The Historical Evolution of Central Banks: Are We on the Verge of a New Era?

Esther Jeffers, Université de Picardie
Dominique Plihon, Université Paris 13

Abstract:
This paper examines the origins, functions, and evolution of central banking. It argues that the Global Financial Crisis (GFC) led central banks to move away from the narrow price stability-focused mandate to taking charge of financial stability. Environmental damage and climate change constitute significant systemic risks for the financial sector, and to the economy at large. We discuss to what extent central banks can and should play a major role in preventing these risks from materializing. We also explore the ways in which this can be done and outline measures that central banks can take to meet these challenges and contribute to this effort.

Key words: Central Banking, Financial Stability, Monetary Policy, Climate Change

JEL: B5, E5, G2, G18, Q5
The Historical Evolution of Central Banks: Are We on the Verge of a New Era?

Esther Jeffers, Université de Picardie
Dominique Plihon, Université Paris 13

Introduction

The Great Financial Crisis (GFC) showed the importance of central banks, their functions, and the major role they play. Since 2007, they have acquired more responsibilities and implemented a wide range of tools to prevent the collapse of the entire financial system and ensure financial stability. Yet, there is no consensus on the theoretical or practical framework that should be used to achieve this objective, or on the institutional forms that it should take. Since climate change and environmental damages represent clear risks to financial stability, awareness has been growing that the financial system must stop funding activities that are harmful to the environment. An increasing number of central banks and regulators are conscious of the need to address this challenge in practice and have started to take initial steps to address these issues.

This paper starts by examining the evolution of central banking, its conception, and functions from its origins (I) to the beginning of the twenty-first century (II). We raise the question of the course and instruments of monetary policy used by major central banks before and after the GFC. We argue that maintaining financial system stability is above all a question of political economy and part of the role of central banks (III). To the extent that central banks are tasked with maintaining financial stability, climate change and environmental issues represent a new challenge that central banks need to address (IV).

I. Genesis of central banking

The functions and the evolution of central banks since their origins have been contingent on the variety of institutions and challenges which characterized the different historical periods.1

A. Origins of central banking

The first central banks (Riksbank, 1668; BoE, 1694) were initially established in order to provide governments with certain banking and financial services, notably funding during wartime. The Swedish Riksbank was established as a joint stock bank. It was chartered to lend the government funds and to act as a clearing house for commerce. The Bank of England was

granted a royal charter in return for a loan of £1.2 million to the government, along with long-term banking privileges, including the issuing of bank notes. The Bank of France was created in 1800 to fund war and stabilize the currency after the hyperinflation of paper money during the French Revolution and the failure of the “Assignat” regime. Very quickly Napoleon gave it a monopoly on issuing bank notes. Other central banks—The Netherlands Bank (1814), the Bank of Belgium (1850)—were created to pump credit into the economy or to stimulate commerce.

The traditional functions of the first generation of central banks were funding government debt and operating the payment systems: early central banks issued private notes, which served as currency, and they gradually obtained a monopoly over such note issuing. They became the repository for most banks in the banking system because of their large reserves and extensive networks of correspondent banks. These factors allowed them to become the lender of last resort when faced with a financial crisis.

During the 19th century, the aim of central banks was to ensure that the quality of money market assets was good enough to enable them to inject liquidity if needed in accordance with the “real bills” doctrine, including when acting as lenders of last resort (Bagehot, 1873). Since the central bank was a direct rival of the other commercial banks, it did not have direct supervisory oversight of their books. In addition to any role central banks were given in terms of watching over the quality of commercial bills, they were created to fund governments.

B. Later wave of central banks: Fed and ECB

The crisis of 1907 led to the creation of the Federal Reserve in December 1913. It was initially created to address banking panics. It was given the mandate of providing a uniform and elastic currency (that is, one that would accommodate the seasonal, cyclical, and secular movements of the economy) and to serve as a lender of last resort. Before that, the United States was recurrently shaken by panics and financial crises (1873, 1884, 1890, 1893, and 1907). Because of its scope and depth, the Panic of 1907 became the catalyst for the creation of the United States central bank. On December 23, 1913, President Woodrow Wilson signed the Federal Reserve Act "to provide for the establishment of Federal reserve banks, to furnish an elastic currency, to afford means of rediscounting commercial paper, to establish a more effective supervision of banking in the United States, and for other purposes.”

Since 1977, the Federal Reserve has operated under what is commonly referred to as the “dual mandate” from Congress to "promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates". It now has additional responsibilities, including fostering a sound banking system, and a healthy economy.

---

During the Great Financial Crisis (GFC), which started in 2007, the Fed gained additional supervisory responsibilities under the Dodd-Frank Wall Street Reform and Consumer Protection Act (2010), including the authority to monitor large or complex institutions that could threaten the stability of the US economy and financial system.

The European Central Bank (ECB) was established in 1999 to unify the European monetary space and manage the new single European currency. Its mandate and operational framework were strongly influenced by the “monetarist view” on monetary policy and inflation. This is why it has a single mandate: “To maintain price stability is the primary objective of the European System of Central Banks and of the single monetary policy for which it is responsible.” Furthermore, a quantitative definition of the ECB’s primary objective of price stability was adopted in December 1998: “Price stability shall be defined as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%. Price stability is to be maintained over the medium term.”

