

Working Paper Research

September 2022 N° 413

Economic research at central banks: Are central banks interested in the history of economic thought?

by Ivo Maes



Publisher

Pierre Wunsch, Governor of the National Bank of Belgium

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ISSN: 1375-680X (print)

ISSN: 1784-2476 (online)

Abstract

With central banks becoming monetary authorities, research departments have become a core element of a modern central bank. Crucial elements of a central bank research department are contributing to monetary policymaking and sustaining a dialogue with the academic community. The importance of historical research (and central banks do not really make a difference between economic history and the history of economic thought) varies a lot. The historical curiosity of influential central bankers and the commemoration of anniversaries are important factors hereby. Historical research can allow central banks to take more distance and can help to avoid a “this time is different” view.

Keywords: central banking, economic research, economic history, history of thought.
JEL Classifications: E42, E58, G28, N10.

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The author would like to thank all those who contributed to this project, especially participants of the 2022 ESHET (Padua) as well as Bertram Schefold and Raf Wouters. The usual caveats apply.

The views expressed in this paper are those of the authors and do not necessarily reflect the views of the National Bank of Belgium or any other institution with which the author is affiliated.

Non-technical summary

A research department is now a core element of any modern central bank. This was not always the case. The growth of research departments in central banks is closely related to their transformation from issuing banks, with more commercial tasks mainly relating to discount credit, into modern monetary authorities. It is also related to the need for the management of the monetary system, especially after the demise of the Gold Standard. Moreover, the growth of research departments, not only in central banks, is an expression of the growing importance of a more systematic and scientific approach in modern society. In the European Union, the importance of academic research for central banks was reinforced by the creation of the European Central Bank, which started operating in June 1998. Two elements are clearly important for any modern central bank research department: contributing to monetary policy-making and sustaining a dialogue with the academic community. Research departments fulfil very much a bridging function between monetary policy-making and the academic world. This is more or less a constant in the history of central banks.

As part of a pluralist approach towards research, historical research can have important benefits. Firstly, a historical perspective can offer insights into the relative strengths and weaknesses of economic theories. Theories are techniques of thinking and remain partial. So, it is important to select theories which highlight the relevant features of reality. The great Austrian economist Joseph Schumpeter approvingly referred to Jules Henri Poincaré's observation, "tailors can cut suits as they please; but of course they try to cut them to fit their customers". Secondly, for policy-makers, the policy regime is of crucial importance. Sometimes, one tends to take the policy regime as given, rather ignoring that a change in regime will affect economic events and policy outcomes. At other moments, on the contrary, there are heated discussions about the policy framework. In both cases, thorough economic research can help central bankers to build a robust economic policy framework. A broad historical approach, which can offer some distance and a wider variety of experience, has a role to play.

TABLE OF CONTENTS

1.	Introduction	1
2.	Historical evolution of central banks and their research function	2
3.	Historical research at central banks.....	5
4.	Conclusion	7
5.	References	8
	National Bank of Belgium - Working Papers Series	9

1. Introduction

A research department is now a core element of any modern central bank. This was not always the case. The growth of research departments in central banks is closely related to their transformation from issuing banks, with more commercial tasks mainly relating to discount credit, into modern monetary authorities. It is also related to the need for the management of the monetary system, especially after the demise of the Gold Standard. Moreover, the growth of research departments, not only in central banks, is an expression of the growing importance of a more systematic and scientific approach in modern society.

In the European Union, the importance of academic research for central banks was reinforced by the creation of the European Central Bank, which started operating in June 1998. Professor Otmar Issing, previously the chief economist of the Deutsche Bundesbank who became responsible for the ECB's Directorates General Economics and Research, gave a strong impulse to the research activities of the ECB. He described the analysis and research function as "a weighty responsibility". Indeed, in central banks, this area is at the very centre of monetary policymaking. "This is where the analyses on the real economy and monetary conditions are produced, macroeconomic projections drawn up, speeches on monetary policy drafted, and relevant public statements crafted. In-house research and the monitoring of the latest developments in economic studies outside are further indispensable elements" (Issing 2008: 71).

