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Economists, Economic Knowledge, and Central Banks

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Abstract

What do economists do in central banks? Why do central banks hire economists? This book investigates the evolving role of economists and economic knowledge within central banks, arguing that their current centrality is neither self-evident nor historically inevitable. While the presence and influence of economists in central banks today may seem natural, this book shows that it is the result of a complex, gradual, and uneven historical process shaped by institutional structures, disciplinary transformations, and shifting relationships between science and policy. Drawing on a rich but dispersed body of literature, the book traces how economists progressively gained authority through the establishment of statistics departments, the adoption of macroeconometric models, and the emergence of a shared cognitive infrastructure between academia and central banks. Rather than focusing on individuals or doctrines, it examines general trends and institutional shifts across a series of national case studies to show how central banks function as boundary organizations, at the intersection of policy and science.

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1. Introduction

What do economists do in central banks? Why do central banks hire economists? The answer today comes as obvious to those familiar with economics or central banking: central banks are the institutions that conduct monetary policy, and economists are the professional figures that master, by training, ‘the science of monetary policy’—as phrased by three key figures of contemporary macroeconomics (Clarida et al. 1999). Thus, nothing would seem more ‘natural’ than seeing a large number of economists working within central banks, at different levels (including the upper echelons), and to see economists exerting a significant influence over policy decisions, based on their expert knowledge of the issues at stake.

It is indeed well-documented that economists working at central banks in the beginning of the twenty-first century had become more numerous and had gained more influence over policy decisions than they had at the beginning of the twentieth century. But is this ‘marriage’ between central banks and economists really so ‘obvious’ and ‘natural’? After all, even as late as 1958, the Bank of England’s Governor Lord Cobbold (who had made a previous career as a banker) famously argued that his institution was ‘a bank, and not an [economists’] study group’ (Acosta et al. 2024a, 5); about a decade later, Federal Reserve Chairman William McChesney Martin (who also made a career as a financial broker, and held English literature degree) still warned against ‘statisticalitis’ spreading in economics, and considered he could dispense with his economic staff’s forecasts (Acosta and Cherrier 2021, 344). And, more recently, European Central Bank President Christine Lagarde (a lawyer by training) openly antagonized the ‘tribal clique’ of economists.¹

This book provides an overview of the evolution of the role and place of economists and economic knowledge within central banks, taking a history of economics perspective to highlight general trends across various national and institutional contexts. Despite its reliance on case studies, this book is neither about exceptional circumstances, nor about particular individuals. *Single* economists, inside or outside

1 See <https://www.weforum.org/podcasts/agenda-dialogues/episodes/davos-2024-town-hall-lagarde-how-to-trust-economics/>; (retrieved 30/05/2025).

central banks, play no significant role in our story, which pertains to general trends and structural shifts: it is not about the hero, but the chorus.² Following this perspective, we argue that the changing role and place of economists within central banks mirrors the trajectory of these institutions as ‘boundary organisations’, straddling the State and markets (Coombs and Thiemann 2022) but also policy and science (Goutsmedt and Sergi 2025).

The evolution of central banks’ positioning at the first boundary (State-market) provides a general framing for central banks institutional history, i.e. the evolution of their missions and role at the interface between the State and the markets. The term ‘central bank’ only began to be used during the late nineteenth century, to refer to commercial banks that had been granted some special privileges by the government (such as complete or partial monopoly of issue, holding government’s deposits, etc.). These were thus commercial banks that had moved closer to the boundary with the State. And, indeed, from the early twentieth century, these ‘special’ commercial banks started to be seen as ‘organs of public policy,’ in charge of the ‘maintenance of the currency and the money market’ (Kisch and Elkin 1928, 55). After World War II, a further displacement occurred, with a wave of nationalization of most central banks. Moreover, they were subordinated (more or less strictly) to governments (the Treasury, in most cases), which effectively determined monetary policy, leaving to central banks a mostly operational role (that is, implementing government’s decisions). Finally, since the 1990s, central banks became ‘independent’, regaining autonomy from the State.

Although some further details about these changes are addressed in this book, our aim is not to develop an institutional history of central banking.³ Our purpose in the following pages is to address the second

² This perspective does not intend to deny the influential role that some particular individuals have played in this or that specific central bank or circumstance. The reader interested in portraits of particular individuals in central banking, including some economists, will find a rich set of autobiographies and biographies available: see e.g., Carli (1995), Axilrod (2009), Volcker and Gyohten (1992), and Dow (2013).

³ The institutional history of central banks is covered by an abundant literature, including contributions by economists (including central bankers themselves), economic historians, historians, and political scientists. For institutional histories of some national central banks see e.g., Conti-Brown (2016), Goodhart (2018), Hetzel (2023), Lie et al. (2020), Meltzer (2003; 2010a, 2010b), Rougier and Sember (2018), and Toniolo (2022). For a comparative perspective and a compact presentation of the histories of various central banks, see e.g., Edvinsson et al. (2018), Singleton (2011), Siklos (2006), and Ugolini (2017). Also, central banks are notorious for sponsoring and editing in-house histories: see e.g., Kynaston (2017), Reis (1996), Uribe (2017), Watts and Rymes (2014).

‘boundary’ relevant to these organizations: that is, the boundary between science and policy. Understanding central banks as ‘boundary organizations’, navigating in-between science and policy, provides, we argue, a clear framework to understand the evolving role of economists and economic knowledge within central banks.

This framework relies on three characteristics, following Hoppe et al. (2013) and Goutsmedt and Sergi (2025). First, it depicts central bank economists engaging in a ‘double participation’ to both ‘sides’ of the boundary—living a ‘double life’: for instance, maintaining collaborations with universities and attending research events, while at the same time participating in the routines of the policy work (preparing briefs, forecasts, scenarios, etc.) and taking part in monetary policy meetings. Second, a boundary organisation is subject to ‘double accountability’. For central banks, this means that their operations and decisions are, on the one hand, assessed against their results in controlling inflation or maintaining financial stability (that is, their policy mandate or mission). On the other hand, central banks may also have to face the judgment of academic economists, particularly on the scientific basis for their policy decisions (e.g., criticism about the type model they use to analyse the economy, or about their forecasting routines, etc.). Finally, boundary organisations usually produce ‘boundary objects’: i.e., ‘intermediate’ objects coproduced by actors that belong to the field of sciences and to the field of policy, and that allow for coordination between experts and policymakers. For central banks, models used in forecasting procedures are typical examples of such boundary objects.

The overall claim of this book is that central banks, throughout the twentieth century, moved much closer to this policy-science boundary—more specifically, closer to academic economics. Yet, since the very beginning of the twentieth century, central banks’ activities were already tangential to scientific activities; thus, to be precise, what we observe is that economists have become more ‘central’ in central banks. First, at the macro level, this means that ‘double participation’ has progressively become the norm: individuals with academic credentials in economics are now legion within central banks, often occupying positions at the highest hierarchical levels. Second, scientific ‘accountability’ has gained prominence. When providing a rationale for their policy decisions, central bankers deliberately employ technical language that echoes economists’ framing of economic problems. Central banks also derive

institutional prestige from their staff's ability to publish in academic journals, thereby making the organisation more attractive to highly qualified economists. Moreover, the tools they use are increasingly scrutinised by economists in academia and other institutions. Finally, economists' centrality in central banks is also reflected in the resources devoted to the development of new boundary objects—such as forecasting or stress-test models—which have become integral to central banks' daily policy routines and decision-making processes.

However, this evolution resulted from a gradual and nonlinear process. The growing influence of economists and economic knowledge has had various setbacks and faced outright rejection and dismissal, including in recent years. This reflects the fact, highlighted notably by Moschella (2024), that central banks remain 'political institutions', and not just 'epistemic communities': therefore, the role and place of economists and economic knowledge remains conditional to the way central banks engage with multiple audiences (financial markets, governments, and citizens) to build their political legitimacy. The milestones along this long and bumpy road are the changes to the type of economic knowledge that economists developed within central banks, as well as their relationship with economists in academia—or, more broadly, their relationship to economics as a discipline. In the following sections, we show how economists and economic knowledge first gained a foothold in central banks notably through the collection and analysis of economic statistics and the creation of economic studies departments at the beginning of the twentieth century (2.). After consolidating this statistical tradition—which has been maintained until the present day—economists in central banks adopted developed new forms of economic knowledge, notably macroeconomic models, in the 1960s and 1970s (3.). These models—still used in central banks today—gained prominence in policymaking during the 1970s and 1980s, thus helping consolidate economists' role and influence. The decisive shift in economists' influence within central banks, however, came in the 1990s, when a shared 'cognitive infrastructure' for monetary policy emerged between central bankers (staff economists and policymakers alike) and academics (4.). Following this turn, in the late 1990s central bank economists exerted significant influence not only over monetary policy, but also over economics as a discipline—especially throughout academic publications

(5.). This historical perspective allows a broader understanding of the recent challenges to, and future prospects for, economists and economic knowledge within central banks (6.).

By focusing on these aspects, our account relies on various strands of literature in the social sciences. Readers will thus find extensive (though not exhaustive) references to these different literatures. Our purpose is to propose a new, encompassing view, unifying the extant scholarship—otherwise dispersed across various disciplines within social sciences (political sciences, history, sociology, science studies, economics, etc.) and uses a variety of qualitative and quantitative approaches.

Social scientists have recently shown a keen interest in central banks, particularly regarding the role of economic knowledge produced by economists as a cornerstone of central banks' legitimacy and authority. This topic is actually related to a broader one: the relationships between economists/economics and policy (beyond central banks), and the different ways economists (and their ideas and tools) can shape policymaking—and, even more broadly, to the question of the role of sciences and scientists within modern societies. In their compelling 'Do Economists Make Policies? On the Political Effects of Economics', Hirschman and Berman (2014) distinguished three main mechanisms through which economists and economic knowledge shape policymaking.⁴ First, the growing prestige of economics as a discipline, built along the twentieth century (*cf. infra*) confers 'professional authority' to individuals exhibiting 'economics' credentials (training, professional identity). Second, economists exert influence via their 'institutional position' within the policymaking process, which allows them to weigh in (to various extents) on decisions: economists in central banks' decision units constitutes one of the typical illustrations of this channel. Finally, and more indirectly, economists contribute to shaping the 'cognitive infrastructure' of policymakers, framing the way policymakers think about economic problems and constraining the set of possible answers to solve them.

Despite the acquaintance with these broader questions and its reliance on a broad spectrum of contributions from the social sciences, this book takes a *history of economics* perspective. To be clear though, this is not an intellectual history of doctrines about monetary policies. Our approach follows a recent trend in the history of economics, that focus on the *practices* of economists (see Stapleford,

⁴ See Christensen (2021) for another survey of the literature on the influence of experts on policy decisions.

2017), that is, on the production of economic knowledge (such as theories), embedded in material artefacts (such as models), within specific intellectual communities (in or outside academia, like economists in central banks), and for specific purposes (such as producing expertise for policy).

This approach entails combining an understanding of the economic knowledge produced by economists with an understanding of the conditions under which such knowledge is produced. More specifically, it requires considering what an economist ‘is’ and ‘how’ he or she ‘became’ one—that is, it requires considering the sociology of the economics profession.⁵ In this respect, three major changes have unfolded since the post-war that constitute the main backdrop for the topic of this book. First, economics as *an academic field* has undergone substantial intellectual and methodological changes. Intellectually, or in terms of economic *theory*, a variety of approaches and national traditions were progressively marginalised within the profession, by a “mainstream” of economists sharing core theoretical principles—often labelled as a “neoclassical economics”.⁶ In terms of methodology, post-war economics has increasingly relied on mathematical models and statistical techniques.⁷ Both these intellectual and methodological changes entailed a transformation in the *training* and *intellectual framework* that define an ‘economist’, and, thus, a transformation in the type of economists working in central banks as well—so much so that ‘economists’ working in central banks in the 1930s bore little resemblance to ‘economists’ working in central banks in the 1990s. Second, economics firmly established itself as a major *field of expertise* within society—the very same job title of ‘economist’ became commonplace in all sorts of public institutions, international organisations, and private businesses—and, thus, in central banks as well.⁸ Finally, economics, both as an academic field and as a field of expertise, including at central banks, has *internationalised*. This process of convergence has been mostly

⁵ On the sociology of professions, see Abbott (1988). On economics and professionalisation, see e.g. Coats (1993), Fourcade (2009), Christensen (2017), and Tribe (2022).

⁶ On this transformation, see notably Morgan and Rutherford (1998).

⁷ On these aspects, see e.g. Weintraub (2002), Morgan (1992, 2012), and Qin (2013)

⁸ The rise of economic expertise has been addressed for different periods, countries, and institutional contexts. See e.g., Schmelzer (2016), Chwioroth (2010), Christian et al. (2018), and Berman (2022).