The ECB is the most recent major central bank to have been created. It is a central bank with a transnational dimension. The Maastricht Treaty (1992) created the ECB to head the eurosystem and entrusted it with the responsibility for setting monetary policy. It also transferred the responsibility for the functioning of the payment system to the ECB. However, neither the Maastricht Treaty nor the ECB statutes gave the central bank an explicit mandate to directly provide emergency liquidity support to individual financial institutions. This remains the responsibility of national central banks. They have retained the responsibility of the LOLR function in their jurisdictions, although the GFC demonstrated that reality is more complex, especially when the issue is preventing systemic risk. Also, Article 123 prevents the ECB from giving “overdraft facilities or any other type of credit facility” to Member State governments (or to other EU bodies), and Article 125 prohibits the ECB from assuming any liabilities or “commitments” of the Member State governments—the famous ‘no bailout’ clause.

II. Central banking in the 20th century

The two World Wars and the Great Depression in the interwar period led to important changes in the nature of central bank mandates as well as to its theoretical and operational frameworks. During WWI, after the US entered the war, the young Federal Reserve dedicated itself mainly to supporting the war effort. The war destroyed much of the financial system in Europe while it accelerated the evolution of the Fed into a true central bank by increasing its financial resources and transforming the US dollar into a major international currency. During

---

4 Treaty on the Functioning of the European Union, Chapter 2 – Monetary Policy, Article 127
5 The Governing Council clarified in 2003 that in the pursuit of price stability it aims to maintain inflation rates below, but close to 2% over the medium term.
the 20th century, no common historical tradition of the central bank acting as banking supervisor existed. Two generations of central bankers led.

A. Keynesian central banking

After 1914, central banks attached greater weight to the goal of maintaining domestic economic stability (output, prices, and employment). This shift was a direct consequence of the political and economic instability caused by the two World Wars and the Great Depression. It was also linked to a change in political economy in many countries. Suffrage was expanding and labor movements were on the rise, while Keynesian ideas and the belief in the Phillips curve trade-off between employment and inflation were gaining in popularity.

After 1950, the Fed and other central banks in advanced economies followed a deliberate countercyclical policy, which was quite successful in combating recessions and keeping inflation low up to the end of the 1960s.

Economic stabilization, based on the implementation of both fiscal and monetary policies, became a major goal of central banking under the Keynesian optimal policy mix framework.

B. Monetarist central banking

Inflationary pressures built up in the 1970s and reached double digits in the US and Europe. The Great Inflation led to a sharp reversal of monetary policy, starting in the US. Paul Volker launched his shock therapy in 1979, which involved monetary tightening and the raising of policy interest rates to double digits. The Volker shock led to a deep recession and a significant decline in inflation.

During the 1980s and the 1990s, the goals and the theoretical framework of central banking were based on two major principles of the monetarist doctrine: (1) the major cause of inflation is excessive money supply, and hence (2) monetary policy is the most efficient instrument to fight inflation. In the 1980s, the independence of central banks was established as a precondition for their credibility in accordance with the recommendations of the New Classical School. Since the 1990s, large central banks have followed a policy of explicit or implicit inflation targeting, based on the so-called “New Keynesian” theoretical framework.

The causes of the end of The Great Inflation are still being debated. The view according to which the decline in inflation was due to tight monetary policy ignores the fact that Volker’s therapy took place at the same time as the neoliberal counter-revolution, which had major social and economic consequences. Capital gained the upper hand at the expense of labor, which led to a decline in workers’ income. Neoliberal policies contributed to globalization and increased competition, which also exerted downward pressure on prices.

---

6 The Great Inflation lasted from 1965 to 1982.
7 Michel Aglietta, Laurent Berrebi et Audrey Cohen (2009), Banques Centrales et Globalisation, Groupama Asset Management, Expertises N° 7.
Many economists thought that the golden age of central banking was reached during the “Great Moderation” episode (1993–2007), which was a period of economic stability characterized by low inflation, positive economic growth, and the belief that the boom and bust cycle had been overcome. This view was mistaken for two reasons: (1) monetary policy was not the only cause of the “Great Moderation” and (2) central banking contributed to the Great Crisis that began in 2008 by creating the conditions for financial instability, as illustrated by the Minsky “Tranquility Paradox”.

III. The financial stability role of central banks

Since the beginning of the 21st century, central banks have been facing two major challenges, which are directly related to the financial stability issue: the “Great Financial Crisis” (GFC) that started in 2007, and the acceleration of climate change, officially recognized as a major global issue by the Paris Agreement in 2015.

A. The failure to prevent the Great Financial Crisis

Managing financial stability has been a major issue for central banks since the origins of central banking (Goodhart and Tsomocos, 2010). However, central banks were not always responsible for banking supervision or at the head of the supervisory system.

Regulation introduced after the Great Depression resulted in the absence of banking crises from 1935 to about 1970. This came to an end in the 1970s following deregulation policies that were implemented in many countries. In the period between the two world wars, banking problems in Europe were not handled in the same way in different countries. Separate institutions became entrusted with the responsibility for bank examination and oversight. Sometimes those bodies were embedded in the central bank (France, Italy, Spain, and Ireland). In other countries they were totally separate (Germany, Denmark, Norway, Sweden, and Switzerland).