Two elements are clearly important for any modern central bank research department: contributing to monetary policy-making and sustaining a dialogue with the academic community. Research departments fulfil very much a bridging function between monetary policy-making and the academic world. This is more or less a constant in the history of central banks. In the policy work of a research department, one might further distinguish two types of activities. First, there is the role as a think tank, proposing new policy initiatives and proposals, very much a bottom-up activity. Secondly, once policy decisions are taken, research departments play a role in the concrete elaboration of policies, much more a top-to-bottom process.

In this paper we will go into question of the importance of historical research at central banks. A first observation is that central banks, rightly or wrongly, do not really make a difference between economic history and the history of economic thought. As research at central banks is policy oriented, central banks want to get the research which contributes to their objectives. This paper has both a descriptive and a normative component. As for the actual practice, one can note a great variation in the importance of historical research between central banks. The interest of influential central bankers in history and historical research and the commemoration of anniversaries are important factors hereby. As for the

“normative” issue, the argument here is that historical research can allow central banks to take more distance and can help to avoid a “this time is different” view. The paper is divided in two main sections: historical evolution of central banks and their research function; and historical research at central banks.

2. *Historical evolution of central banks and their research function*

Modern central banks are the outcome of an evolutionary process. At the origin, they were mostly so-called “banks of issue”, with a mix of private and public functions. For instance, the National Bank of Belgium, founded in 1850, was, in essence, an issuing and discount bank (Maes 2010). It had three important missions: the issue of banknotes; the organization of short-term commercial credit, in particular the rediscounting of commercial paper (short-term debt obligations related to commercial transactions); and the function of State cashier. Over time, the monetary system has been evolving, with gold gradually being replaced by fiduciary money. Originally, banknotes represented claims on metal standard money and were intended mainly to facilitate large-value payments. At the end of the 19th century, banknotes became more widely established as payment instruments. This large-scale replacement of coins by notes in the monetary circulation led to a growing concentration of countries' stocks of precious metal at their banks of issue (the early central banks). So, the banks of issue became the custodians of their country's gold. This contributed to the growing importance of the "monetary" function of the central banks, as compared to its traditional "credit" function (discount credit). This contributed also to reinforcing the public character of the banks of issue.

In this changing world, the central banks needed more information on how the economy was evolving. So, they decided to create “Economic Services”, even if this concept remained, initially, rather vague. In the last decades of the 19th century the central banks of England, Germany, France and Italy created an office that was responsible for compiling statistics and preparing reports (Feiertag 2005: 17). There are significant parallels between the creation of these Economic Services at the different central banks. So was the need for information on the domestic economy a crucial driving force to set up a research unit (Martin-Aceña and Tortella 2006: 3). Further common elements were the links with the library (a specialised documentation centre) and the recruiting of brilliant economists, mostly drawn from the academic world, like Paolo Baffi at the Bank of Italy, Germán Bernácer at the Bank of Spain, Albert-Edouard Janssen at the National Bank of Belgium or Pierre Quesnay at the Bank of France (who became, in 1930, the first General Manager of the Bank for International Settlements).

The First World War led to the general collapse of the Gold Standard. As emphasized by John Maynard Keynes, in *Auri Sacra Fames* (the accursed hunger for gold), the First World War, with the suspension of convertibility, concentrated gold in the vaults of the central banks, "and these Banks have not released it". But he also admitted that gold continued to exercise a strong psychological influence, "Gold is out of sight – gone back again into the soil. But when gods are no longer seen in a yellow panoply walking the earth, we begin to rationalize them" (Keynes 1930: 183). Moreover, the war caused severe economic damages to many European economies and led to huge increases in the supply of money. Consequently, in the early interwar period, several European economies were confronted with severe problems of inflation, budget deficits and a large government debt. As there was no longer an automatic pilot, the need for economic analysis became paramount. So, in several central banks Economic Services were reinforced or created to analyse the policy problems with which the economies were confronted. These initiatives further illustrate that economic analysis at policy-making institutions is mainly a demand-led process, and driven especially by concrete policy problems, especially economic and financial crises. Through time, these economic services have been expanding and have been transformed into fully fledged "Economics and Research Departments".