(although not exclusively) driven by *Americanisation*, as North American economics has played a major role in shaping the scientific and professional standards for economists around the world.⁹

Internationalisation is a relatively recent process and, thus, national traditions played, for a long time, a more defining role in the intellectual and professional identity of economists.¹⁰ Thus, although economics developed in the United States came to define, today, ‘what is an economist’ worldwide, each national tradition has resisted and adapted differently to this Americanisation of economics. Addressing the role of economists in central banks *in general* is therefore not an easy task, since the identity of economists and of economics is always imbued, to some extent, with national specificities. As a result of this difficulty (and others), the story told in this book, like the extant literature on the subject, relies on case studies of specific central banks and episodes.¹¹ Moreover, most of these case studies focus on Western central banks, with an overwhelming majority addressing the case of the Federal Reserve, the Bank of England, and, for the most recent period, the European Central Bank. Thus, the story told in the following pages should be considered with this qualification: it is a story built on the current knowledge on the topic, which is mostly based on a limited set of national case studies. This also entails focusing on specific time periods that are relevant for these case studies. As we emphasise in the concluding section, extending the analysis to more diverse national cases and conducting comparative work is precisely one of the important avenues for further research.

2. Measuring the Economy: Statistics and Studies Departments

In April 1928, the rococo ‘Galerie Dorée’ (‘Golden Hall’) of the Banque de France hosted an unprecedented event: an international conference of ‘central bank statisticians’, gathering 24 representatives of European and North American central banks. The purpose of the discussion was to harmonise the way central banks gathered, analysed, and disseminated economic statistics. In the previous decades, statistics had become a crucial activity within all central banks participating in the

⁹ See e.g., Coats (1997), Fourcade (2006), and Goutsmedt et al. (2021).

¹⁰ Nonetheless, it is worth pointing out that different episodes of internationalisation regarding economic expertise in central banks were observable well before the 1970s (*cf.* 2.3).

¹¹ The other major difficulty is the distinctive institutional history of each central bank, which creates specific organisational arrangements and cultures, thus creating different contexts for economists.

conference: statistics illuminated ‘the economic life of the country’, as argued by the Finnish delegate, making it possible to ‘observ[e] economic phenomena as a whole without theoretical prejudice’, as noted by the Hungarian delegate (Yee 2023, 16).

By the time of this meeting there still was a broad consensus of central banks’ usefulness as currency authorities, tasked with upholding the international gold-standard and maintaining a stable currency (Kisch and Elkin 1928, ch. 1).¹² The individual trajectories of existing central banks varied, as did the specific characteristics of their relation with the State—i.e., the conditions stipulated in their charters regarding the terms of loans to the government, the composition of their boards, etc. For the purpose of this book, however, we retain only one major feature from this institutional history: central banks are organisations located at a moving boundary between the State and the market (commercial banks, financial actors, and the more general public of non-financial firms and households); henceforth, one can understand their institutional history as the evolution of their positioning at this boundary. These movements had been shaped both by economic conditions and by policy debates. In the latter, economic knowledge (e.g., early monetary theories) produced, in general, outside central banks, played an important role, although not always a decisive one (2.1). In turn, this evolving position drove the type of economic knowledge produced inside central banks. In this section, we highlight the production of ‘economic statistics’ (i.e., the definition, collection, and statistical treatment of data about ‘the economy’) and ‘economic studies’ (i.e., the analysis of such data) as the earliest forms of such knowledge incorporated and developed within central banks. This encompassed, notably, statistics and studies about the banking sector (e.g., deposits, notes in circulation), about monetary and economic exchanges with the rest of the world (the ‘balance of payments’), and, later, about ‘the economy’ more broadly understood (output, price level, etc.). To produce economic statistics and economic studies, new administrative entities (‘Statistical Departments’, ‘Economic Sections’, ‘Research Divisions’, and the like) were progressively created by central banks across the world between the end of the nineteenth century and the postwar period (2.2). This general movement towards producing economic statistics and studies was evidently shaped by idiosyncratic patterns, related to the specificity of each national

12 On the history of the gold standard see e.g. Bordo and Schwartz (2009) and Eichengreen (1992).

central bank's position at the boundary between the State and markets. However, as the 1928 Paris conference of 'central bank statisticians' shows, various forms of cooperation across national central banks drove a significant convergence in the scope, methodology, and use of economic statistics and studies (2.3).

2.1 A Special Kind of Bank

The oldest 'central banks' date back to the seventeenth and eighteenth centuries: the Sveriges Riksbank (established in 1688), the Bank of England (1694), the Banco de España (1728). They were often referred to as 'banks of issue' precisely because they were commercial banks to whom the State granted some 'special' privileges, like the issuance of money. By the 1920s, however, these institutions were understood as playing a public role in the working of national economies (and the international monetary system), ultimately serving the public interest. This, however, did not mean that they should be under the control of the government. Rather, it was seen as desirable that they be independent from the government *and* any private individual interest, aiming instead at furthering the 'public interest' (Kisch and Elkin 1928; see also de Vale 2021). This consensus, however, was destroyed by the abandonment of the gold standard by several countries, starting in the early 1930s, and World War II.¹³ The wave of nationalisation that began in the postwar thus marked a further displacement of central banks towards the State. Nationalised central banks, now acting as public institutions subordinated to the executive—oftentimes the ministries of finance—continued their tasks and even acquired new ones.¹⁴

Public debate also played an important role in shaping the general opinion about what a central bank should and could do, and the specifics about how to do it. The public scrutiny and discussion of central banks took various forms—including pamphleteering, debates in the press, congressional and parliamentary hearings—and the politicisation of their mission and organisation only increased as

¹³ World War I had already led to the temporary abandonment of the gold standard. In the aftermath of the war, many developed countries and their central banks made the restoration of convertibility and the gold standard a priority, but the system proved short-lived (see e.g. Daunton 2023a, ch. 1).

¹⁴ On the missions of central banks, see e.g., Blinder (2004) and Bordo and Siklos (2018).

central banks' special position—their boundary status—became more apparent to the public, the governments, and to central bankers themselves.¹⁵ Economic arguments often played a role in these debates,¹⁶ but matters pertaining to central banking were definitely not perceived as being the exclusive domain of economic expertise alone. Economic knowledge thus had only limited influence in the debates about the status, missions, and organisation of central banks up to the mid-twentieth century. However, these earlier debates did have a substantial effect in progressively establishing economics as a field of expertise and in shaping economic literature—most notably monetary theories.

The history of monetary theories has been addressed by an abundant scholarship. It covers extensively the evolution of economic ideas about the nature of money, the functioning of the monetary and financial system, the role of commercial banks and financial markets, and the relation between money and 'real' activity (output, employment, etc.)—all of which, in turn, have fuelled a wide set of conceptions about the role of central banks, both in positive (descriptive or analytical) and normative (pushing projects for reform) terms.¹⁷ For the purpose of this book, two features highlighted by this literature are essential. First, debates about the Bank of England during the nineteenth century had an overarching influence over economic monetary thinking, far beyond England, and extending into the twentieth century (see e.g., Sayers 1957).¹⁸ The centrality of these debates can be explained, on the one hand, by the key position of the Bank of England in the international monetary system of the gold standard and, on the other hand, by the intellectual preeminence of British writers in the development

15 This process is perhaps best illustrated by one of the most famous images in the history of central banking: the cartoon 'The Old Lady of Threadneedle Street' (1797), which presented the Prime Minister wooing an old lady representing the Bank of England. For the context of this episode, see Kynaston (2017, chapter 4). On the political debates about the creation of a central bank in the US, see e.g. Singleton (2011, chapter 4), Mehrling (2010), and Lowenstein (2015).

16 See, for instance, the participation and impact of political economists like David Ricardo and Henry Thornton in the 'bullionist controversy' of the early nineteenth century about the convertibility of paper money. See e.g., Arnon (2011), Kynaston (2017, 89–98), and Laidler (1989).

17 On different 'traditions' in monetary thinking, see e.g. O'Brien (2007), Mehrling (2010), Laidler (2010), and Dimand (2010).

18 This influence is particularly relevant with respect to three major topics: the issue of convertibility (guaranteeing the convertibility of Bank of England's notes into gold at a fix rate) and its effect on prices; the actions needed to manage gold inflows and outflows; and the role of the Bank as the 'lender of last resort', which refers to offering loans to commercial banks in times of financial crisis to maintain the stability of the whole banking system. Bagehot's (1873) rule is perhaps the most well known contribution to this third issue: see e.g., Mehrling (2010) and Leloup and Trautwein (2024).

of economics.¹⁹ The latter extends from the nineteenth century to the 1930s and 1940s—John Maynard Keynes being the most obvious representative of British economists’ engagement with monetary theory. The second important element outlined by the history of monetary theories is the growing influence, starting from the 1920s, of different intellectual traditions in economics. In the 1930s, Swedish economists, for instance, featured prominently among those leading both academic debates and policy innovations. Indeed, the 1931 Riksbank decision to abandon the gold standard and to target instead the domestic price level was “based on ideas of Knut Wicksell and partly drafted by Swedish economists” (Straumann and Woitek 2009, 255).²⁰ But a longer-lasting ascendant trend was that of the North American traditions in monetary thinking—plural, since sharply contrasting positions existed, shaped by the debates about the establishment of the Federal Reserve in 1913—and by the previous, unsuccessful attempts of establishing a ‘central bank’ in the United States.²¹ The growing influence of US-based economists in post-war academic economics worldwide—the process of Americanisation of economics (*cf.* 1.)—overlapped with the key role that the Fed played in the international monetary system after the 1944 Bretton Woods Agreement.²²

2.2 Statistics, Studies, and Economists in Central Banks

Central bankers regularly participated in public hearings or debates in the press, offering their views—defending or explaining the bank’s actions. However, their credentials were those of experienced practitioners in the field of finance and banking; and not, in any case, based on their expertise in monetary theory. Yet, towards the end of the nineteenth century, new practices had begun to be adopted, turning central banks into producers of economic knowledge and laying the ground for economic expertise to develop in the following decades: the production of economic statistics and economic studies. These activities are to be understood broadly, especially insofar as different central

¹⁹ British economics (or, rather, ‘political economy’) built a distinct disciplinary identity and institutions sooner than in other countries (see e.g., Tribe 2022).

²⁰ About Wicksell’s monetary thought, see e.g. Boianovsky and Trautwein (2006). About the role of economists at the Riksbank, see notably Jonung (1979) and Wetterberg (2009).

²¹ On American monetary thinking, see notably Mehrling (1997).

²² On the history of Bretton Woods international monetary system, see e.g., Abdelal (2009), Gindin and Panitch (2012), and Daunton (2023b).

banks relied on different methodologies and techniques for the definition, collection, storage, statistical treatment, and analysis of their data about ‘the economy’.²³ They constituted a novelty for central banks for sure, but, more generally, also for society and for economics as a field. The literature on the social history of quantification has notably analysed this trend as the growing tendency of ‘governing by numbers’: this highlights the role played by statistics in managing the economic and social world, while, at the same time, they conventionally define and reshape the image of the world (via the categories, classifications, and concepts used).²⁴ In short, central banks were not the only institutions developing these activities: statistics were also on the rise in governments, statistical offices, international organisations, as well as think tanks, foundations, and other private actors.²⁵

The earliest departments of economic statistics and studies within central banks identified in the literature correspond to the three major central banks in existence at the end of the nineteenth century: the Bank of England, the Banque de France, and the German Reichsbank.²⁶ In France, recognition that the Banque de France was lagging behind in data collection—particularly in comparison to the Bank of England—led to the creation of a dedicated unit, the ‘Service des études économiques’ in 1872 (Martín-Aceña and Tortella 2016). In Germany, Reichsbank president Richard Koch initiated the establishment of a statistical department in 1895 (Yee 2023, 5). The Bank of England did not establish an ‘Economic Section’ until 1921, although the collection of statistics was already a well-established routine by then (Acosta et al. 2024a, 5).

It should not come as a surprise that many banks had no such departments in the late nineteenth and early twentieth centuries, as their core missions were largely limited to issuing currency and financing

23 On the emergence of the notion of ‘the economy’, that is, an understanding of how different economic actors and sectors are interconnected by the flow of goods and money, see notably Mitchell (1998), Schabas (2009), Hirschman (2015), and Angeletti (2023).

24 See Porter (1996), Stapleford (2009), and Desrosières (2011). See Mennicken and Espeland (2019) for a recent survey of the literature on quantification.

25 On these three last actors, see notably Fritsche et al. (2020).

26 In Italy, soon after the creation of the central bank in 1894, the first governor Giuseppe Marchiori created the ‘Ufficio Gabinetto del Direttore Generale’ to collect economic information and translate relevant foreign economics papers (Martín-Aceña and Tortella 2016, 144). However, a proper statistical unit, the ‘Servizio Studi Economici e Statistica’, was only created in 1926, after the Banca d’Italia was granted a monopoly on currency issuance, as well as the supervision of commercial banks (ibid., 141). See also Scatamacchia (2003).

public debt. However, the economic and financial consequences of World War I—inter-allied debts, German reparations, and efforts to return to the gold standard—significantly increased the demand for enhanced statistical capacity within central banks (Feiertag 2005b). As summarised in Table 1, more and more central banks started their own economic studies or statistical service in the 1920s.

