beginning of 1998 and mid-1999, reaching almost 12 percent and staying high, around 9.5 percent, until 2005. The effects of the 2008–09 crisis were very different. Economic activity fell, but less than in the previous episode, with a drop of 3.3 percent between mid-2008 and mid-2009. The recovery was much faster: GDP was comparable to its precrisis level by the end of 2009, only two quarters after the downturn. The subsequent growth rate was also different. Considering the first six quarters after output recovered to its initial level, following the Asian crisis the economy grew at an average annual rate of 4.4 percent, whereas following the 2008 financial crisis the economy grew at an average annual rate of 6.1 percent.

The behavior of the unemployment rate was totally different as well. After having risen from around 7.5 percent in mid-2008 to nearly 11.0 percent in mid-2009, it quickly descended to levels around 7.0 to 7.5 percent at the beginning of 2011. The policy regime was crucial for this result. Fiscal policy implemented a sizable economic stimulus package. Monetary policy also gave a significant boost to the economy, as the Central Bank took the monetary policy interest rate to its minimum and implemented additional measures to ensure the effectiveness of its actions. The effects of the 2008–09 crisis were very substantial, but the resilience of the Chilean economy and the effectiveness of its macroeconomic policies were even stronger.

Over time, inflation-targeting regimes have evolved into what is now known as a flexible inflation target (FIT). In this scheme, the central bank sets an inflation target, which is intended to be achieved in a given time horizon. As shown by Svensson, inflation targeting implies inflation-forecast targeting.[6] Thus, the central bank's inflation forecast at the policy horizon becomes the intermediate target.[7] In the case of Chile, the inflation target is 3 percent, and the time horizon is two years. As long as this target is credible, monetary policy will not only achieve inflation stability, but will also reduce the volatility of the business cycle.

6. Svensson (1997).

7. To avoid indeterminacy or multiple equilibria, the forecast must be the central bank's forecast and not that of the market (Bernanke and Woodford, 1997).

Analytically, the FIT regime is based on the idea that the policymaker minimizes a loss function that penalizes both inflation deviations from the target and deviations of output from full employment. The FIT thus optimizes the trade-off between output volatility and inflation volatility. The time horizon is what makes this scheme flexible. The target is not achieved in the short run since it also takes into account the output costs of achieving the target. A rigid inflation target is one in which the central bank cares only about inflation, so the horizon would be the shortest possible for monetary policy to affect output. The longer the time horizon, the higher the weight of output volatility in the loss function.[8] The time horizon typically extends to two years, or more ambiguously to the "medium term." As long as medium-term inflation expectations remain anchored, monetary policy helps to reduce the volatility of other variables.

A FIT regime also requires a flexible exchange rate, so that monetary policy can be conducted independently. However, a proper FIT helps to stabilize the currency as long as monetary policy moves *leaning against the wind.* For example, a persistent depreciation of the currency, other things equal, increases the inflation forecast, although much more moderately than in rigid exchange rate systems. This effect calls for a tightening of monetary conditions, reducing pressures against the currency.

It is often asserted, especially in nonprofessional discussions, that inflation targets ignore output fluctuations. As I have just argued, however, this is a mistake. Flexible inflation targets take into account activity and employment, and this is implicit in the choice of the time horizon. Moreover, a credible inflation target is efficient in terms of minimizing the trade-off between output and inflation fluctuations, and it also helps to reduce real exchange rate volatility. Indeed, a flexible inflation-targeting regime can maximize welfare and perform much better than an exchange rate or monetary target.

What variables should a central bank consider when setting the interest rate? In the regime I just described, the answer to this question is pretty simple: anything affecting inflation over a two-year horizon. Variables such as inflation expectations, wages, output, unemployment, the exchange rate, commodity prices, and so on have important effects on inflationary forecasts and must be taken into account when deciding the future path of monetary policy. However, investors and wage and price setters must also understand the importance of these variables for the inflation process. Communication is essential, and that is the role of monetary policy or inflation reports, monetary policy statements, minutes, projections, speeches, and so forth.

8. De Gregorio (2007).

A key question that arose during the financial crisis involved the extent to which central banks should react to asset prices, such as housing or stock prices. The answer from the perspective of inflation targeting is that as long as they affect the inflation forecast, they should be considered in the monetary policy reaction function.

Asset price bubbles or distortions that may threaten financial stability should be considered when evaluating financial vulnerabilities, but they should not influence monetary policy if they do not have an impact on inflation. It is not clear that an increase in interest rates will be capable of stopping an increase in asset prices. The required adjustments might be so large that they could end up unnecessarily generating high unemployment and an undesired drop in inflation. Under inflation targeting, any interest rate movements that are inconsistent with inflation converging to the target may undermine the credibility of monetary policy, destabilizing inflationary expectations and weakening the effectiveness of monetary policy.