The 1970s and 1980s turned into decades during which central bank responsibility became institutionalized and extended. The international aspect of crisis management became more important, and central banks became the dominant players in the international field. Central bank responsibility for setting financial regulation was institutionalized at the international level (for example the Concordat and the Basle guidelines). After the 1970s, under the influence of monetarist theory, central bank activity came to consist solely in having an independent central bank that sought to keep inflation at a specific, low rate by controlling

---

official interest rates. This ‘new consensus’ approach to the theory of central banking thus focused entirely on monetary stability, while financial stability was viewed as separate from monetary policy. Such an approach became so predominant that the European Central Bank (ECB) charter makes price stability its primary responsibility. In order to preserve the independence of the ECB, its charter explicitly forbids it from financing any public institution or state. The dominant theoretical literature (Friedman and Schwartz,11 1963; Poole,12 1970) insisted on the importance of a principle separating policy to ensure monetary stability from policy to ensure financial stability. This meant that interest rates became the main and only instrument for monetary stability, and that price stability became the main target of central banks. Financial stability was pushed to the bottom of their priorities, if at all present on their horizon. This view is well illustrated by the twin peaks system in the UK with the Bank of England and the Financial Service Authority (FSA).

Not only did large central banks neglect financial stability during that period, but they also contributed to the Great Financial Crisis by their policy based on the separation principle. Indeed, as shown by Borio,13 who developed the “credibility paradox”, a concept close to Minsky’s “tranquility paradox”, banks and financial investors underestimated risks because they had full confidence in the credibility of major central banks, and were thus inclined to take excessive risks during the Great Moderation. Central banks ignored the fact that monetary stability can have negative effects on financial stability.14

Two other reasons contributed to the failure of central banks to pursue the financial stability objective: the neoliberal doctrine of finance based on the market efficiency hypothesis, which focused only on microeconomic regulation/supervision and neglected the importance of systemic risk, and the financialization process, which led to the rise of universal banking with the progressive blurring of the dividing lines between deposit and investment banking, and to the increasing role of the shadow banking system, outside banking regulation.

B. Is it the CBs’ business to ensure financial stability?

Maintaining financial system stability is above all a question of political economy. The financial stability goal is particularly important because capitalist economies are potentially prone to financial instability (Minsky, 1992).15 Minsky’s financial instability hypothesis suggests that when optimism is high and ample funds are available for investment, financial institutions and investors undertake riskier practices, which leads the economy towards a crisis. Cyclical fluctuations are magnified and the dynamics of the financial system influence

---

business cycles, amplifying booms and recessions. The health of the real economy is affected if the financial system becomes paralyzed and is not resilient enough to keep servicing the economy. Financial instability is endogenous. Central banks cannot ignore the financial sector because they are the ultimate source of liquidity.

As indicated before, one of the major lessons of the Great Financial Crisis is that financial stability should matter to central banks since the goals of monetary policy and financial stability are interconnected. Monetary policy can have a significant impact on financial stability and vice versa. Performing their role concerning monetary policy provides central banks with a macroeconomic focus and an understanding of financial markets, institutions, and infrastructure. Another lesson of the GFC is that monetary policy alone cannot provide macroeconomic and financial stability. Coordination with other—fiscal and prudential—policy instruments is necessary.

The institutional structure of bank supervision has been extremely diverse, with central banks sometimes playing no supervisory role and sometimes having full responsibility for bank supervision. There is a difference between regulation (rules) and supervision (checking that the rules are actually observed and imposing sanctions when they are not). Should banking supervision be assigned to the central bank or to a separate supervisory body? There are many articles analyzing the pros and cons of giving central banks powers in the prudential domain (Goodhart, 2003; Buiter, 2006; Wymeersch et al, 2012). The defenders of separation believe that monetary stability and financial stability are independent, and there is a conflict of interests between both activities. Therefore the responsibility for both should not rest with the central bank. They argue that better information is acquired when separate institutions hold those two functions. On the other hand, the GFC demonstrated that a central bank has better information than any other institution on banks’ health. Central banks are in the best position to supervise banks precisely because of the intimate relationship between monetary policy and prudential supervision, and their role as emergency liquidity provider makes them a key actor in banks’ crisis management. This role is even better performed if the central bank, as supervisor, has good and timely information on banks’ health. Furthermore, having this type of information, which comes from the activity of supervision, helps monetary policy because of the important role that banks play in the economy. Joint responsibility produces better results for supervision and monetary policy than those that would be obtained by a supervisor having no macroeconomic responsibilities for its actions.

During the GFC, central banks became skilled in financial oversight. According to the Financial Stability Institute, “central banks are the prudential supervisor for banking in two thirds of the jurisdictions; they are also performing that role for insurance companies in an increasing number of countries (from 14 before the crisis to 22 in 2018). In 60% of the jurisdictions, central banks have become the primary macroprudential authority, although often other authorities are also involved by participating in inter-agency committees. In addition, central banks also host the resolution authority in close to 60% of the surveyed
countries”.¹⁶

The post-crisis reforms gave financial sector authorities two more roles: macroprudential policy and resolution. Central banks gained substantial skills in these two domains as well as in microprudential policy. In the European Union, countries within the euro zone share a single prudential supervisory authority (the ECB’s Single Supervisory Mechanism) for significant banks,¹⁷ while Member States still have responsibility for the prudential oversight of smaller institutions and for other supervisory functions. This is done within the framework of the European Banking Union, which comprises a Single Supervisory Mechanism (SSM) in charge of the oversight of significant banks in the euro zone, and a common resolution authority—the Single Resolution Board (SRB), which is responsible for the application of a common set of rules and the management of the European Single Resolution Fund (SRF). However, the European Banking Union is not an adequate solution to the challenge of European Monetary Union problems, because it’s establishment was more an emergency response to the GFC and the Euro crisis and an attempt to preserve the single currency: “The establishment of the banking union was not in reality the result of a collective visionary reflection by EU leaders on how best to take forward the project of European integration. The idea did not gain traction until the middle of the recent European financial and sovereign crisis, and was motivated by the need to contain the increasingly evident risks to the survival of the single currency.”¹⁸