Building statistical and analytical expertise in the politically sensitive context of the interwar period became a means for central banks to justify and legitimise their policies. By the early twentieth century—and even more after the war—many central banks had come to recognise their role as both the backbone of the national financial system and as guardians of monetary stability. In doing so, they increasingly adopted a public service ethos (Feiertag 2005a, 19; Singleton 2011, 35). Owning these statistics was also essential: central banks reduced their dependence on external data providers and moved away from a mere reliance on surveys and consultations with commercial banks and other financial actors. As a 1928 report from the Banque Nationale de Belgique’s ‘Service des études économiques’ stated, as long as the ‘best way to audit an economic nation’ remained ‘direct contact with trade and industry’, the resulting information would continue to be ‘so vague,’ and ‘so questionable, due to errors and fraud’ (Yee 2023, 7). Finally, as the need for expertise grew, a self-reinforcing dynamic emerged: projecting the image of a technically competent central bank—through the regular publication of statistics and analytical reports—became a strategy for attracting highly qualified personnel.

Table 1. First research departments of major central banks

| Year | First statistics/research departments | Central bank |
|-------------|--|---------------------|
| 1880 | Political economy studies section, then Economic studies section | Banque de France |
| 1895 | Statistical service | Reichsbank |
| 1906 | <i>Name unknown</i> | Sveriges Riksbank |

| | | |
|------|---|---|
| 1914 | Office of economic and financial studies | Banca d'Italia |
| 1918 | Division of analysis and research | Board of Governors of the Federal Reserve |
| 1921 | Economic section | Bank of England |
| 1921 | Economic study service | Banque National de Belgique |
| 1928 | Economic research section | Bank of Greece |
| 1930 | Archive, statistics, and economics studies unit | Banco de Portugal |
| 1930 | Study service | Banco de España |

Sources: , Yohe (1990), Martín-Aceña (2000), Scatamacchia (2003), Tuccimei (2005), Wetterberg (2009), Maes (2010), Martin-Aceña and Tortella (2016), Acosta et al. (2024a), Dutilleul (2025). Note that, in some cases, there were statistical departments/offices that were established some years before and then became research departments, sometimes after merging with other units.

Although often bearing similar names and reflecting a shared shift toward technical expertise, these services could in fact differ significantly in their objectives and the types of data they collected. Moreover, their priorities evolved alongside broader economic contexts and the changing role of national central banks. The case of the Banque de France is illustrative: the ‘Service des études économiques’ was not the primary institution responsible for collecting financial data in France. Since the second half of the nineteenth century, that task had been carried out primarily by private banks, especially the ‘Service des Etudes Financières’ of Crédit Lyonnais (Dutilleul 2025, 8–9). Instead, the Banque de France developed an expertise in producing different categories of data. For example, this included international comparisons through the collection of weekly balance sheets of other central banks, as well as producing data on economic cycles and macroeconomic variables (ibid., 9).²⁷ With the emergence of national credit

²⁷ In many central banks the primary task of statistical departments was to collect and circulate information related to the banking sector and financial transactions; only a few pursued, like the Banque de France, a broader, more public-oriented mission by initiating the collection of national economic data. See Yee (2023, 17) about the case of the Hungarian central bank in the 1920s and the collection of agricultural data.

policy as a central function in the 1940s, new demands arose to closely monitor banks. This included collecting detailed information on ongoing loans and balance sheets—a shift that marked a departure from the practices of the late nineteenth century and coincided with the decline of *Crédit Lyonnais*'s role in statistical production (*ibid.*, 12).

Initially, these statistics and research departments were not staffed by ‘economists’, at least not in the sense we understand the profession today. At the turn of the twentieth century, economics itself was only beginning to consolidate as a distinct academic discipline—a process that unfolded unevenly across countries (Fourcade 2009; Tribe 2022). Consequently, the profiles sought by statistics and research divisions often combined academic training with practical experience in banking and financial markets; the latter would remain the most valued type of experience in central banks for several decades. As a former chief economist of the Bank of England noted in the 1960s, because ‘the City [and financial markets in general] feels rather than thinks’, central banks occupy a space ‘between Reason and Emotion’ (Dow 2013, 35).

The individuals involved in establishing the first economic studies departments illustrate these diverse professional trajectories. Albert-Edouard Janssen and Paul van Zeeland, for instance, were both instrumental in the creation, in 1921, of a ‘Service des études économiques’ at the *Banque Nationale de Belgique*. In Belgium, like in most countries in continental Europe at the time, economics was a subject taught in Law faculties at universities. Janssen graduated in political science and diplomacy in 1909 and later completed a PhD on international monetary relations that integrated both legal and economic perspectives (Maes and Buyst 2005a, 118). He subsequently taught courses on money and credit at the University of Leuven, while simultaneously beginning his career at the *Banque Nationale de Belgique* in 1908. Van Zeeland was one of his students, and in 1920 he obtained a graduate fellowship to study at Princeton, where he attended Edwin Walter Kemmener’s lectures on monetary economics (Gomez Betancourt and Maes 2021). While in the US, he obtained an internship in the newly established Statistics Department of the New York Fed, before being permanently appointed at the *Banque Nationale de Belgique* in 1922. Janssen and van Zeeland later created, in 1928, a research institute on business cycles at Louvain university (Maes and Buyst 2005b, 77). Their trajectories reflect a broader

pattern: law-trained professionals who specialised in economics, at a time when the discipline's boundaries were not yet firmly defined, and who developed a form of expertise that would become increasingly valued by central banks.²⁸

Furthermore, central banks were not always fully supportive of recruiting economists—particularly those with overly theoretical backgrounds. Practical knowledge related to central banking activities—especially in the banking sector—was often more highly valued in hiring decisions. A 1925 memorandum from the Bank of England regarding the hiring of an economist stated that the candidate ‘must have a gift of applying economics to practical affairs . . . but if he had also followed [Mr. Keynes] in his progressive decline and fall . . . he would be worse than useless’ (Bank of England 1976, 436).²⁹ Applicants with a background in banking were thus sought as much as, if not more than, those with academic training in economics. For instance, Karl Nordhoff worked at a Hamburg-based bank before being appointed by Hjalmar Schacht to head the Reichsbank's research department in the 1920s (Yee 2023, 7). There, he applied his technical expertise to advance the compilation of data on German private banks. Until the 1960s it was not uncommon for staff hired at the Bank of England's economics unit to hold degrees in philosophy or history, and then get any necessary training in economics in-house (Acosta et al. 2024a, 11). By the 1990s, however, a degree in economics had become a *requirement* in job advertisements (ibid.), and the recruitment of staff with a PhD in economics increased consistently thereafter (*cf.* 5.1).

2.3 International Cooperation and Economic Statistics

In the 1920s, several central banks created their economic statistics or studies department, mirroring the activities of the Bank of England, the Banque de France, and the Reichsbank. This phenomenon corresponds to a general process (relevant to several other aspects covered in our book):

²⁸ For similar examples regarding the Banque de France's research department in its first years and its connection with the Statistical Society of Paris, see Dutilleul (2025) and Plessis (2005).

²⁹ This scepticism toward economic theory is also clearly expressed in a 1929 lecture by Béla Imrédy, a director at the National Bank of Hungary: ‘While the statistical studies of Central Banks should have a basis in theoretical economics they must not be allowed to become doctrinaire and in the pursuit of theory to neglect the observation of economic phenomena which may perhaps appear of little importance from the theoretical point of view’ (Yee 2023, 14).

‘transplantation’, or the ‘art of moving ideas, policies, institutions, and practices from one environment to another’ (J. Johnson 2016, 28).³⁰ Research departments, economic statistics, and economic studies are precisely the kind of institutions, ideas, and practices transplanted across central banks, especially starting from the interwar period. By the 1960s it had become inconceivable for any central bank in the world not to have a research department collecting economic statistics.

Let’s consider one early example of such transplantation. In the early 1930s, as the Spanish economy was plagued by a severe exchange rate crisis, the leadership of the Banco de España sought advice from the Banque de France, the Bank of England and the Bank of International Settlements (BIS). Among other actions, executives from these institutions ‘recommended the creation of a Servicio de Estudios’, to be filled with expert staff, providing statistics and economic reports to answer pressing issues (Martín-Aceña and Tortella 2016, 141, 146).

The transplantation of ‘studies’ departments took place in a more general context of international cooperation across central banks (and, more generally, across government institutions) for building coordinated policies (James 2016). For the interwar period, such need for cooperation arose from the economic consequences of World War I (inter-allied debt, German reparations), the wish to return to the gold standard, and, later on, from the various attempts at curbing the effects of the 1929 crash and the ensuing Great Depression.³¹ During the 1950s and 1960s, Bretton Wood Agreement also bound central banks to cooperate at various levels. The forms of cooperation established in both the interwar and the immediate postwar also went beyond the bilateral or multilateral initiatives driven by national central banks (such as the 1928 Paris conference mentioned above): two new international organisations were established, the BIS (1930) and the International Monetary Fund (1944), whose activities fostered significantly the international cooperation across central banks.³²

Cooperation in the realm of policy and cooperation in the realm of research departments, economic statistics, and economic studies went hand-in-hand. Central banks’ collection and circulation of

30 See also McNamara (2002, 64) about the transplantation of central banks’ ‘independence’.

31 Of course, other forms of international cooperation across central banks had been in place before, such as the gold standard (*cf.* 2.2) and the Latin Monetary Union (Einaudi 2018).

32 On the history of the BIS, see Toniolo (2005). On the history of the IMF, see e.g. Bordo and Schwartz (2001).

economic statistics was seen as a way to promote a common understanding of the prevalent economic conditions and, thus, a convergence in the understanding and framing of coordinated or common policies. The 1928 Paris conference of central banks' statisticians addressed several aspects pertaining to the harmonisation of statistical methods, including, for instance, the proper aggregation of individual prices to calculate price indexes, as well as the need for choosing the same base year for facilitating cross-country comparisons (Yee 2023, 18–19).³³ Other aspects of the standardisation of statistics were of a less technical nature, although not less controversial, such as the adoption of a common language (or two: English and French) to be used by all central banks in their statistical reports and economic studies (ibid.). With respect to the mission of disseminating economic statistics and studies, central banks' research departments were also often closely associated with specialized libraries. Hosted within the central bank, libraries functioned as 'information systems', whose key role was to collect and store documentation and reports from other central banks, international statistics, and information published by economic and financial press.³⁴

This standardisation of economic statistics in the interwar period was part of a broader process promoted by the League of Nations to coordinate the production of statistics across countries, for various subjects (e.g., labour market statistics, produced under the responsibility of the International Labour Organisation). During this period, independent research institutes studying the business cycle (such as the National Bureau of Economic Research in the US, the Institute for Conjoncture in Moscow, and the Kiel Institute of the World Economy in Germany) cultivated a fruitful dialogue about their respective methods for collecting and analysing economic statistics.³⁵ This movement towards a common international framework for economic statistics took an even more decisive turn in the after-

33 This problem was notably raised by the representative of the Fed at the meeting. Indeed, the debate about 'index numbers' (such as price indexes) was a critical topic in the United States at that time (see e.g., Cruz-e-Silva and Almeida 2022; Dimand 1998).

34 See Martin-Aceña and Tortella (2016, 141–42) about the Banco de España, and Maes (2010, 43–45) for the Banque Nationale de Belgique.

35 See Cherrier et al. (Forthcoming).

war, as exemplified by the development of the system of ‘national accounts’ (a United Nations-driven initiative) and of the *Balance of Payments Manual* (published by the IMF).³⁶

Finally, it is important to highlight that the ‘transplantation’ of studies departments was also driven by power dynamics and domination at a global scale. The construction of large empires over the nineteenth century went hand-in-hand with reshaping the monetary and financial systems of the colonised territories and the management of their economies.³⁷ When the decolonisation process started in the postwar, the power relationships built in the previous century still permeated the relationships between Western central banks and newly established central banks in the Global South. This meant that the transplantation of central banking ideas, practices, and institutions—in the form of missions and ‘money doctors’—was not simply a matter of technical assistance and international cooperation between peers, but was also heavily permeated by political and economic interests.³⁸

3. Macroeconometric Modelling

Terry Pratchett’s fantasy novel *Making Money* (2010) recounts the misfortunes of former outlaw Moist von Lipwig, taking the lead of the central bank of the fictitious city of Ankh-Morpork. Upon von Lipwig’s arrival, Mr. Bent, the Bank’s Chief Cashier, introduces him to a mad-scientist-like character, Mr. Hubert, frantically operating a mysterious machine made of glass tubes in a dark basement:

“Mr Hubert believes that this... device is a sort of crystal ball for showing the future”
said Bent, and rolled his eyes.

“Possible futures” said Hubert [...] “The Gloopier, as it is affectionately known, is what
I call a quote analogy machine unquote. It solves problems not by considering them as
a numerical exercise but by actually duplicating them in a form we can manipulate: in

³⁶ About the international harmonisation of national accounts, see notably Vanoli (2005, ch. 3). The *Balance of Payments Manual* was first published by the IMF in 1948: it built on previous work within the League of Nations for establishing a unified framework for measuring the economic interrelationships between a national economy and the rest of the world.

³⁷ On colonial monetary systems and the role of central banks, see e.g. Helleiner (2003), Gardner (2012), and Pallaver and Podestà (2021).