At the end of the 20th century, the start of the economic and monetary union also implied some dramatic changes for research departments of the central banks of the euro area. From the outset, Professor Issing, responsible for the ECB's Directorates General Economics and Research, was at pains to stress the importance of academic research for monetary policymaking. A crucial reason for this was that EMU presented an unprecedented challenge, a unique event without historical parallel. From an economic analysis perspective, the crucial issue was that EMU implied a "regime shift". For an analysis of such fundamental changes in the economic policy framework, Issing referred to the work of Nobel laureate Robert Lucas (1976), "His core finding is that individual economic agents' adjustment to policy changes can be associated with sizeable changes in macroeconomic variables ... As a result, models based on historical data using empirical parameters become unreliable or simply useless. If policy ignores the influence of the regime shift and continues to rely on existing models or parameters, mistakes will inevitably result" (Issing 2008: 79). The awareness of the ensuing "extreme degree of uncertainty" became a crucial leitmotiv in preparations for the ECB's single monetary policy.

For Issing, economic research was crucial to handle this uncertainty, "There was no blueprint for the introduction of a new currency under these special circumstances. The obvious first step was to take stock of current economic thinking. Zero hour for the ECB as a new central bank was the hour of economics. What insights were relevant, and had they

been put to the test in central bank experience?" (Issing 2008: 184). However, Issing also pointed up the limits of academic research. "In spite of all our diligence and all our efforts - including in-depth discussions with experts from other central banks and academia - we realised that, while being indispensable in designing a successful monetary policy, economics could not provide a clear, conclusive answer that would relieve the central bank of the need to decide for itself. So we had to discuss all the possible options and weigh up their respective advantages and drawbacks" (Issing 2008: 185).

So, right from the beginning, the ECB sought to keep in close contact with the academic world (Maes 2010). It set up an intensive dialogue via a wide range of initiatives such as conferences, visitor programs and seminars. Publications, especially in the Working Paper series of the ECB, were also stimulated. The establishment of the ECB, and the importance it attached to economic research, would soon become a spur to other central banks to reinforce their research capacities, too.

Furthermore, the academic world became interested in the European central banks' research performance. In an early article entitled "*Central banks: from monopolists to competitors*", Sylvester Eijffinger argued that, "The national central banks in the ESCB will ultimately be given the same role as the regional Federal Reserve Banks within the American system of central banks. ... they will start competing with each other in the quality of their policy analysis and applied scientific research. It is precisely this quality which, alongside the personal authority of the president or governor, is a key determinant of the influence of the national central bank in the Governing Council. ... In short, the national central banks within the ESCB will gradually start competing with one another in the field of policy analysis and research and, at the same time, enter into rivalry with the ECB's own research department ... They will have to find their own niche in this spectrum. This also means that they will have to make better use of their comparative advantages (geographical location, specific research experience, etc.)" (Eijffinger 2001: 6-7). Moreover, Eijffinger provided a first comparison of the research performance of the European central banks in terms of their publications in refereed economic journals, and thus actually fuelled competition between central banks in the field of research.

The importance attached to research at the European Central Bank also came to the fore in a speech by its then President, Jean-Claude Trichet, in May 2007. He specifically discussed whether central banks should be producers or simply consumers of research, asking: "Should central banks allocate resources to costly in-house research, rather than buying research output from universities and other research institutions?". He advanced four reasons why the ECB had decided to develop its own research capability:

"First, central banks need research-oriented economists to follow the latest developments in economics and to recognise their potential relevance for policy-making. ... A second reason ... is that a major task of central bank research is to bridge the possible gap between academics and policy-makers and to create occasions for interactions with the academic community where the diversity of views can be expressed and discussed. ... A third argument ... is that competition with the academic world ensures adequate monitoring of the quality of models and analytical tools used for policy. ... Finally, a fourth reason ... is that the policy process sometimes requires research output not yet available at universities or other research institutes. The ECB has at times identified issues of fundamental importance for understanding the impact of monetary policy in the euro area, upon which limited information was available" (Trichet 2007: 1-2).