Ensuring coordination, be it on a national level, let alone an international level, is still an unresolved challenge. The increased integration of supervisory responsibilities within the central bank, particularly in countries most affected by the GFC, is a response to the need to correct coordination difficulties. Different attempts were made in earlier decades to bolster such cooperation on the international level. One was the creation of the Basel Committee on Banking Supervision in 1974 to spread standards to be followed by banking supervisors and to promote regular cooperation between its member countries on banking supervisory matters. Another was the Financial Stability Institute (FSI), jointly created in 1998 by the Bank for International Settlements and the Basel Committee on Banking Supervision. However, despite major successive reforms aimed at reducing risks and regulatory weaknesses, shortcomings did not make it possible to prevent the GFC, nor will they make it possible to prevent future risks. This is true not only because there are differences in the implementation of the measures adopted due to differences in the underlying political economy of the banking sector. Or only because of the shortcomings of the adopted reform, which are real. Or because the financial industry is always looking for ways to circumvent new adopted regulatory measures when the large shadow banking sector is not regulated. All this is true. The main problem is that central banks do not have a common understanding and framework

---

¹⁶ FSI Insights on policy implementation N° 8, “Financial supervisory architecture: what has changed after the crisis?”, Daniel Calvo, Juan Carlos Crisanto, Stefan Hohl and Oscar Pascual Gutiérrez April 2018

¹⁷ For details on the criteria by which a bank is considered significant, see: [https://www.bankingsupervision.europa.eu/banking/list/criteria/html/index.en.html](https://www.bankingsupervision.europa.eu/banking/list/criteria/html/index.en.html)

¹⁸ Fernando Restoy, Chairman, Financial Stability Institute, “The European banking union: what are the missing pieces?”, Public lecture at the International Center for Monetary and Banking Studies. Geneva, Switzerland, 16 October 2018
concerning financial stability.

C. The ambivalent role of central banks in the aftermath of the Financial Crisis of 2007

Central banks were indeed able to play their role of LOLR during the financial crisis and to avoid the collapse of the world financial system. This was progress in comparison with the failure of the Fed to act as a LOLR of banks during the crisis in the 1930s. However, the ECB has been very reluctant to play the role of LOLR of governments in the Eurozone, contrary to Fed policy.

Central banks have also implemented unconventional policies, which failed in two major fields: (1) they failed to avoid the Great Recession, and (2) they created the conditions for a future financial crisis by injecting liquidity into the financial system.

The institutional reforms accomplished so far are incomplete. The separation principle was in practice abolished as a consequence of the GFC, and the role of systemic risk supervisor was given to central banks. However, the independence of central banks was preferred over CB coordination and fiscal policy reform. Finally, the lack of separation between commercial and investment banking, and the continued prevalence of the universal bank model goes hand in hand with expanding the financial and political power of large banks.

The conclusions of the La Rosière Report on financial supervision in the EU (2009), which was published immediately after the outbreak of the Great financial crisis, were clear: “Concerning crisis management and resolution, the Group considers that the current arrangements are not satisfactory. It recommends that a clear and transparent framework must be immediately established to manage a crisis – and that all Member States must have the same set of tools and procedures.”

In a famous paper published in 2010 at the outset of the financial crisis, Olivier Blanchard, chief economist at the IMF, recognized that there was a need to revise the pre-crisis consensus with respect to macroeconomic policies, including monetary policy.\(^1\) Three main changes were called for regarding (i) the risk of low inflation targeting, (ii) the limited role given to financial regulation, and (iii) to fiscal policy. However, this article failed to recognize a fourth limit of the pre-crisis consensus, i.e. the complex and ambivalent relationship between monetary policy and financial stability.

D. Rethinking monetary policy

The history of central banking shows that in the past monetary policy has adapted to changing economic environments and to new challenges. Since the beginning of the 21st century, central banks have had to deal with two major types of crises: the Great Financial Crisis

\(^1\) Olivier Blanchard (2010), Rethinking Macroeconomic Policy, IMF Staff Position Note, February 12, SPN/10/03
(GFC) and the climate change crisis. Before the GFC, the dominant view regarding the role of central banks and monetary policy was that the best contribution central banks could make to societal prosperity was to secure low and stable inflation rates. This conviction was epitomized by the so-called inflation targeting framework that has dominated mainstream economic thinking since the early 1990s. The inflation-targeting model, based on the New-Keynesian theoretical framework, has been severely criticized since the outbreak of the GFC for failing to address concerns other than price stability, and most importantly for its disregard of financial stability. The focus on inflation-targeting dovetailed with a trend to separate monetary stability from financial stability. The GFC showed that this “separation principle” is dangerous, since monetary stability can lead to financial instability, as shown by the “Minsky tranquility paradox” and the “credibility paradox” of monetary policy mentioned above.