³⁸ See Flandreau (2003) and Álvarez et al. (2024) for discussions of the notion of a money doctor. See Gómez Betancourt (2022) for a discussion of the work of Edwin Kemmerer, one of the most influential money doctors during our period of interest, and Maes and Pasotti (2021, ch. 2) on Robert Triffin as a money doctor in Latin America.

this case, the flow of money and its effects within our society become water flowing through a glass matrix [...] The geometrical shape of certain vessels, the operation of valves and, although I say so myself, ingenious tipping buckets and flow-rate propellers enable the Gloopster to simulate quite complex transactions.” (Pratchett 2010, 83–84)

Pratchett’s novel captures, with some irony, the struggle for recognition of economists within central banks. Mr. Hubert’s ‘Gloopster’ is inspired by an actual device, the ‘Phillips Machine’, an ‘hydraulic computer’ devised by Bill Phillips in 1949 with the help of Walter Newlyn (Boumans and Morgan 2024): a system of pipes and reservoirs, each representing a sector or an operation in the real economy (consumption, investment, saving, etc.), connected by a flow of water (representing money and income). As described by Pratchett, Phillips Machines could perform simulations about the effects of various policies on the economy: increasing income taxes (that is, a wider opening of the ‘taxes valve’) will modify the amount of net income (the volume of water running down the pipes) and, therefore, the levels of consumption, saving, interest rates, etc.³⁹

Pratchett’s story echoes 1950s economists’ dedication to producing and operating economic models hosted within central banks. Yet, despite some early investment in Phillips Machines by central banks (e.g. on the Reserve Bank of New Zealand; see Bollard 2016), hydraulic computers had a limited reach and remained mostly a pedagogical tool. Instead, the kind of models developed by economists in central banks during the 1960s and the 1970s were systems of mathematical equations, coded on electronic mainframe computers. The dominant form of modelling was, more precisely, ‘macroeconomic modelling’: this practice consisted in crafting large systems of equations—each representing an aspect of the economy (different sectors, economic agents, and their interrelationships)—and combining them with actual data, thanks to statistical techniques. In the end, like the tubes and valves of Phillips machines, macroeconomic models constituted systems that could be ‘manipulated’ by economists, to produce simulations and forecasts about the effects of various policies. ‘Macroeconomic’ modelling is still today a defining characteristic of the work of economists within contemporary central

³⁹ For an example of an operating Phillips Machine: <https://www.youtube.com/watch?v=rAZavOcEnLg>.

banks, although the theoretical depiction of the economy and the type of statistical techniques involved have changed (see 5.2).

This section starts with introducing the reader to the defining characteristics of the practice of macroeconometric modelling, as it originated in academia in the 1950s-1960s; we then highlight how macroeconometric modelling entered central banks in the 1970s and 1980s. From this moment, joint modelling ventures between universities and central banks were also established, making macroeconometric models ‘boundary objects’ (*cf.* 1.). Thus, macroeconomic modelling was instrumental in better connecting academic economics and central banks (3.1). However, central banks and central bank economists have entertained, during this period, a paradoxical relation to macroeconometric modelling. On the one hand, central banks and their economists have played a decisive role in developing this practice; and, in return, this practice was instrumental in further establishing the influence of economists and economic knowledge within central banks. On the other hand, such a process was slow and faced many obstacles and struggles: economists, and modellers, had to fight their way through several pushbacks by competing forms of expertise (3.2).

3.1 Macroeconometric Models: Born in Academia, Raised in Central Banks

Despite the ambition of their creators that macroeconometric models would provide useful tools for policymaking, they remained for some years largely confined to their academic host institutions, especially in the US. In Europe, nonetheless, during the 1950s, various economic modelling practices were already used to support economic planning in several countries, including the Netherlands, Norway, France, and Italy.⁴⁰ From the 1960s onwards, central banks became more frequently involved in the construction of models, often in collaboration with academic institutions.

The emergence of macroeconometric modelling formed part of a broader postwar transformation of economics towards a more intensive use of mathematical tools, which also included the consolidation of neoclassical economics and general equilibrium (Morgan and Rutherford 1998; Weintraub 2002). Central to this development was the consolidation of the econometric approach to economic analysis,

⁴⁰ For The Netherlands, see e.g. van den Bogaard (1999) and Kayzel (2019). For Norway and Italy, see respectively, e.g., Halmayer (2017) and Rancan and Sergi (2024, ch. 1); for France, see Courbis (1991) and Muniz Duarte (2023).

championed by the Cowles Commission, a US-based think tank. There, alongside research on other areas, Trygve Haavelmo established the probabilistic foundations of econometric modeling (Haavelmo 1944), and Lawrence Klein developed the first macroeconometric model of the United States (see e.g. Bjerkholt 2014; Pinzón-Fuchs 2019). Klein's contributions built upon earlier pioneering work by the Dutch economist Jan Tinbergen for the League of Nations (Dekker 2021, ch. 10), as well as on the ongoing discussions to represent John Maynard Keynes' ideas in compact IS-LM-type models (De Vroey and Hoover 2004). More generally, since the 1950s, macroeconometric modelling came to embody the Keynesian consensus that dominated macroeconomics in several countries (Renault 2020).

The rise of macroeconometric modelling was also characterized by the international circulation of ideas, practices and tools. For instance, Klein's travels in Europe set the bases for the future international network of modellers that Klein later developed from the late 1960s through 'Project Link'—an initiative aimed at constructing a world model by combining national models together (Hickman 1991).

Policymaking institutions, and eventually central banks, became significantly involved in 'large-scale' macroeconometric modelling mainly in the 1960s. In the US, the first step towards the integration of large-scale macroeconometric modelling to policymaking was the construction of the SSRC model (1960-1963), sponsored by the Committee on Economic Stability of the Social Science Research Council.⁴¹ Klein and James Duesenberry led this modelling team, comprising more than 20 researchers, coming from academia, think tanks, and government agencies. The new level of disaggregation envisioned for this model—more than 150 equations, an order of magnitude larger than anything built during the previous decade in the United States or abroad—required the collaboration between academic and non-academic economists: on the one hand, both existing theory and expert knowledge was deemed relevant to guide equations' specification; on the other hand, the volume and specificities of the required data led to a close and constant communication with the government agencies that could provide them. As a result, the SSRC model crucially increased the visibility of macroeconomic

⁴¹ See Duesenberry et al. (1960) and, on the history of this model, Acosta and Pinzón-Fuchs (2019).

modelling outside academia and spurred the development of macroeconomic models at government agencies, most notably at the Federal Reserve Board of Governors, where economic analysis had traditionally been closely tied to the American institutionalist tradition (Acosta and Cherrier 2021, 339).

The Board launched the building of a large-scale macroeconomic model in 1966, commissioning a team led by Frank de Leeuw (Board of Governors, Division of Research and Statistics), Franco Modigliani (MIT), and Albert Ando (University of Pennsylvania). The resulting model became known as the FMP/MPS model.⁴² De Leeuw and Ando had been part of the SSRC project. Building the FMP/MPS model took several years: this timing was rather fitting with the pace of the academic modellers involved, whose priority was to reach adequate specifications for equations, rooted in clear theoretical foundations. By contrast, the Board economists were impatient about having a complete system that could be used for analysis as soon as possible, and thus consolidating the space for modelling within the Fed. Finally, a working model was delivered in 1970. In 1971, its maintenance (that is, ensuring its continuous re-estimation against new data, its theoretical development, the maintenance of the computer code, etc.) was entrusted to University of Pennsylvania's Wharton Business School—while economists at the Board continued to resort to the model for their works. The FMP/MPS model thus initiated the long-lasting tradition of the Fed's Board (and, later, of its Reserve Banks) to promote the building of large-scale macroeconomic models.⁴³ The development of the FMP/MPS model is thus illustrative of the way macroeconomic modelling, originating in North American academia, found its way towards the Fed, then constituting a 'boundary object'.

Table 2. First macroeconomic models developed in central banks⁴⁴

⁴² The name reflects the changes in the organisations involved: the Federal Reserve Board, MIT, and the University of Pennsylvania during 1966-1970 (thus FMP), and MIT, the University of Pennsylvania, and the SSRC afterwards (thus MPS). Different aspects of the history of this model have been covered by historians of economics: see notably Backhouse and Cherrier (2019), Acosta and Rubin (2019), Rancan (2019, 2022). For an insiders' history of modelling at the Fed, see Brayton et al. (1997).

⁴³ After the FMP/MPS, the Board developed a multi-country model, then the FRB-US model (see e.g., Brayton et al. 1997). More recently, in the beginning of the 2000s, economists at the Board were also important contributors to the development of new types of models (*cf.* 5.2).

| Year | Model | Central bank |
|-------------|--|---|
| 1969 | RDX1 | Bank of Canada |
| 1970 | FMP/MPS | Board of Governors of the Federal Reserve |
| 1970 | M1BI | Banca d'Italia |
| 1972 | SIMPLET | Banque de France |
| 1972 | Bank of Finland Quarterly model | Bank of Finland |
| 1972 | Bank of Japan Macroeconometric model | Bank of Japan |
| 1972 | BoE model of the UK economy | Bank of England |
| 1975 | NA | Bank of Greece |
| 1975 | Econometric Model of the Deutsche Bundesbank | Deutsche Bundesbank |
| 1985 | MORKMON | De Nederlandsche Bank |

Source: Acosta and Cherrier (2021), Bank of Finland (1972), Goutsmedt et al. (2024), Barten (1991), Courbis (1991), Rancan (2020), Sato (1991), Zonzilos (2004), Helliwell (2006), Wewel (1991).

Other central banks were early adopters of macroeconomic modelling in the 1960s-early 1970s (see Table 2). In some countries, modelling practices originated in academia, and were then adopted by central banks, in a joint development with academia. At the Bank of Canada, like at the Fed's Board, academics were brought in part-time to build a macroeconomic model, delivered in 1969 under the name 'RDX1' (for 'Research Department eXperimental [model] 1'). This was soon followed, in 1971, by RDX2, which, similarly to the FMP/MPS model, featured an extensive description of the financial

⁴⁴ Dates are approximative and refer to the published—or more or less definitive first versions—of these models that can be identified in the primary and secondary literature available. However, these models were oftentimes built and already used several years before any documentation was published.

sector (Duguay and Longworth 1998). Japan followed a similar path, with early models being developed in universities, but with the practice soon spreading not only to the Bank of Japan but also to several other policymaking institutions, notably the Economic Planning Agency (Sato 1991). In the United Kingdom, the first macroeconometric model of the British economy had been developed by Klein himself, during the years he had spent in Oxford (1954-1958; Klein 1980). From this early attempt, larger models ensued at various British universities, particularly at the London Business School, which started publishing forecasts from their model in the mid-1960s. The London Business School also played a key role in helping Treasury's economists with developing their own macroeconometric model, in the late 1960s, and, more broadly, in helping change the view on the usefulness of models in the United Kingdom (Ball and Holly 1991). The Bank of England followed this movement, by acquiring the London Business School model in 1972 and making it its own few years later (Goutsmedt et al. 2024). In Belgium, large-scale macroeconometric modelling remained mostly an academic endeavour during the 1960s and the 1970s. In the 1970s, some of these university-based models were commissioned and sponsored by the European Commission; Belgian policymaking institutions (the Planning Commission, then the Banque Nationale de Belgique) only adopted these models in the 1980s and 1990s (Evrard 2023; Rancan and Sergi 2024, ch. 1). In The Netherlands and in Norway, central banks were also 'late' adopters of macroeconometric modelling, embracing the practice mostly in the 1980s. In the Netherlands, Tinbergen's modelling work unfolded in the 1950s and the 1960s, almost immediately connecting academia and the Central Planning Bureau; the Ministry of Finance soon followed this example, whilst the De Nederlandsche Bank built its in-house model only in the mid-1980s (van Els 2003). Norway accounts to a similar case: the Ministry of Finance had established, in cooperation with academia, a tradition of developing and using macroeconometric models for supporting policymaking decisions much earlier than the central bank (Bjerkholt 1998). In the countries covered by the literature, there are a few cases in which macroeconometric modelling developed *first* in policymaking institutions (including central banks) and only *later* this practice disseminated to academia.

In France, universities were not a welcoming environment for the development of this practice until the late 1970s. Indeed, in French academia, the status of economics was still one of marginalisation, with no proper degrees or research programmes; moreover, mathematical and statistical economics was only adopted by a small minority within the profession, rather in engineering schools and public administrations (see e.g., Fourcade 2009, ch. 4). The development of macroeconomic models thus unfolded, in the 1960s and the 1970s, outside academic circles, mainly at the French Treasury and the National Institute of Economics and Statistics (see e.g., Courbis 1991). The Banque de France, despite some early ‘small scale’ attempts at macroeconomic models (such as the SIMPLET model in 1972), was not really investing in developing in-house large-scale macroeconomic modelling until 1979: then, with the help of the National Research Center (CNRS) and the University of Paris 10, the Banque de France developed the ‘GAMA’ model (Dutilleul 2025).