Using monetary policy to burst a bubble in asset prices is particularly complicated in emerging market economies, since bubbles in domestic assets generally take the form of an exchange rate appreciation caused by large capital inflows. Tightening monetary policy to burst the bubble may have perverse effects, since it induces further capital inflows and strengthens the currency. In this case, the interest rate is not the appropriate instrument. Exchange rate intervention could be a better policy tool.

## Bringing Back Financial Stability to Central Banking

With the global financial crisis, there was a renewed discussion on the role of central banks in securing financial stability. This is not new. The first central banks were created in Sweden and England in the seventeenth century, but no proper role for central banks was established. Indeed, the Bank of England was founded to finance the war with France in the late seventeenth century.[9] It was not until the nineteenth century that the Bank of England was given the monopoly for the issue of banknotes and assigned the role of lender of last resort. In the origins of central banking, its role was to secure the functioning of the payment system. Thus, financial stability was not new, although it was a secondary issue compared to the conduct of monetary policy, which gradually turned to focus on price stability. Since central banks mainly focused on

9. Davies and Green (2010).

one instrument (either the interest rate or the money supply, but not both), financial stability was mostly ignored.

This is not the case with emerging market economies, which have suffered many financial crises. Consequently, the role of financial stability has always been central in policymaking. The most relevant aspect of financial stability is international financial transactions. For this purpose, central banks, most usually, manage exchange rate policies, hold international reserves, and dictate norms to avoid currency mismatches and external payment crises. In Chile, the Central Bank's objectives are price and financial stability. The Constitutional Law explicitly establishes that the Central Bank's mission is "to safeguard the stability of the currency and the normal functioning of internal and external payments." The resilience of financial systems in emerging markets during the global financial crisis owes much to the fact that financial stability was already an important piece of the policy framework.

I would like to discuss three issues regarding financial stability and monetary policy. First, was the crisis caused by monetary policy? Second, what are the instruments for financial stability? And third, what are the interactions between financial stability and monetary policy?

Regarding the cause of the crisis, I do not think monetary policy—conducted, for example, on the basis of a Taylor rule—was the main culprit. Very low interest rates in advanced economies induced high risk taking as financial institutions searched for yields. Excess liquidity may sow the seeds for asset price bubbles and financial vulnerabilities.[10] However, to cause a huge financial crisis, some serious distortions in the financial system are required. Countries like Australia and Canada had very low interest rates, but their financial systems responded appropriately to the financial crisis. Chile also followed an interest rate cycle similar to that of the United States and did not suffer a financial crisis. Some countries even had a housing bubble, but they did not have the degree of leverage recorded in the United States, which was central in triggering the crisis. Asset price bubbles do not necessarily cause a financial crisis, as was the case with the tech bubble in the early 2000s. The bad combination is asset price bubbles with high leverage in the banking system.

However, monetary policy played a role in the crisis in the way it dealt with bubbles, deviating from the prescriptions to pursue price stability. This was the so-called Greenspan put. The rule followed by the U.S. Federal Reserve was not to react to the formation of a bubble, but to mop up its effects after

10. See, for example, Acharya and Naqvi (2012).

the bubble burst. This was done by providing an unlimited amount of liquidity and sharp reductions of interest rates. Recent evidence confirms that including asset price deflation in the equation improved the fit of the Taylor rule.[11] Markets therefore expected monetary conditions to ease when asset prices declined significantly. This point was raised almost ten years ago by Miller, Weller, and Zhang, who argue that eliminating the downside risk of asset prices feeds the bubble, so bubbles not only increased as the result of irrational exuberance, but they were also "exaggerated by the faith in the stabilizing powers of Mr. Greenspan."[12]

Regarding the second question, the instruments for financial stability are what have been termed macroprudential tools, as opposed to microprudential regulation, which targets the health of specific financial institutions. One of the first tools used for financial stability was the dynamic provisioning on housing loans implemented in Spain in 2000. It is still too early to fully evaluate this instrument, since it did not avoid a housing bubble, and many institutions dedicated to housing finance, the *cajas de ahorro,* went bust during the crisis.

On the time dimension, the idea of macroprudential tools is to avoid the buildup of financial vulnerabilities in the upturn of the business cycle and to have a cushion for the downturn. Financial systems tend to be procyclical, so some sort of break system should be implemented to avoid excessive risk taking. This underlies the new rules in Basel III, especially in the definition of the countercyclical buffer of new capital requirements.

On the cross-section dimension, extra capital has been proposed for systemic institutions to make them more resilient to financial turbulences. The definition of systemic institutions is still blurred, however, and given the evolution of financial innovation, an institution that is nonsystemic today may eventually become systemic. Indeed, a nonsystemic institution on a worldwide basis could be systemic from the point of view of particular economies.