Drawing upon the lessons of the GFC, we can define a new view of monetary policy, with four important changes with respect to the pre-crisis “inflation-targeting model”. First, most economists now believe, central banks should have several targets regarding price and financial stability and macroeconomic activity. This implies that central banks need to use various policy instruments since, according to the Tinbergen rule, the number of policy goals cannot exceed the number of instruments. Second, conventional monetary policies can be supplemented by so-called “unconventional” policies, such as intervention in the corporate and government bond markets. Third, the LOLR role of central banks, which was crucial during the GFC, must apply not only to banks, but also to governments. Governments are important for the articulation of monetary and fiscal policies. Fourth conclusion: monetary policy alone cannot achieve macroeconomic and financial stability goals. It must be implemented in coordination with other instruments, such as fiscal policy. The latter conclusions suggest that the independence granted to central banks in the pre-crisis era needs to be reconsidered.

We can summarize the major features of the new “post-crisis” monetary policy framework as follows:

- The ultimate goal of monetary policy, common to all macroeconomic policies, is growth, employment, stability of prices, and external balance, i.e. Kaldor’s famous “magic square”.
- Monetary policy pursues several specific intermediate goals, among them monetary stability (prices, exchange rates), financial stability, expectations, and liquidity.
- The goal of monetary stability cannot be separated from the goal of financial stability.
- The major tools of monetary policy are interest rates, regulation, and debt management. Regulation (i.e. off-market intervention) is part of monetary policy, as well as debt management (which can lead to non-conventional operations).

- Assignment of tools: given the broad set of monetary policy objectives, coordination in the use of instruments may be advantageous. So monetary policy instruments are to be used simultaneously, rather than following the “one-target-one tool” strategy.

- There are five transmission channels directly related to interest rates: credit, portfolios, wealth, expectations, and exchange rates. The relative importance of these transmission channels depends on the structure of the financial system and the degree of development. The credit channel is the most important in bank-based financial systems, whereas the portfolio and wealth channels are dominant in market-based financial systems.

E. A new global stability policy framework is required

The GFC was both a market failure and a public policy failure. A market failure, due to poor market discipline, reckless behavior in the private financial sector, and a failure of bank risk management. Also a public policy failure, as public authorities underestimated the systemic risk and failed to succeed in coordinating major public policies, i.e. monetary policy, prudential policy, and fiscal policy.

The GFC showed that monetary policy has important limits when it comes to achieving financial and macroeconomic stability. It needs to be complemented by prudential regulation and supervision. Moreover, the GFC illustrated the fact that fiscal policy must be viewed as an integral part of financial and macroeconomic policies. Indeed, governments did respond to the crisis with exceptional support for the financial system in the form of capital injections, debt guarantees, and asset purchases.

This global response demonstrated the need for a new public policy paradigm to ensure financial and macroeconomic stability. A global policy framework has to be elaborated, based on the coordination of monetary, prudential, and fiscal policies, as illustrated by the table below (Hannoun, 2010). As mentioned by Hannoun, former Deputy General Manager at the BIS, such a global framework should be “comprehensive” with contributions from prudential, monetary, and fiscal policies. Only the combination of these policies can achieve both financial and macroeconomic stability. The framework must also be “worldwide” because the financial system itself became worldwide in the context of financial globalization. Moreover, the focus needs to be “system-wide” and take into account mutually reinforcing interactions between the financial system and the macroeconomy.

---

Global Financial Stability: Policies and Tools

<table>
<thead>
<tr>
<th>Prudential policy</th>
<th>Monetary Policy</th>
<th>Fiscal Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Microprudential policy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital ratios</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquidity standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limits to bank activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Conventional policy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserve requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit instruments</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Manage aggregate demand</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic stabilizers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Countercyclical (discretionary) policy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Macroprudential policy** |
| Countercyclical capital charge |
| Forward-looking provisioning |
| Leverage ratios |
| **Unconventional policy** |
| Quantitative easing |
| **Build fiscal buffers in good times** |
| Taxes/levies on financial sector |

| **Provide financial sector support in times of stress** |
| Capital injections |
| Deposit and debt guarantees |
| Bank rescue packages |
| Discretionary stimulus |

Source: Authors, based on Hannoun, BIS, 2010

By making central banks responsible for prudential supervision, recent institutional reforms—such as the European Banking Union—are a first step, albeit insufficient, towards a tighter coordination between monetary policy and prudential policy.

However, the current situation clearly shows the lack of coordination between monetary policy and fiscal policy. In this respect, as indicated by Krugman (2019), low interest rates implemented by central banks may be seen as an injunction to governments and fiscal authorities to increase public investment. Such a coordinated policy would represent a break with the neoliberal contradiction in which restrictive fiscal policies coexist alongside accommodative monetary policies, as in the Eurozone.

The necessary new global policy stability framework suggests that the political independence of central banks, which has been effective since the 1980s in most advanced economies, must be reconsidered. There are two reasons for this change. First, a democratic control over central banks is required, given their broader roles—and power—in the aftermath of the GFC. Second, the independence of central banks is not consistent with the necessary coordination with governments in order to implement a countercyclical “optimal policy mix” and to play an active role in financing the transition towards a low-carbon society.

---

22 See Krugman: [https://twitter.com/paulkrugman/status/1161620761276235776](https://twitter.com/paulkrugman/status/1161620761276235776)
IV. Climate change: a new challenge for central banks

Climate change is a fundamental challenge for our societies. Containing it will require a profound and radical transformation of our economic system, including a substantial reorientation of investments toward low-carbon technologies.