In Italy, like in France, academic economists were generally rather sceptical of econometrics and mathematical models. The first sizable macroeconomic model of the Italian economy was built by the Banca d’Italia: commissioned as early as 1964 by the Governor Guido Carli (a firm believer in the relevance of this new practice), the ‘M1B1’ was completed in 1970. The work of Banca d’Italia ‘Servizio Studi’ (Research Department) then spurred a dynamic of emulation across Italian academics, leading to the development of macroeconomic models at University of Bologna and at University of Ancona (Rancan and Sergi 2024, ch. 1).

In both the Italian and the French case, the FMP/MPS experience in the United States played a pivotal role for the introduction of large-scale macroeconomic modelling. In France, one of the main models of the 1970s-1980s (the ‘METRIC’ model), was developed under the supervision of George de Mènil —himself a former contributor to the FMP/MPS model in the United States (Goutsmedt et al. 2021; Rancan and Sergi 2024, ch. 1). Modigliani, one of the main coordinators of the FMP/MPS model, came several times in Rome to consult on the ongoing work on M1B1. Although the resulting model did not follow exactly the blueprint of the FMP/MPS model, a fruitful dialogue was established (Rancan 2020).

These examples are illustrative of the transplantation (see Section 2) of modelling experiences across central banks, across policymaking institutions, and across different national contexts. Moreover, as this modelling practice spread in various national contexts, international networks of specialists arose, creating spaces for discussing modelling practices (from theoretical specifications, to the choice of data, or coding standards) and facilitating transplantation.⁴⁵ Modellers based in the United States often played a pivotal role in such networks. This mirrored a broader phenomenon, the internationalisation/Americanisation of academic economics, starting from the 1970s: that is, the establishment of international networks and cooperation to a much larger scale than before, bringing to the circulation of economists, economic ideas and theories, modelling practices, and the alignment of methodological and professional standards on those prevalent in the United States.⁴⁶

Despite this phenomenon, building up to a convergence towards international standards for macroeconometric modelling in central banks, we have also highlighted above the diversity of national cases. And yet, there is not, at the moment, any historical work covering extensively and comparing the various national experiences with macroeconometric models.⁴⁷

3.2 Making Space for Macroeconometric Models

Since the early works of Klein, the core ambition of macroeconometric modellers has been to provide both economic forecasts of the ongoing economic conditions and to quantify the possible economic effects of different policy decisions. But what has then been the role of such models within central banks, from the late 1960s to the end of the 1980s? What were the actual *uses* of these models within central banks?

Besides the specificities related to the individual national cases, the literature points at one general dynamic: macroeconometric modelling constituted a vehicle to assert the relevance of economists'

⁴⁵ As mentioned above, Klein's Project Link constituted probably the most extensive of such networks.

⁴⁶ On the specific role of large-scale macroeconometric modelling in this movement, see notably Bodkin et al. (1991) for a first-hand account and Goutsmedt et al. (2021) and Rancan and Sergi (2024, ch. 4) for a historical perspective.

⁴⁷ See Bodkin et al. (1991) or Morgan and Butter (2003) for attempts in this direction.

expertise within central banks; *however*, this expertise was challenged, and sometimes marginalised, by alternative forms of expertise and knowledge.

In the case of the Fed's Board, the FMP/MPS model had to come to terms both with other approaches to economic analysis and with 'traditionalist' views of an older generation of policymakers, which valued practical experience of the business and banking world over economists' expertise. As documented by Acosta and Cherrier (2021), the 1960s at the Fed's Board coincided with a 'rift' between economists (especially those working within the Division of Research and Statistics; DRS), and the policymakers (including chairmen and members of the Federal Open Market Committee). William McChesney Martin (Chairman from 1951 to 1970), notably, 'led the group who felt that the Federal Reserve policy had to remain an art rather than a science' and that the ability to read 'the tone and feel' of the markets was more crucial than economic statistics and models (Maisel in Acosta and Cherrier 2021, 333).⁴⁸ At the same time, however, Martin also encouraged the DRS to explore new forms of economic analysis, and he supported a policy of hiring younger economists trained in econometrics and macroeconomic modelling (*ibid.*). At the DRS, crucial support was also provided by its director, Daniel Brill, who, like his predecessors, had been trained in the American institutionalist tradition. Brill, however, was instrumental in securing a place for macroeconomic modelling at the Board (*ibid.*, 337).

In practice, economists' contribution to the policymaking process resided, in this era, mostly in providing 'projections' (the word 'forecast' was avoided) of relevant future variables. From June 1964, DRS projections were collected and circulated to the Federal Open Market Committee members in booklets with a green cover (hence their nickname, 'greenbooks'), soon accompanied by 'bluebooks' (also produced by the DRS), which outlined more precisely monetary policy parameters (interest rates, reserve measures, etc.) and the projected outcome of three policy scenarios (A, B, and C). Greenbooks and bluebooks initially relied, on the one hand, on data and statistics elaborated by the DRS (in line with the tradition outlined in Section 2); on the other hand, projections resulted from 'purely judgmental' reasoning, by DRS 'experts' in each market and sector (*ibid.*, 343). From 1968, forecasts produced with the FMP/MPS model started being combined with such judgmental forecasts. This

⁴⁸ Lawyers constituted a third group providing a competing expertise within the Fed (Conti-Brown 2016, ch. 3).

meant that, although knowledge produced with large-scale macroeconomic modelling had entered the policymaking process, it still was not the only, nor the dominant way of producing economic expertise and support policy decisions. Actually, large-scale macroeconomic modelling even experienced a clear set-back, as it failed to correctly predict the consequences of Johnson's tax surcharge implemented in 1968. This 'debacle' made chairman Martin willing to dismiss altogether economic analysis presented in bluebooks, as representative of 'statisticalitis ... a disease that could kill us all' (Martin quoted in Acosta and Cherrier 2021, 344). The following chairman, Arthur Burns, a preeminent institutional economist, did not endorse this extreme scepticism; yet, he, too, had little faith in large-scale macroeconomic modelling as a useful technique. Large-scale macroeconomic modelling was largely sidelined in the following decades, at least when it came to the policymaking process (that is, the drafting and discussion of bluebooks), although this practice continued to serve as a platform for DRS economists to produce policy work within the division.⁴⁹

From the 1960s to the 1980s, challenges to the FMP/MPS model came from Fed economists outside the Board as well as from academics. Within the Federal Reserve System, the main criticism came from economists at the Federal Reserve Bank of St. Louis who had developed an alternative modelling strategy, based on single-equation testing of specific hypotheses, which aimed at challenging the FMP/MPS model, both on empirical grounds and on theoretical ones (Rancan 2019).⁵⁰ Moreover, academic criticisms against large-scale macroeconomic models raged in the 1970s, particularly in the United States. Some of these criticisms aimed at contesting the relevance of specific theoretical mechanisms embedded within the FMP/MPS, such as the Phillips curve, or the term-structure of interest rates (Delcey and Sergi 2023). Other criticisms, such as the 'Lucas critique' (Lucas 1976), were more 'systematic', putting into question the overarching structure and methodology of such models.⁵¹

⁴⁹ As mentioned earlier, the practice of large-scale macroeconomic modelling did survive and actually prosper throughout the 1970s and even the 1980s, especially outside the United States, and not only as a policymaking-related practice but also as a flourishing private consulting business (P. G. Duarte and Sergi 2023).

⁵⁰ This methodology was inspired by Milton Friedman's empirical methodology of 'naïve models'. See e.g., Chao (2019) and Orozco Espinel (2022).

⁵¹ On the 'Lucas Critique' and its impact on large-scale macroeconomic modelling, see e.g. Hoover (1994) and Goutsmedt et al. (2019).

In other central banks, the upper echelons were sometimes more supportive of large-scale macroeconomic modelling. Carli (Banca d'Italia governor from 1960 to 1975) is a case in point: unlike Martin at the Fed, Carli personally initiated the construction of a macroeconomic model, akin of the one in development at the Fed's Board; it was also Carli who invited Modigliani in Rome to provide advice and guidance about the model. Carli's faith in this practice did not entail that he envisioned relying entirely on the model to conduct monetary policy. As documented by Rancan (2020), Carli made the model public, advertising it personally, in conferences before various audiences, sending out copies, and encouraging media coverage. This publicity was intended to leverage the model (and the associated activities of the whole Research Division) as 'a tool to defend the Bank's monetary action against policy pressures and criticisms, emphasising their scientific foundation. The model should have traced a boundary between the technical and political power' (Rancan 2020, 28). The model remained rather a qualitative tool (providing 'mental discipline' and a 'rational framework' for thinking about monetary policy). This also limited the model's actual use 'for the official show of the Annual Report, and for domestic and foreign public relations use ... [but] when it came to policy, models were pushed aside ... and the telephone was used' (De Cecco in Rancan 2020, 21).

Similar tensions appeared in other central banks. Very often, central banks leveraged models in their conflicts with Treasuries—a tense relationship, in many countries, insofar as most central banks were not yet independent, i.e. they formally had to enforce and operationalise government monetary policy decisions. At the Bank of England, the adoption of a large-scale macroeconomic model was mainly conceived as a way to compete with the Treasury's model. The purpose was thus to produce an equivalent counter-expertise, that could be leveraged within policy meetings between the two institutions (Goutsmedt et al. 2024). Yet, the final say on monetary policy belonged to the Treasury, and the Bank of England was to operationalise its decisions: for this purpose, the large-scale macroeconomic model was of practically no use.⁵² Moreover, contrary to the Banca d'Italia's use of the model in the public debate, the Bank of England was informally forbidden by the Treasury to

⁵² Additionally, the operationalisation of monetary policy went through the Markets division, which was thus more central in the Bank of England than the Economics division where the model was developed.

publish alternative forecasts produced with its model. Thus, large-scale macroeconomic modelling at the Bank of England was largely kept behind curtains.

The arrival of Margaret Thatcher at 10 Downing Street in 1979 further altered the relationship between the government and the Treasury on the one side, and the Bank on the other. For the first time since inflation had soared in the late 1960s, the Bank was confronted with politicians who pushed for a new monetary policy doctrine (James 2020, 71).⁵³ In the next section, we discuss how this debate played out on a conceptual level. In terms of methodology though, this debate highlights the relevance, in the Bank of England's case, of alternative forms of economic expertise to large-scale macroeconomic modelling. Indeed, economists at the Bank devised a series of smaller, narrower models, studying specifically monetary issues (Goutsmedt et al. 2024). Special advisor Charles Goodhart suggested that the Bank should fund the development and the estimation of a monetary model by James Davidson and David Hendry at the London School of Economics. For Peter Brierley, from the Bank's staff, this model would 'facilitate an evaluation of policy issues within a specifically monetarist framework' and the results could be 'compared with those produced by the Bank and Treasury large structural models, which basically reflected a more Keynesian approach.' It was, in the end, these works on small monetary models, rather than large-scale modelling, that the Bank pushed forward in its debate with the Treasury and, also, in his publications disseminated to external audiences.

By the end of the 1970s, economists had thus built some space for them and their economic expertise inside central banks. Although this started in the early twentieth century with the development of statistics and studies (*cf.* 2.), macroeconomic modelling emerging in the 1960s-1970s marked a further step: that is, a closer cooperation between central banks and academic economists in building 'boundary objects'. Despite some resistances and push-backs, both these practices (statistics and macroeconomic modelling) continued then to gain space inside central banks throughout the following decades. This

⁵³ In March 1980 the government launched the Medium Term Financial Strategy (MTFS). The strategy specified money supply targets for monetary policy. In doing so, they explicitly relied on key monetarist assumptions (Best 2020, 603–4) and on the idea that such 'control of the money supply will over a period of years reduce the rate of inflation' (James 2020, 70).

was fuelled, in the 1980s and 1990s, by the convergence of central bankers and academic economists towards a common ‘cognitive infrastructure’ in thinking about monetary policy.

4. Rethinking Monetary Policy

In the 2000s, many macroeconomists and central bankers appeared to agree on a common approach to monetary policy. For instance, in 2005, a conference organised by the British ‘Government Economic Service’ (Arestis 2007) addressed the question: ‘Is there a new consensus in monetary policy?’ Charles Bean—then chief economist at the Bank of England—responded affirmatively, noting:

[J]ust as there has been a degree of convergence in macroeconomic thought over the last decade with the development of the New Keynesian synthesis, so there has also been convergence in beliefs about the proper scope of monetary policy and the appropriate institutional framework for the conduct of that policy (Bean 2007, 1).

However, this apparent consensus was the outcome of a much longer process. Almost three decades had been necessary to achieve this ‘convergence of beliefs’ between central bankers, economists within central banks, and academic economists. This convergence was also reflected in the spreading of a new policy regime across central banks: many institutions had gained independence and increasingly relied on inflation targeting to maintain price stability. Such a policy regime, if not the direct result of economists lobbying, found a posteriori justification in the new consensus.

In this section, we characterise this ‘convergence of beliefs’ as the coproduction of a ‘cognitive infrastructure’, shared across these different actors (4.1). The ‘convergence’ actually started with a growing gap and controversies (1970s-1980s), in the wake of stagflation and of increased critical scrutiny of central banks’ activities, exacerbated by the monetarist episode (4.2). The convergence happening in the 1990s constituted thus the decisive decade for strengthening the role and place of economists within central banks (4.3).