Again, these issues are not new in emerging market economies, which in general have more capitalized banks. In Chile, most of the industry already satisfies the requirements that are supposed to be in place by 2019. Moreover, banks with a high market share are subject to even larger requirements.

Chile has also already made significant progress in areas such as restrictions on currency mismatches, liquidity management, and the use of derivatives.

11. Hall (2011).
12. Miller, Weller, and Zhang (2002).

In all of these cases, the Central Bank of Chile has the authority to set prudential regulation. For banks, these are related to authorizing the use of derivatives and regulating market and liquidity risk, among others. The Central Bank also has a say in "systemic" regulation, such as overall limits for the pension funds. This scheme accommodates recent policy concerns, since it avoids the conflict of interest that arises from merging the supervisor of specific institutions with the monetary authority, while preserving an institution that provides a broad look at the stability of the financial system. This being said, however, there is a need to continue strengthening coordination with other regulators. The recent creation of a Financial Stability Committee in Chile represents a step in this direction. The Committee will also provide a clearer view on financial stability and risks. Over time, and as learning takes place, some legislation should be introduced to enhance the effectiveness of the Committee. In the Central Bank, an evaluation of financial vulnerabilities and strengths is performed semi-annually in the *Financial Stability Report.*

Finally, regarding the interactions between macroprudential policies and monetary policy, the traditional view has been influenced by the Tinbergen principle, by which there should exist as many instruments as policy targets.[13] This view is reinforced by the fact that, as I argued above, the interest rate is too blunt of an instrument to deal with asset price bubbles and financial dislocations. Therefore, the interest rate—that is, the monetary policy instrument used to achieve the inflation target—must be separated from macroprudential tools to deal with financial stability. However, and perhaps unfortunately, the separation is not that clear. As I discussed before, monetary policy actions, such as the Greenspan put, may create financial instability. The financial crisis also affected the business cycle and, hence, had implications for monetary policy. Moreover, the transmission channels of monetary policy could break down during a crisis. Therefore, the state of the financial system should be taken into account in the conduct of monetary policy in economies following a FIT regime, since it affects the transmission channels and the business cycle.

Another issue is whether macroprudential tools may be used to complement monetary policy. For example, adjusting capital requirements over the cycle or introducing dynamic provisioning may have effects on the output gap, inflation, and interest rates. This is similar to the case of automatic stabilizers of fiscal policy, which also have implications for monetary policy.

13. Bernanke (2011) also discusses these issues.

Therefore, conflicts should not arise between financial stability and price stability tools, as long as financial regulation reduces the procyclicality of the banking system. From the point of view of the inflation target, this is just part of the environment in which decisions have to be made.

Perhaps a more controversial issue is the use of macroprudential tools as a substitute for monetary policy. Some emerging markets have recently begun using banks' reserve requirements to tighten credit by reducing the need to increase the interest rate, which has collateral effects on asset prices, especially the exchange rate. The advantage of using the interest rate for monetary policy is that the transmission channels are relatively well known. Changes in monetary policy interest rates affect the cost of financing, asset prices, and the availability of credit. The macroeconomic consequences of changing regulation are less well understood. Tightening restrictions on banks may create disintermediation and move credit to unregulated segments of the market. In addition, the latitude of changes in regulation is much more limited than that of interest rates. A more constructive approach may be to design rule-based countercyclical regulation with the clear purpose of minimizing the risk of a financial crisis. Nevertheless, the interactions between monetary and financial policies need to be further explored and clarified.

## Final Remarks

A natural reaction to a crisis is to think that everything is wrong and that all must be changed. Emerging markets, in particular Chile, performed well during the crisis and, above all, during the recovery. Therefore, a first lesson must be on the factors that produced these good results, and macroeconomic management was certainly central to the rapid recovery. The financial system was resilient, which shows that the regulatory framework was appropriate. However, the role of policymakers is not to congratulate themselves for past achievements, but to look at strengthening the macroeconomic framework.

As development proceeds, new challenges arise due to financial innovation. It is therefore extremely important to look for lessons while the crisis unfolds, to take advantage of financial development without risking financial stability. There is a need to study the interactions between monetary and financial policies further, especially given the challenges stemming from the global outlook.

Implementing monetary policy in a flexible, inflation-targeting framework has shown its benefits; incorporating financial frictions and the appropriate policies should help us to navigate better in a very uncertain world.

The crisis also left some lessons for the profession and the way in which highly stylized models are used in policymaking. The narrow view is to think they are a precise description of how the world works, when in truth it is much more complicated. However, the other extreme view—and a very bad one for policymaking—is to disregard all that has been learned from academic work. It is necessary to be humble about the current state of economic knowledge, but it is also necessary to be rigorous and serious about policies.

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