The Paris Agreement on climate change (2015) highlighted the need to make financial flows consistent with a low-carbon and climate-resilient roadmap. The question to what extent central banks can and should contribute to this effort is a question that is increasingly coming to the fore around the world.23 A key factor for this increasing spotlight on central banks is the growing role they have been playing in the economy since the outbreak of the GFC.

Heads of central banks are aware of their responsibility regarding climate change, as illustrated in a speech by François Villeroy de Galhau, governor of the Banque de France: “The first central bank in History, the Risbank, was founded in the 17th century to finance the Swedish government’s war costs. Today, central banks must wage another type of “war” alongside the signatory states of the 2015 Paris Agreement—the fight against climate change and its consequences”.24

There is a wide agreement that central banks (as well as financial supervisors) are facing two major challenges: dealing with new financial risks caused by climate change, and promoting the massive financial flows required to make the transition towards a low-carbon economy.

As we will show, central banks have been dealing with the question of prudential supervision of climate-related risks (A), but have not made a significant move regarding the second, crucial issue of “greening” monetary policy (B).

A. Central banks and climate-related financial instability

Safeguarding financial stability has traditionally been considered a core responsibility of central banks, and post-crisis deliberations have produced a relatively broad consensus that central banks need to move away from narrow price stability-focused mandates and once again take charge of financial stability. Since climate-related risks may be a source of financial instability, managing them falls within the scope of central banks.

1. Major climate-related risks

The financial impact of climate-related risks exists on three levels: the physical risks (which are the most immediate and visible) caused by the proliferation of extreme weather events such as floods, storms, wildfires, and rising water levels, and the subsequent damages the insurance firms and banks will have to cover; and liability risks, which emanate from parties who have suffered losses from the effects of climate change and who seek compensation from

23 “On the role of central banks in enhancing green finance” (2017), UN Inquiry Paper 17/01, February
those they hold responsible. The final and most important level involves transition risks, which can result from adjustments in the direction of a lower-carbon economy. Changes in policy, technology, and physical risks could prompt a reassessment of the values of a large range of assets as costs and opportunities become apparent.

Recognition of the importance of climate-related risks led to the creation in 2017 of the Central Banks and Supervisors Network for Greening the Financial System (NGFS). In 2019, the NGFS has over forty members and observers from five continents. As shown below, the NGFS has been focusing on micro and macro-prudential regulation, as well as on the greening of the financial system. So far, the NGFS has not dealt with the role of monetary policy in financing the transition to a low-carbon economy.

**Working axes of the NGFS**

- **Microprudential regulation & supervision**
  - Current supervisory practices in micro-prudential supervision
  - Environmental information (climate risk) disclosure
  - Financial risk differential exists between ‘green’ and ‘brown’ assets.
- **Macrorfinancial regulation & supervision**
  - Climate change impact on macroeconomy and financial stability
  - Gaps in our collective knowledge
- **Scaling up green finance**
  - Greening the activities of Central Banks and supervisors
  - Understanding/monitoring the market dynamics of green finance
  - Central banks/supervisors as catalysts for greening the financial system

Besides central banks, public authorities have taken other initiatives to deal with climate change. In late 2015, at the request of G20 leaders, the Financial Stability Board (FSB) established an industry-led Task Force on Climate-related Financial Disclosures (TFCD). It is developing recommendations for voluntary, consistent, comparable, reliable, and clear disclosures around climate-related financial risks for companies to provide information to lenders, insurers, investors, and other stakeholders.

2. Climate-related financial instability: a “Minsky moment”

Climate-related risk is unique in character. It is irreversible, because no technology currently exists to remedy it. It is also potentially systemic because its materialization could transform the functioning of the whole economy.

As stressed by Mark Carney, governor of the Bank of England and chairman of the Financial Stability Board, the financial stability risks related to climate change give rise to two paradoxes:

---

25 “A call for action—Climate as a source of financial risk” (2019), NGFS, First Comprehensive Report, April
“First, the future will be the past. That is, climate change is a tragedy of the horizon which imposes a cost on future generations that the current one has no direct incentive to fix. The catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors including businesses and central banks. Once climate change becomes a clear and present danger to financial stability it may already be too late to stabilize the atmosphere at two degrees Celsius.

“The second paradox is that success is failure. That is, too rapid a movement towards a low-carbon economy could materially damage financial stability. A wholesale reassessment of prospects, as climate-related risks are re-evaluated, could destabilize markets, spark a procyclical crystallization of losses and lead to a persistent tightening of financial conditions: a climate Minsky moment.”

So far, most of the recommendations and decisions taken by central banks and public authorities to deal with climate change have been inspired by the dominant orthodox view on central banking and finance, based on the efficient market hypothesis. The main target of authorities is to adapt the functioning of markets to climate change by providing recommendations to improve information on a voluntary basis.

This theoretical framework is inadequate because climate change should be considered a market failure, as it creates important externalities beyond regulation by market mechanisms. Climate-related market failure takes on different forms, among them systemic and endogenous instability—i.e. a climate Minsky moment—and suboptimal allocation of financial resources, e.g. the provision of credit by banks to socially undesirable activities—such as carbon-intensive or polluting businesses.