4.1. The Coproduction of a Cognitive Infrastructure

To understand the strengthened role of economists within central banks, it is essential to look beyond the presence of particular individuals in leadership positions or the maintenance of models. Rather, the

key development lies in the increasing diffusion of a shared framework for understanding monetary policy among central bankers and economists, both within and outside central banks.

In ‘Do Economists Make Policies?’, Hirschman and Berman (2014) provide us with a relevant distinction to characterise this process. They delineate three channels of economists’ influence on policy decisions: the ‘professional authority’ that academic credentials in economics confer to experts, the strategic positions taken by economists in policymaking institutions, and the ‘cognitive infrastructure’ (*cf.* 1.). The latter designates an economic ‘style of reasoning’ that determines which problems are important or relevant, and how to solve them, as well as a set of ‘policy devices’ that help to make policy decisions. A style of reasoning relies on a series of concepts: i.e. theories and technical notions that demarcate experts from laymen. Concepts contribute to an expert-framing of problems (for instance, ‘inflation is the result of agents’ expectations’), inducing specific policy solutions (‘inflation is controlled by managing agents’ expectations’). Policy devices are those ‘tools’ operationalizing a style of reasoning, that is, facilitating the transition from ‘thinking’ about a problem to actually ‘acting’ to solve it.⁵⁴ Such ‘tools’ are of different nature: models (such as described in 3.) are one example; yet, as we will see in this section, this also includes statistical indicators or other measures (such as monetary aggregates, M1 or M3, or the output-gap), feedback rules (e.g., the Taylor rule), and communication strategies (e.g., inflation targeting).

In the late 1990s, as Bean testified above, it had become apparent that central bankers, economists within central banks, and academic economists shared the same cognitive infrastructure. Previously, central bankers were often criticising how economists (outside or inside central banks) thought about economic problems and the way to address them, pushing back on economists’ style of reasoning as irrelevant and disconnected from the practical realities of policymaking (*cf.* 3.2). The new cognitive infrastructure of the 1990s was, however, neither the result of some linear process where central bankers embraced academic economic theories, nor an alignment of academic economists on central bankers’ style of reasoning. Rather, this process represents a ‘coproduction’, wherein the boundary between science and policymaking became increasingly blurred (Hoppe 2005; Jasanoff 2010).

⁵⁴ On the ‘translation of economic ideas into an actionable policy framework embedded in policy devices’, see Thiemann (2024, 14).

This coproduction is the outcome of the dialogue between academic economists and central banks, which was fostered by three factors.

First, central banks in Western countries found themselves under increased public scrutiny, as they endorsed a more crucial role in fighting stagflation.⁵⁵ Academic economists became more involved with discussions and critiques of monetary policy; for instance, in the US, as in other countries, debates emerged regarding the Fed's decision to raise interest rates in response to the first oil shock in 1973-1974 (Goutsmedt 2021). As a result, academic economists increasingly represented a new and influential audience that central bankers had to engage with and consider seriously (see below, with the monetarist case).

Second, central banks personnel and academic economists had, increasingly, a similar educational background—to the extent that we observe a wider circulation of individuals from academic to central bank career paths, at all levels (including the upper echelons). More policymakers in central banks held academic qualifications such as PhDs in economics; similarly, central bank staff was increasingly hired in the ranks of economics PhDs.⁵⁶ For instance, few employees hired in the 1970s had a PhD and none of the executives did either; in the 2000s, more than half of the employees hired and of the executives had a PhD (Goutsmedt et al. 2025). As a result of this transformation (*cf.* 5.), academic economists and central bank personnel increasingly 'spoke the same language', broadening the space for dialogue.

Third, central banks and academia collaboratively established new venues to facilitate ongoing exchanges: central banks created advisory panels to consult with academic economists on monetary policy, organised joint conferences that brought academic economists and central bankers together (e.g.,

55 As Singleton (2011, 203) puts it, 'The Great Inflation and Disinflation restored central banks to a vital place in the economic policy community'. See also Wansleben (2022). On the economic history of the 1970s and the stagflation, see e.g. Blinder (2022) and Chélini and Warlouzet (2017).

56 This process extends beyond central banks. As they became central institutions for economic policy in a new context of financialisation after the 1970s (Krippner 2005; Wansleben 2022), banks and financial institutions also started to hire economists able to analyse (and forecast) monetary policy decisions (Hall 1992, 102–3).

the Jackson Hole economic symposium),⁵⁷ and launched visiting programs designed to attract prestigious academic economists.⁵⁸

4.2. The Influence of Monetarism: Mind the Gap

Historians and political scientists analysing the role of monetarism have argued about the preeminence of their ideas in reshaping the conduct of monetary policy in the 1970s and the early 1980s. According to this view, monetarism, an intellectual movement gaining prominence in North American academia in the 1960s, ‘provided a template and a legitimizing framework for a new economic strategy that prioritized neoliberal, anti-inflationary policies over employment or growth objectives’ (McNamara 1997, 5–6).⁵⁹ More recent scholarship has documented that the ‘conversion’ of Western central banks to monetarism was far from straightforward (Clift 2019; Best 2020). In this section, we adopt this latter perspective; more generally, we argue that, during this period, academic economists and central bankers were still far from sharing a cognitive infrastructure. They disagreed on how to solve current problems and on the ‘policy devices’ that help to make policy decisions. The dialogue between the two groups was marked by conflict, also mirroring the controversies within academia—ignited, during the 1970s and early 1980s, by reactions against monetarism. Monetarist ideas certainly influenced central bankers’ thinking in response to the pressures of stagflation; however, there was also significant resistance, rejection, and rapid abandonment of monetarist frameworks, particularly at the Fed and the Bank of England, where these ideas initially took roots.

⁵⁷ See e.g., Zech (2024). This later fostered the emergence of proper communities of ‘Fedwatchers’ or ‘ECBwatchers’. Originally established as a conference focused on agricultural issues in 1978, the Federal Reserve Bank of Kansas City organised the conference in Jackson Hole for the first time in 1982, under the theme of “Monetary Policy Issues in the 1980s”, and invited then Fed Chair Paul Volcker to deliver a speech. Other Federal Reserve Banks used to organise conferences in the 1970s that brought together academics and policymakers. For instance, Lucas and Sargent presented their influential paper “After Keynesian Macroeconomics” (Lucas and Sargent 1978) at a conference organised by the Federal Reserve Bank of Boston (Goutsmedt 2017). However, none of these events achieved the same prominence as the Jackson Hole conference.

⁵⁸ For example, from 1979 onwards, the Banque de France launched financial support to welcome researchers within the institution (Dutilleul 2025). In 1977, the Bank of England established a Panel of Economic Consultants, to invite academic economists to give their views on monetary policy (Acosta et al. 2024b). Similar initiatives emerged at the same time in other central banks, intensifying throughout the 1980s and 1990s.

⁵⁹ See also Hall (1992) and Fourcade-Gourinchas and Babb (2002) for similar views on monetarism. On the origins of monetarism, see e.g., Tavlas (2023).

Monetarism is not a monolithic approach, and important distinctions exist within it (Snowdon and Vane 2005, ch. 4). However, three fundamental principles can be highlighted. First, monetary policy plays a decisive role in determining fluctuations in output and inflation; managing the economy is thus better achieved through monetary policy than through fiscal policy (M. Friedman and Schwartz 1963; De Long 2000). Second, as Milton Friedman argued in his 1968 American Economic Association presidential address (M. Friedman 1968), neither monetary policy nor macroeconomic policy in general can permanently reduce unemployment.⁶⁰ There exists an equilibrium (or ‘natural’) rate of unemployment, which macroeconomic policy can affect in the short run, but which is determined by structural factors in the long run. In other words, monetary policy is neutral in the long run, i.e., it cannot permanently reduce unemployment below its equilibrium rate. Third, monetary policy should follow rules rather than be guided by discretionary reactions to specific events. In his *Program for Monetary Stability*, Friedman (1960) proposed a rule that would ensure stable growth of the money supply.⁶¹ This rule became a core tenet of monetarism in the 1970s, following Friedman (1968) and its sharp critique of discretionary monetary policy: Friedman argued that monetary authorities should avoid attempting to control a natural rate of interest or unemployment, as such interventions could lead to destabilising consequences (Forder 2018).

What was the influence of monetarism on central banks and monetary policy with respect to these three core principles?

With respect to the first principle, beginning in the 1970s, monetary policy did, indeed, take precedence over fiscal policy in many Western countries. While monetarist ideas likely contributed to this realignment, they were not the dominant factor shaping the shift in policy priorities. This shift was driven also by criticisms of the inherent link between fiscal policy and the electoral cycle (Buchanan and Wagner 1977; Nordhaus 1975), and by persistently high inflation rates, which placed immense political pressure, both from governments and the public opinion, on central banks to take action. Furthermore, the collapse of the Bretton Woods system and the accelerating financialisation of the global economy

⁶⁰ Note that the primacy of Friedman in developing these ideas has been questioned (Forder 2014).

⁶¹ Friedman had proposed such a rule on various occasions and before 1960 (Forder 2019, ch. 15).

transformed the ways in which macroeconomic policies impacted economic stability.⁶² In this changing landscape, monetary policy came to be regarded as a more effective tool for managing economic stability than fiscal measures.

Regarding the second principle—the long run neutrality of monetary policy and the concept of an equilibrium rate of unemployment—monetarism’s influence has been slow and indirect. Indeed, this sort of framing of monetary policy has been part of the central bankers’ cognitive infrastructure solely since the 1990s (Arbogast et al. 2024). Although the ideas of an equilibrium rate of unemployment and long-run neutrality of monetary policy were discussed among central bank economists, it took time for these ideas to be fully integrated, for instance, in central banks’ macroeconomic models.⁶³ But, in order to achieve this integration, the original concepts devised by Friedman underwent a substantial transformation, as they were translated into different frameworks, more compatible with other economic theories—particularly, Keynesian economics (Goutsmedt and Rubin 2018) and new Classical economics (Hoover 1988). This is illustrated by the change in vocabulary: the term ‘natural rate of unemployment’ became synonym with the term ‘NAIRU’ (‘non-accelerating inflation rate of unemployment’), developed by Keynesian economists Modigliani and Papademos (1975) and Tobin (1976).⁶⁴

The third principle—monetary policy should follow rules—contributed more directly to the 1980s debates surrounding the instruments of monetary policy, particularly in the United States, the United Kingdom and Germany. However, the influence monetarists gained over central banks’ thinking on this point was largely due to their ability to reach out beyond scholarly circles, to politics. In the United States, this influence first manifested through congressional pressure on the Fed. A peculiar alliance of populist representatives and other members of Congress sympathetic to monetarist ideas pushed for the public disclosure of monetary targets. This effort culminated in the passage of House Concurrent Resolution 133, which required Federal Reserve officials to report on their ‘objectives and plans with

⁶² On how financialisation impacted the conduct of macroeconomic policies, see e.g. Hall (1993), Braun et al. (2021), and Wansleben (2022).

⁶³ See Rancan (2022) for the Fed and Goutsmedt et al. (2024) for the BoE.

⁶⁴ On the history of the use of these two concepts, see Backhouse et al. (2023).

respect to the ranges of growth or diminution of monetary and credit aggregates' (Kettl 1986, 144–45).⁶⁵ Friedman described this resolution as 'the most important [...] change in the structure for the formulation of monetary policy' since the 1935 Banking Act (ibid. 146).⁶⁶

Nevertheless, the pivotal shift toward rule-based policy in the United States came with the so-called 'Volcker shock'. After being appointed in August 1979 by President Carter, Paul Volcker, the new Federal Reserve chairman, announced, in October 1979, that the Fed would adhere to a strict target for the growth of \$M1. This decision was not a strict endorsement of monetarism, but rather a political move that demonstrated the Fed's commitment to combating inflation (Hetzel 2008, ch. 13; Krippner 2007).

In the United Kingdom, monetarism did not dominate academic circles either, but it gained influence through political channels as the Conservative Party, under Margaret Thatcher's leadership, gradually adopted its principles (Smith 1987). The Tories were particularly attracted to the 'discipline' offered by strict monetary targets for controlling the growth of the money supply (Hall 1993, 287). Although explicit monetary targets were initially introduced under the Labour government of James Callaghan in 1977, the Conservatives sought to implement more coercive targets when they came to power. In March 1980, the government established a strict target for the growth of £M3.⁶⁷ However, officials within the Bank of England hesitated to fully endorse this approach, as they viewed the relationship between inflation and £M3 as too unstable (Goutsmedt et al. 2024). In their opposition, they invoked 'Goodhart's Law', articulated by their special advisor on monetary policy, Charles Goodhart: 'any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes' (Goodhart 1983).

In other European countries in Western Europe, monetarist principles also experienced ups and downs. As hinted by James (2012, 95), the Committee of Governors was mostly reluctant to endorse any form

⁶⁵ Similar targets had been adopted in Germany in 1974 and in France in 1976 (Kettl 1986, 144).

⁶⁶ U.S. Congress, Senate, Committee on Banking, Housing, and Urban Affairs, *Second Meeting on the Conduct of Monetary Policy*, hearings, 94th Cong., 1st sess., 1975, 34. Someone close to monetarists thinking about policy like Robert Lucas also saw an 'encouraging example' provided by Resolution 133 (Lucas 1980).