3. *Historical research at central banks*

As already observed, central banks do not really make a difference between economic history and the history of economic thought. As research at central banks is policy oriented, central banks want to get the research which contributes to their objectives. As for the importance of historical research at central banks, one can observe a wide variety of practices. In certain central banks, like the Bank of Italy, there is a Historical Research Division, while in other central banks historical research is nearly absent, with a wide variety of situations in between. In general, historical research, like in the academic community at large, is rather losing ground. There are two main factors which can account for this wide variety of experiences: the importance of personalities and anniversaries. In many central banks historical research is dependent on personalities, both the personal interest (and demands) of high level officials in historical questions and the curiosity of researchers who are investing in historical research. Anniversaries are occasions for remembrance and reflections on one's history and also moments when central banks typically pay attention to their origins and growth. A special place in the world of central banking is taken by the Bank of England, not only because it is second oldest central bank (after the Riksbank), but also because of the central role of the pound sterling and the London financial markets in international monetary history. To commemorate its tercentenary, in 1994, the Bank of England organized a conference "The future of central banking" (Capie et al. 1994). Many central banks take the occasion of an anniversary to publish books on their history. In the early decades of the 19th century several central banks were founded, starting with the Banque de France in 1800, giving rise to many commemorations in the first decades of the 21st century. For instance, in 2016, the the Austrian Nationalbank published a book to commemorate its bicentenary (Jobst and Kernbauer 2016). Moreover, the oldest central bank in the world, the Sveriges Riksbank, celebrated its 350th anniversary in 2018, publishing also a volume on the Sveriges Riksbank and the history of central banking

(Edvinsson, Jacobson and Waldenström 2018). Much earlier, in 1950, to commemorate its first century, the National Bank of Belgium published a volume on its history until the end of the First World War (Kauch 1950).

The crucial question, however, is what historical research can contribute to monetary policymaking. Here the argument is that a pluralist approach to policymaking can have significant advantages. Typically, central banks give a lot of attention to the history of the last year. Indeed, the annual economic report is for many central banks one of their flagship publications. But is it important to look at different time spans. This can be intra-day analysis, especially important to understand the functioning of financial markets, but why not also take a longer perspective, of several years or decades? It is crucial not only to look at times when things go well, but also at crisis periods.

In the light of the Great Financial Crisis of the first decade of the 21st century, there is a tendency to perceive the history of central banking as one of an institution whose predominant concern varied between “normal” times and “extraordinary” times. In a contribution on the history of the financial stability mandate (FSM) of central banks, Gianni Toniolo and Eugene N. White, conclude that central banks performed quite well in “normal” times, but had difficulties during “extraordinary” times, also because of financial innovations: “most supervisory regimes successfully managed financial systems in ordinary times, sometimes preventing a troubled institution from generating a systemic crisis, but were less capable of dealing with extraordinary macro-systemic shocks, which they were not designed to confront. When macro-systemic shocks overwhelmed supervisors’ capacity to meet the FSM, the shocks led to regulatory/supervisory regime shifts that primarily addressed past deficiencies, rather than focusing on reforms to ensure the stability of a continually innovating financial system.” (Toniolo and White 2016: 485).

An interesting issue is further the question, who was aware of the Great Financial Crisis? Among the few persons who are considered as a Cassandra who was warning for the crisis, one might single out Nouriel Roubini, Alexandre Lamfalussy and Bill White. Typical for them was a wider historical perspective. Roubini and Lamfalussy were marked by the Latin American debt crisis in the 1980s. White was very much under the impression of the Japanese experience, with an asset price bubble in the 1980s followed by a “lost decade”. For these three, this broader historical approach was of crucial importance to let them take distance. The three were marked by experiences whereby bust had followed on boom. It made them reticent to an approach of “this time it is different”. Furthermore, Ben Bernanke, who served as the Chair of the Federal Reserve Board during the crisis, was marked by his studies of the Great Depression, a valuable asset to steer monetary policy during such a

profound crisis. As is well known, history does not repeat itself. However, it can contribute to a broader perspective. This can help to see parallels and differences and help identify structural changes.