Carbon pricing and environmental regulation are the initial steps that need to be taken to address climate change problems. Governments can also give a mandate to central banks for the “greening” of financial regulation and monetary policy.

In any case, central bank policies need to be tightly coordinated with other policy instruments.

B. Greening monetary policy: a major challenge for central banks

Until now, the role of monetary policy in making the transition to a low-carbon economy has not been on the agenda of central banks in the “advanced economies”. As Benoît Coeuré, member of the executive board of the ECB, puts it: “An area that has received less attention

though, both in policy and in academia, is the impact of climate change on the conduct of monetary policy.”

1. What should be the role of “green” monetary policy?

Central banks must contribute to making financial flows consistent with a sustainable roadmap, in accordance with the 1.5 degree increase scenario included in the Paris Agreement. This goal means that financial flows to the high-carbon economy should be reduced while at the same time encouraging massive financial flows to the low-carbon economy in order to close the huge carbon financing gap. The High-Level Expert Group on Sustainable Finance (2017) launched by the European Commission has estimated this gap as running at an annual €180 billion in the European Union.

The view of most central banks in advanced economies is that monetary policy should be based on the “neutrality principle”, i.e. central banks should not influence markets in their role of allocating financial resources towards the different sectors of the economy. Consequently, central banks should not take measures in favor of low-carbon industries. This view must be challenged for two reasons. First, it is based on the efficient market hypothesis, which does not hold in the case of market failures such as climate change, as indicated previously. Financial investors do not take into account negative externalities related to climate change, leading to a suboptimal allocation of financial resources. Secondly, existing empirical evidence provides converging results showing clearly that recent interventions by the ECB and the Bank of England, which have taken the form of unconventional monetary policy operations (purchases of corporate bonds), are far from “neutral”. They have been significantly biased in favor of high-carbon sectors, such as the car and fuel industries.

2. Policy tools to impact credit allocation and investment decisions for the transition toward the low-carbon economy

As we have shown, until now the greening of monetary policy has not been a priority for central banks and academic research. The aim of this section is to provide some notion of what the instruments of a “green” monetary policy would look like, the major goal of which would be to contribute towards closing the huge carbon financing gap mentioned above. We will focus on monetary policy strictly speaking (and not on prudential policy related to climate change risks, a topic which has been already addressed by central banks).

29 “Monetary policy and climate change”, speech by Benoît Cœuré, member of the Executive Board of the ECB, Conference on “Scaling up Green Finance: The Role of Central Banks”, Berlin, November 8, 2018
31 Corporate Europe Observatory (2016), “The ECB’s ‘quantitative easing’ funds multinationals and climate change”, December 12
2.1. Greening conventional monetary policy

- Modulation of interest rates in open-market operations: Kempf suggests that central banks introduce negative and positive risk premiums charged to commercial banks on the money market according to the degree to which they align themselves with the 1.5°C scenario laid out by the Paris Agreement on Climate Change. Risk premiums charged to commercial banks would be determined on the basis of a notation corresponding to the average climate risk of their portfolios.

- Incorporate environmental criteria in the eligibility policy: according to current criteria, bonds are eligible for purchase as collateral by the ECB if they are rated as investment-grade by at least one ratings agency. A more proactive approach to align monetary policy to the Paris Agreement would require that climate criteria be introduced in the rating of assets purchased by central banks. A recent study has shown that the eligibility policy of the ECB has a significant impact on the spread (risk premium) of the assets selected to be used as collateral. The “collateral channel” may be an efficient way of greening monetary policy.

- Directed green credit instruments: Fry (1995) classifies six main credit policy instruments, namely, subsidized loan rates, differential discount rates, direct budgetary subsidies, credit floors, direct budgetary subsidies, and loans by public specialized financial institutions. Among these, the most commonly used instrument is subsidized loan rates for priority sectors. To incentivize commercial banks to lend to priority green sectors at lower rates, a central bank could use differential discount rates, where banks extending credit to green investment can rediscount bills at a lower rate.

- Another way for the central bank to influence credit allocation is the use of differentiated reserve requirements that could be linked, for example, to the composition of commercial bank portfolios. As pointed out by Epstein (2007: 12), “variable ‘asset-based reserve requirements’ were [historically] widely used [...] to promote lending to desired sectors.” The reserve requirement ratio is the share of deposits that banks and other depository institutions such as savings institutions and credit unions must hold in reserve and not lend out. Reserve requirements have a significant impact on banks’ ability to create credit and thereby also an economy’s money stock. If the central bank lowers the reserve requirement, banks can increase

---

their lending. Allowing lower required reserve rates on privileged green assets would be a way of favoring green investments over conventional investments (Campiglio 2016).37

Directed green credit instruments and differentiated reserve requirements are more suited to developing countries and emerging market economies.

2.2. Greening unconventional monetary policy

Unconventional monetary policy (UMP) was first employed by the Bank of Japan in the early 2000s to fight deflation when nominal interest rates were already at the zero lower bound. Most central banks in advanced economies have also resorted to UMP in the aftermath of the GFC. Quantitative easing (QE) has been the most important form of UMP. It essentially consists of large-scale asset purchases from banks and other financial institutions via open market operations. These asset purchases mainly include government bonds, although some central banks have also bought corporate bonds and equities.