⁶⁷ The Bank, at the time, was not operationally independent from the government.

of monetarism;⁶⁸ however, some European countries were more inclined to experiment with these principles. Germany and the Bundesbank adopted an explicit monetary target as soon as 1974 (P. A. Johnson 1998). In France, by contrast, the push-back of the Banque de France against monetarist ideas was stark (Monnet 2015, 2018).⁶⁹

Whenever monetarists appeared to win a victory with the adoption of strict monetary growth targets, this success was generally short-lived. As hinted earlier, the adoption of these targets in both the United States and in the United Kingdom did not reflect the establishment of a new paradigm or a consensus among economists and central bankers. Whether in academia or central banks, many economists continued to support discretionary policies. On the policy front, the early 1980s witnessed a ‘hollowing out’ of monetarism (Clift 2019). While monetary policies in the United Kingdom and in the United States achieved some ‘bloody successes’ (rapidly reducing inflation at the cost of significant unemployment increases), they also faced ‘quiet failures’ (Best 2020): the instability of the relationship between inflation and various monetary aggregates in the early 1980s undermined the credibility of monetary targeting (Smith 1987, 150; Clift 2019). In October 1982, the Federal Reserve abandoned M1 targeting, effectively ending this monetarist ‘experiment’ (Best 2022). In the United Kingdom, discretionary policy returned as early as June 1980 when interest rates were lowered despite £M3 exceeding its target (Clift 2019).

What was left of monetarism? Debates around monetarism had started to shape the common cognitive infrastructure of academic economists and central bankers, particularly by drawing attention to a set of new concepts (e.g., equilibrium rate of unemployment) and policy devices (e.g., policy rules and explicit quantifiable targets). Yet, this occurred through a complex and rather uneven process, marked by conflicts, push-backs, and turnarounds. Thus, monetarists had a limited direct influence in the emergence, in the 1990s, of the common cognitive infrastructure.

⁶⁸ Established in 1964, this meeting gathered all governors or presidents of the central banks of the European Economic Community. On the evolution of European monetary institutions, including different venues gathering European central bankers, see e.g., James (2012).

⁶⁹ About monetarism in Belgium and the Netherlands, see notably Harmsma (2024) and Jones (2005); in Italy, see Ventresca (2023). Japan also adopted a monetary target in 1978, although its actual monetarist nature is contested—see notably Ito (1989).

4.3. Closing the Gap between Macroeconomists and Central Bankers

What was the shared cognitive infrastructure that emerged in the 1990s? It involved first and foremost a new style of reasoning regarding the control of inflation. Inflation was now understood as arising from economic fluctuations, triggered by ‘shocks’, that pushed the economy out of its long-term trend of growth; this trend is characterised by a given level of ‘potential output’, an equilibrium rate of unemployment and an equilibrium interest rate. The role of monetary policy was to maintain inflation at a stable and moderate level, which is a necessary condition for the economy to run at its ‘potential’. In order to achieve this, monetary policy has notably to achieve a sustained capacity of influencing expectations about the future formed by economic agents (households, firms). Indeed, in this way of reasoning about the economy, one pivotal idea is that economic agents make plans (about consumption, investment, savings, etc.) *today*, but *taking into account* what they *expect* will be the economic conditions *tomorrow* (academic economists would say that agents make ‘intertemporal plans’, based on ‘forward-looking’ expectations). It is thus imperative, to steer both the current and the future economic conditions, to ‘anchor’ inflation expectations at a low level. This was the most important novelty in the way central bankers think of the policy problem they are facing, and how to address it.⁷⁰

This particular style of reasoning results in a set of policy devices that would enable central banks to develop the ability to anchor agents’ expectations. The organising principle to this is to establish the *credibility* of the central bank: that is, economic agents should believe in the central bank’s commitment to maintain inflation at a low level. On the one hand, building credibility relies on various policy devices that make what central banks *do* (their policy) credible for agents: this entails notably the operational independence of central banks, their reliance on a transparent communication about their decision-making, notably through inflation targeting (i.e. the commitment to attain a target inflation level, and to justify any deviations from this level). On the other hand, this credibility results from the *legitimacy* of

⁷⁰ For further insights, details, and critical perspectives about this style of reasoning, the reader could turn to the literature produced by economists and central bankers (see e.g. Issing et al. 2001; B. M. Friedman 2003; Blinder 2004), various textbooks tackling the subject (see e.g. Drazen 2002), and political economy articles (see e.g., Braun 2015; Walter and Wansleben 2019).

the central bank, through the recognition by the public of its expertise in analysing economic conditions (*cf.* 5.).

Two groups of actors have participated in the coproduction of this cognitive infrastructure: central bankers and academic economists. The latter were *macroeconomists* following a *specific* theoretical and methodological approach, later labelled the ‘new neoclassical synthesis’ (or, sometimes, ‘new Keynesian synthesis’). In this respect, the history of the relation between central banks and economists in the 1990s is actually the history of the relation between central banks and macroeconomists of the ‘new neoclassical synthesis’. The emergence of this ‘special relation’ resulted in a ‘macroeconomic’ cognitive infrastructure for monetary policy; it also entailed the marginalisation of economists from other subfields—for instance, those working on financial economics—and of those working within other theoretical or methodological frameworks.⁷¹ In order to understand better the stakes of this ‘coproduction’, one should thus turn, first, to the specificities of the new neoclassical synthesis approach to macroeconomics.⁷²

In the 1990s, macroeconomists celebrated the advent of the new neoclassical synthesis as the emergence of a new ‘scientific consensus’.⁷³ The term ‘new neoclassical synthesis’ itself was popularised by Marvin Goodfriend and Robert King, two macroeconomists affiliated with the University of Virginia and the Federal Reserve Bank of Richmond. They first mention the label in an article, presented at a workshop at the Bank of England, and published in 1997. Goodfriend and King (1997, 231) contrasted the ‘common portray’ of macroeconomics as a field ‘in intellectual disarray’—plagued by ‘persistent disagreements’—with the ‘last decade’ trends in macroeconomics, of moving towards a ‘new neoclassical synthesis’.

Goodfriend and King (*ibid.*, 232) defined the ‘new neoclassical synthesis’ as the integration, within a same model, of ‘neoclassical’ features (such as intertemporal optimization and rational expectations)

71 See e.g., Fligstein et al. (2017) and Thiemann (2022).

72 What follows draws from an abundant literature on the history of macroeconomics: see Cherrier et al. (Forthcoming) for a summary.

73 Note that the term ‘synthesis’ is not simply a synonym for ‘consensus’, but rather a reference to the idea of a 1960s ‘neoclassical synthesis’ in macroeconomics (P. G. Duarte and De Vroey 2013). This storytelling is recounted in more detail, and analysed critically, by Sergi (2020).

with ‘Keynesian’ features (such as rigidities in price adjustment). This ‘synthesis’ forms the theoretical backbone for crafting ‘dynamic stochastic general equilibrium’ (DSGE) models: these models account for business cycle fluctuations as the dynamic responses to a wide array of exogenous ‘shocks’ (such as surges in competition, consumption habits, ...). While economic agents in the model would like to adjust their intertemporal plans (about consumption, production, saving, pricing, etc.) in response to the shocks, real and nominal rigidities within the model prevent immediate adjustment to equilibrium. Within this framework, monetary policy—primarily through interest rates—plays a central role in stabilising output and guiding the economy back toward equilibrium.

This result opens a clear path at ‘employing’ the macroeconomics of the new neoclassical synthesis for policymaking, especially in the domain of monetary policy (Goodfriend and King 1997, 231). The new synthesis supports indeed a set of conclusions about the role of monetary policy, notably that there is ‘little long-run trade-off between inflation and real activity’, that inflation has significant economic costs, and that credibility is the central concept for understanding the operation of monetary policy (ibid., 232). Additionally, these ideas were deemed ‘consistent with the public statements of central bankers from a wide range of countries’ (ibid.). Further contributions to this line of work would later designate the new synthesis as the ‘Science of Monetary Policy’ (Clarida et al. 1999); Michael Woodford, in his celebrated *Interest and Prices* (2003), also highlighted right away that his objective was ‘reconciling central bankers’ understanding of what they do with the way that monetary policy is conceived in theoretical monetary economics’ (Woodford 2003, viii).

Another development in macroeconomics played an important role in shaping the common cognitive infrastructure emerging in the 1990s: ‘new political macroeconomics’ (Galvão de Almeida 2021), sometimes also labelled ‘new political economics’ or ‘new political economy’. This literature conflated various strains of scholarship seeking to understand ‘how political constraints may explain the choice of policies (and thus economic outcomes) that differ from optimal policies’ (Drazen 2002, 7). One key question within this line of inquiry is the time-consistency problem, popularised by Kydland and Prescott (1977), which argued that policies deemed optimal at time t may no longer be optimal at time $t+s$, due to policymakers’ incentives to exploit short-term gains by misleading economic agents. This

dynamic, however, ultimately undermines policy credibility, as rational agents anticipate these incentives, rendering the optimal policy unachievable.

The time-consistency problem spurred new political macroeconomics analysis of issues such as constraining central banks' discretion, focusing on the importance of credibility and reputation (Barro and Gordon 1983a, 1983b). This literature also explored mechanisms for insulating monetary policy from political pressures, such as selecting central bankers with specific attributes, or formalising the delegation of authority to independent central banks (Rogoff 1985). This literature also investigated empirically the relationship between central bank independence and successful management of inflation (Alesina and Summers 1993). Although initially developed in the United States, the new political macroeconomics gained wider popularity in Europe during the 1990s (Goutsmedt and Truc 2023). Indeed, the tools and concepts introduced by this literature appeared particularly useful for examining European-specific issues: alternative systems for stabilising exchange rates, rules for fostering macroeconomic convergence, and conditions for establishing a monetary union. Ultimately, the new political economy framework also framed some of the debates about the design of the future ECB (see e.g., James 2012, 270–72).

Finally, this new literature also reignited interest in the 1970s stagflation. While the focus on explaining the causes of stagflation had diminished in the mid-1980s, a fresh set of explanations emerged in the 1990s, centering largely on the alleged missteps of central banks' during that period (Goutsmedt 2021). These new interpretations reshaped the understanding of stagflation and became deeply embedded in central bank discourse.

During the 1990s, central bankers exhibited a convergence toward a more unified style of economic reasoning. This trend was not fully independent of the academic dynamics described above. However, it was primarily enabled by significant economic and institutional transformations that had taken place since the 1970s. We thus now turn to these changes, taking place inside central banks, before illustrating how they contributed to closing the gap with academia.

Changing economic circumstances have been a powerful driver in reshaping central bankers' understanding of relevant economic issues and mechanisms, and thus of the policy stakes they were

facing. The end of the Bretton Woods system and rising financialisation strengthened central banks' relationship to financial markets.⁷⁴ The effectiveness of monetary policy—notably in controlling inflation—was thus understood, increasingly, as dependent on the ability to influence the behaviour of financial actors, both at home and, most importantly, abroad (see e.g., Braun 2015; Krippner 2007). In the European context, the emergence of the European Monetary System (then the Exchange Rate Mechanism) bound central banks of the European Economic Community to coordinate their policy interventions, and, more broadly, to think about the international spillover effects of their monetary policy.⁷⁵ In developing countries, the potentially destabilising effects of developed countries monetary policies, channelled by emerging global financial markets, became a key aspect of the reflection about the role of central banks.⁷⁶ Moreover, after the fall of the Soviet Union, new central banks were called to manage the ensuing economic transformations of the countries of the former Eastern bloc, on the model of Western central banks' actions (J. Johnson 2016). During this same period, many central banks lost their traditional roles in financial supervision and regulation, refocusing their activities primarily on monetary policy and inflation control (Goodhart and Schoenmaker 1995; Wansleben 2022, ch. 5). In the wake of these changes, central banks grew more concerned with the importance of the 'credibility' of their decisions. More broadly, governments and international organisations started pushing for a change in the institutional setting within which central banks operated, paving the way to the 'independence' of central banks. Such independence was clearly understood as a way to enhance 'credibility'. Many Western central banks were indeed granted at least operational independence in the 1990s (see e.g., McNamara 2002).⁷⁷ Inflation-targeting rapidly became a crucial policy device for newly independent central banks, serving both to structure communication with the public and to manage

⁷⁴ On the transformations of the international monetary system, see Helleiner (1996) and Daunton (Daunton 2023b). On the link between financialisation and monetary policy, see e.g., Krippner (2007), Holmes (2013), Braun (2018) and Wansleben (2022).

⁷⁵ On the role of central banks in the process of European economic and monetary integration, see Murlon-Druol (2012) and James (2012).

⁷⁶ Spectacular economic and financial crises have erupted in Latin America, since the 1980s, and in South-East Asia, at the end of the 1990s. Currency crises and debt crises often constituted the triggers of such episodes, leading central banks in these countries to rethink their operations: see, among others, Boughton (2001), Guzman et al. (2016), Babb (2018).