Naturally, from a policy perspective, it would even be better to prevent crises. For this, a more robust, or, at least, less fragile, economic policy framework is important. After the Great Financial Crisis, actions in different areas were undertaken, like strengthening corporate governance and an increase in capital and liquidity. There remains however the issue, why was this not done earlier? Different elements can be advanced: (1) banks were happy, as they were making big profits; (2) central banks were happy as their objective of price stability was, more or less, achieved; (3) like in other booms, there was the opinion of "this time it is different"; and (4) economic theory was based on analytical frameworks where history was absent, and crises did not happen. This all shows that the political economy of economic and financial reform would merit a high place on the future research agenda of historians (of economic thought).

4. Conclusion

Economic research has become a core activity of a modern central bank. As part of a pluralist approach towards research, historical research can have important benefits. Firstly, a historical perspective can offer insights into the relative strengths and weaknesses of economic theories. Theories are techniques of thinking and remain partial. So, it is important to select theories which highlight the relevant features of reality. The great Austrian economist, Joseph Schumpeter (1954: 15), approvingly referred to Jules Henri Poincaré's observation, "tailors can cut suits as they please; but of course they try to cut them to fit their customers". Secondly, for policy-makers, the policy regime is of crucial importance. Sometimes, one tends to take the policy regime as given, rather ignoring that a change in regime will affect economic events and policy outcomes. At other moments, on the contrary, there are heated discussions about the policy framework. In both cases, thorough economic research can help central bankers to build a robust economic policy framework. A broad historical approach, which can offer some distance and a wider variety of experience, has a role to play here. As observed by John Steinbeck, "The study of history, while it does not endow with prophecy, may indicate lines of probability" (as quoted in Triffin 1960: 17).

5. References

- Capie F. e.a. (eds.), 1994, *The Future of Central Banking: The Tercentenary Symposium of the Bank of England*, Cambridge: CUP.
- Edvinsson Rodney, Tor Jacobson, and Daniel Waldenström, editors, 2018, *Sveriges Riksbank and the History of Central Banking*.
- Eijffinger, S., 2001, *Centrale Banken: van monopolisten tot concurrenten*, Tilburg, Faculteit der Economische Wetenschappen, Katholieke Universiteit Brabant.
- Feiertag, O., 2005, Introduction: Pour une histoire de l'autorité monétaire des banques centrales, in O. Feiertag (ed.), *Mesurer la monnaie*, Paris: Albin Michel, p. 13-26.
- Issing, O., 2008, *The Birth of the Euro*, Cambridge: Cambridge University Press.
- Jobst Clement and Hans Kernbauer, 2016 *The Quest for Stable Money, Central Banking in Austria, 1816-2016*.
- Kauch, P., 1950, *La Banque Nationale de Belgique 1850-1918*, Brussels: NBB.
- Keynes, John Maynard. 1930. "Auri Sacra Fames." In *Essays in Persuasion*, edited by John Maynard Keynes, 181-185. London: Macmillan, 1931.
- Lucas R., 1976, Economic Policy Evaluation: A Critique, *Journal of Monetary Economics*, 104-129.
- Maes, Ivo. 2010. *A Century of Macroeconomic and Monetary Thought at the National Bank of Belgium*. Brussels: National Bank of Belgium.
- Martín-Aceña, P. and T. Tortella, 2006, Regulation and Supervision: The Rise of Central Banks' Research Departments, mimeo.
- Schumpeter, Joseph Alois. 1954. *History of Economic Analysis*. New York: Oxford University Press.
- Toniolo Gianni and Eugene N. White, 2018, The Evolution of the Financial Stability Mandate, in *Central Banks at a Crossroads*, Michael D. Bordo, Oyvind Eitrheim, Marc Flandreau and Jan F. Qvigstad, editors, 2016.
- Trichet, J.-C., 2007, The role of research in central banks and at the ECB, Speech, Award of the Germán Bernácer Prize, Madrid.
- Triffin, Robert, 1960. *Gold and the Dollar Crisis. The Future of Convertibility*. New Haven: Yale University Press.

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Cover: NBB CM – Prepress & Image

Published in September 2022