There are conflicting views regarding the efficacy of QE in general. Regarding climate change, as mentioned above, existing evidence has shown that the corporate bond purchase programs of the ECB and the Bank of England have been biased in favor of high-carbon sectors. The argument has been made that future asset purchases under QE could be directed toward the purchase of green financial assets, such as “Green Bonds”. This ‘green QE’ would provide a large and stable demand for green bonds issued by companies or public development banks (Anderson, 2015).38 The OECD (2016) has emphasized that green bonds will be a large and growing market in the 2020s globally, and it emphasizes the need for policy support in developing the green bond market.39

Other proposals have been made both to stimulate green funding through the issuing of a new category of monetary assets and to enhance the solvability of low-carbon projects by authorizing project developers to reimburse loans with “Carbon Certificates” (CCs) representing avoided emissions (Aglietta & Hourcade, 2012).40 These CCs could then be used as collateral by commercial banks during their refinancing operations with the central bank.

Academic work based on Post-Keynesian Stock Flow Consistent (SFC) models has shown that “green QE” contributes significantly to accelerating green investments in infrastructure, housing, and transportation.41

Investing in renewable energy and sustainable infrastructure could be the most effective way to promote sustainable growth, since future investment in infrastructure and technology would have to be low-carbon in order to be future-proofed and consistent with the long-term emission reduction targets set by the Paris Agreement on climate change.

3. Central banks in developing and emerging market countries

This paper has focused on central banking in advanced economies. A comparison with central banks in emerging and developing countries (EMDCs) is useful. In many EMDCs, central banks have begun to play an important role in addressing the risks posed by climate change and the need for green investment, as shown by a Report by the New Economics Foundation (2017).42

This can be explained by the fact that EMDCs are more exposed to the immediate challenges of climate change. Many face greater physical risks, including more frequent, climate-change-related, severe weather events. They also recognize the need to rapidly shift their economies to a sustainable ‘green growth’ path for their future prosperity and energy security.

In contrast to advanced economies where central bank mandates are predominantly focused on macroeconomic stability, on paper many of the central banks in EMDCs have a broader mandate to support sustainable development and the government’s economic policy agenda. Three different categories of intervention are regularly used in some of these countries to address the challenge of green finance and climate change: (1) green credit allocation instruments; (2) green regulatory (prudential and macroprudential) instruments for safeguarding financial stability, and (3) other green central banking activities, such as developing green finance guidelines or setting up green bond markets. It is interesting to note that instruments 1 and 2 are mentioned above in section 2.1 as those which could be implemented for the greening of monetary policy in advanced economies.

The People’s Bank of China claims to have implemented the most ambitious measures towards the greening of monetary policy. The policy measures they have adopted are shown below.

The case of the People’s Bank of China

- August 2014: Launch of the Green Finance Taskforce by PBOC
- Guidelines and information system to encourage environmental risk analysis by financial institutions
- Active policy in favor of green lending
  - Capital requirements reduction for green lending
  - Relending facility to provide low-cost funding for green loans
  - Green bonds with lower ratings accepted as collateral

To what extent these official policies have in fact been implemented and what real impact they have had remains to be seen. Nevertheless, two major general differences between developed and developing countries should be mentioned:

- EMDC authorities seem to rely more on direct and administrative regulation than do advanced economies because financial markets there are not as developed
- Political independence of central banks does not exist to the same extent in EMDCs

If we admit that climate change is a market failure, and financial stability a public good, it seems reasonable to assume that the new era of central banking in advanced economies will require resorting to more direct regulation and reconsidering the political independence of central banks.

Concluding remarks

Historical experience shows that CBs have constantly evolved since their inception in order to adapt to changes in their environment. Crisis and financial instability management has been a constant concern of CBs, but it has taken on a new dimension following the GFC. The result is that the dominant central banking model based on inflation targeting has been shattered. However, CBs have not learned all the necessary lessons. The current situation clearly shows the lack of coordination between monetary policy and fiscal policy. Such a coordinated policy would represent a break with the contradictory situation where quite restrictive national fiscal policies and austerity measures are applied alongside accommodative monetary policies in the Eurozone. The GFC demonstrated that fiscal policy must be viewed as an integral part of financial and macroeconomic policies. While central banks had to resort to unconventional policies, injecting huge amounts of liquidity in the financial system and dramatically lowering interest rates, governments responded to the crisis with exceptional support for the financial system in the form of capital injections, debt guarantees, and asset purchases, all of which naturally left its mark on public finances. A new paradigm for central banking has emerged suggesting that the political independence of central banks needs to be reconsidered. Clearly, since the GFC central banks have moved from a “narrow” vision of their role to one that is broader. Yet, neither this nor the independence of central banks has been democratically
discussed. The ECB is probably the most independent central bank in the world because its independence and price stability mandate are enshrined in its statutes.

At the beginning of the 21st century, CBs face two interrelated challenges: financial instability and the necessary transition to a low-carbon economy. Since the crisis, central banks acquired more responsibilities and implemented a wide range of tools to prevent the collapse of the entire financial system and ensure financial stability. Today they have numerous tools at their disposal to affect credit allocation and the investment behavior of financial firms. It is their responsibility to ensure financial stability, and to incorporate in the policy analysis and decision-making processes climate and environment related risks. This is the challenge in the new era of central banking.

References


Blanchard, O. (2010), Rethinking Macroeconomic Policy, IMF Staff Position Note, February 12, SPN/10/03


Corporate Europe Observatory (2016), “The ECB’s ‘quantitative easing’ funds multinationals and climate change”, December 12