⁷⁷ For a longer perspective about conceptions of 'independence', see e.g., Do Vale (2021).

expectations (see e.g. Blinder 2004; Braun 2015; Best 2019).⁷⁸ Inflation-targeting involves the public announcement of a target for inflation over a specified time horizon. Price stability therefore becomes the central objective of the central bank adopting inflation targeting, requiring transparent communication about the instruments used to achieve the target.

This new style of economic reasoning developed within central banks ('credibility', 'targets', 'independence', etc.) mirrored the ideas developed by macroeconomists of the new neoclassical synthesis. Macroeconomists like Goodfriend and King or Woodford seem thus right in highlighting the overlapping between the new synthesis in academic macroeconomics and the new 'consensus' within central banks. The point of this section was to highlight that this overlap is not a simple coincidence, but the result of a coproduction process, involving economists outside and inside central banks, as well as policymakers.

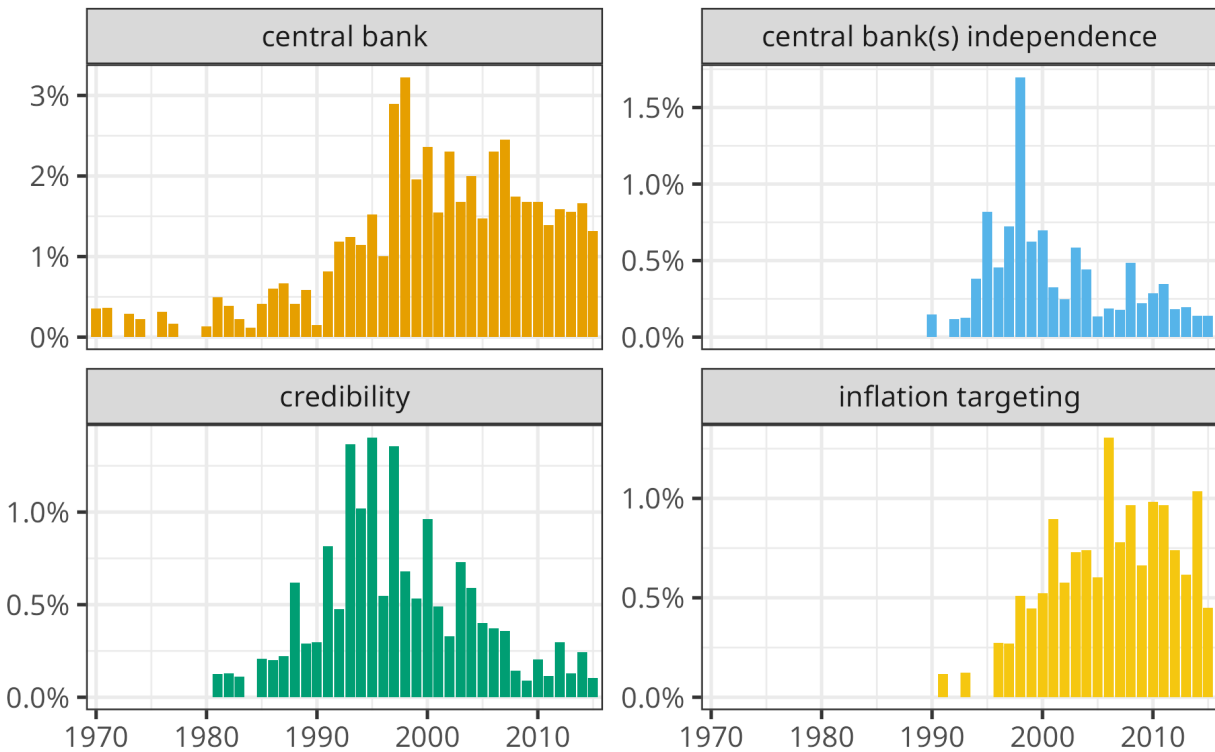
One visible driver of this coproduction is the 'double participation' in academia *and* central banks of various economists who were instrumental in shaping the new neoclassical synthesis. Besides those already cited (Goodfriend, King), it's worth mentioning at least three others, working within the Federal Reserve System: John B. Taylor, whose famous 'rule' (Taylor 1993) became a key policy device in contemporary central banking; and Jeffrey Fuhrer and George Moore, whose early formulations of a 'three equation model' (Fuhrer and Moore 1995) precedes Clarida et al. (1999).

Beyond individual trajectories, collective dynamics were at work, notably thanks to new venues, collaboratively established by central banks and academic macroeconomists. Let's take, for instance, the case of the Bank of England. It adopted inflation targeting in 1992. This shift required the Bank of England to publish quarterly inflation reports, subjecting it to increased transparency and accountability to both the Treasury and the public. Simultaneously, debates about monetary policy frameworks, central bank independence, accountability, and inflation targeting became central topics in the Bank of England's internal research (Acosta et al. 2024a, 17–18). The working papers and academic articles produced by the staff and executives reflected a growing emphasis on legitimising the

⁷⁸ Inflation targeting was first adopted by New Zealand in 1990, followed by Canada in 1991 and the United Kingdom in 1992. See Bernanke and Mishkin (1997, tbl. 1) for the different operational aspects of central banks' inflation targeting in the 1990s.

Bank’s new policy framework, often engaging directly with the political economy literature. For instance, Briault et al. (1997) reviewed the various theoretical justifications for central bank independence, aligning them with the Bank of England’s focus on transparency and accountability. This was presented at a conference organised by the Bank of Japan on the ‘operational and institutional frameworks for effective monetary policy’ (Kuroda 1997). The Bank of England’s efforts during the 1990s culminated in a 1999 symposium in London on ‘Monetary Policy Frameworks’ (Mahadeva and Sterne 2000).

Figure 1 - Proportion of academic articles mentioning central bank related concepts in their title



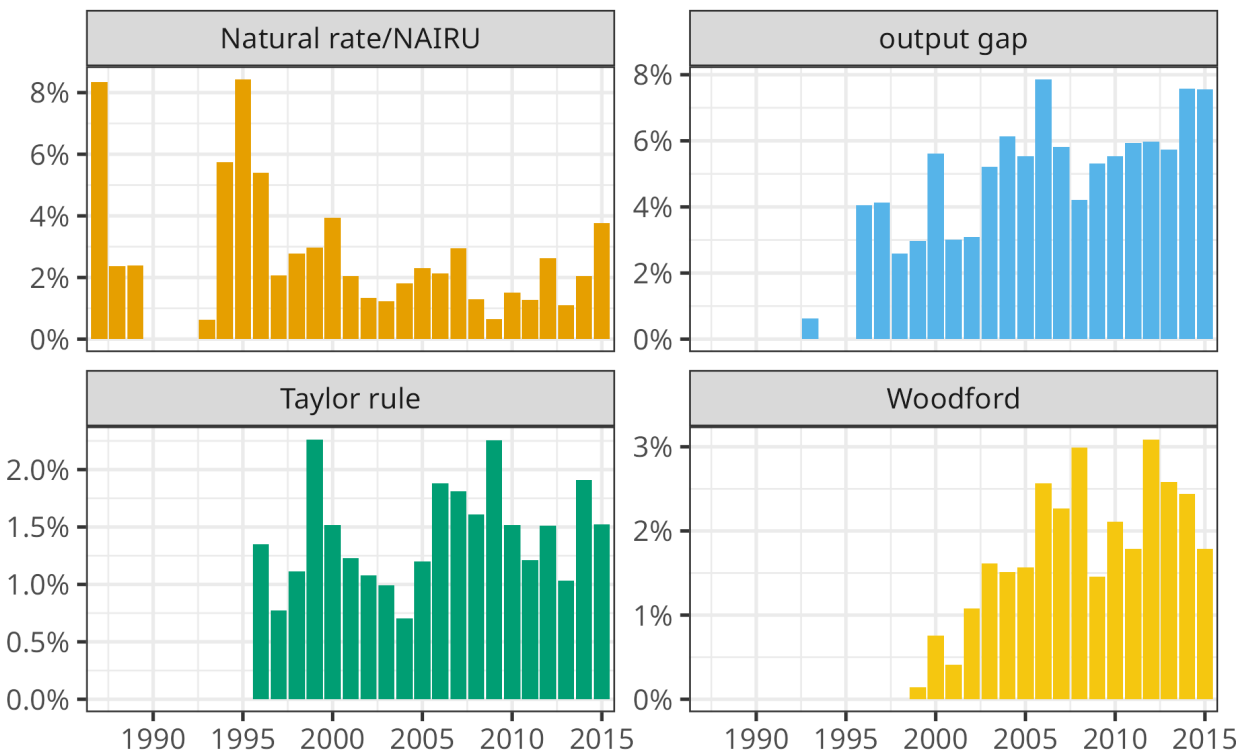
Going beyond case studies, Figure 1 takes a more quantitative look at this coproduction process. As shown by the common trend in different panels, key concepts elaborated during this period—such as ‘central bank independence’ or ‘credibility’—came to represent a sizable share of academic publications in macroeconomics.⁷⁹ Symmetrically, as shown in Figure 2, central bank governors and other

⁷⁹ The corpus consists of articles indexed in Web of Science, with a macroeconomics JEL code—extracted thanks to the Econlit database. It was compiled by Goutsmedt and Truc (2025). Mentions of ‘central bank(s) independence’ also include

policymakers more frequently featured, in their public speaking, either technical language (borrowed from academia), or direct reference to academic macroeconomists.⁸⁰

The coproduction of a common cognitive infrastructure by academic macroeconomists and central bankers, as highlighted in this section, was also enabled by a more general phenomenon. During this period central banks progressively became *producers* of academic research in macroeconomics as well, thus directly participating in the transformation of macroeconomics.

Figure 2 - Proportion of central bankers' speeches mentioning academic concepts



5. Contributing to Academic Research

The world of central banks of the 1990s-2000s has witnessed one major novelty: the creation of a new central bank, the European Central Bank (ECB). The ECB started its operation on June 1, 1998, taking over the (short) legacy of the European Monetary Institute (established in January 1994) and, most

variations such as 'independence of central bank', while occurrences of 'central bank' encompass related expressions such as 'central banks' or 'central banking'.

⁸⁰ Mentions of the terms were identified through a full-text search of central banks' speeches collected by Campiglio et al. (2025).

importantly, the long tradition of European monetary cooperation. The ECB took charge of the emission of the euro in 1999 and, thus, of conducting the monetary policy of the (then) second-largest economic area in the world in terms of GDP. The ECB, as the latest created central bank in the twentieth century, was also molded on the cognitive infrastructure discussed in the previous section: an independent institution, committed to a mission of controlling inflation, and adopting hitherto inflation targeting as an operational framework to anchor expectations. In many ways, the new central bank mirrored how, by the end of the 1990s, economic knowledge within central banks had stabilized around a set of practices: statistics, macroeconomic models, and the framing of monetary policy in the terms co-constructed with (and echoing) academic economics.

Still, building the credibility of the youngest central bank in the world, taking over from the more established national central banks of the eurozone countries, represented a challenge. How did the ECB legitimate its monetary policy decisions? Sociologists Stephanie Mudge and Antoine Vauchez argue that part of the strategy consisted in adopting specific arrangements regarding academic research, i.e. making the ECB a ‘hyperscientised’ central bank (Mudge and Vauchez 2016), ‘acting more like scientific or academic research center, and less like public, political or government institution’ (Mudge and Vauchez 2018, 249). Mudge and Vauchez’s work belongs to a relatively large literature in social sciences, characterising this novelty as the process of the ‘scientisation’ of central banks and taking the ECB as a crucial illustration of scientisation.

This section scrutinises the literature on scientisation, highlighting that the most novel aspect of this phenomenon is, indeed, the increasing pace of contributions to academic research produced by central banks (5.1). This ‘contributory’ scientisation represents a distinctive characteristic of the 2000s and 2010s; there, the feedback effect from central banks’ production of knowledge to academia’s production of knowledge reached a much larger scale, compared to the periods covered in the previous sections. Finally, we provide a more in-depth insight into one example of the type of economic knowledge produced by central banks in this period, namely the development and dissemination of Dynamic Stochastic General Equilibrium (DSGE) models (5.2).

5.1 The Scientisation of Central Banks: Contributing to Science

‘Scientisation’ is a term proposed by Martin Marcussen (2006, 2009) to describe central banks’ evolution.⁸¹ ‘Scientisation’ characterises, in Marcussen’s work, the increasing reliance of central banks on ‘science’ and, most specifically, on science produced within central banks. This is the main novelty of what Marcussen calls ‘the fifth age’ of central banking, that is, the period, starting in the early 2000s, during which ‘central bankers gain legitimacy and authority by basing their views on and applying the language of science’, marking a shift of power to ‘those who master the discourse of science’ (Marcussen 2009, 377). This entails that monetary policy leaves the realm of ‘politics’, to become ‘apolitical’—a ‘technical’ or ‘scientific’ issue that should be addressed by economists and central bank economists ‘mastering’ the relevant scientific knowledge.

This aspect of the transformation of central banks echoes, in Marcussen’s framework, the broader ‘rationalisation process’ of modern societies, emphasised notably by Max Weber: ‘explicit, abstract, calculable rules and procedures’ replace ‘sentiments, traditions and rules of thumb’ (Marcussen 2009, 375). Yet, the scientisation of central banks takes this process further, since it also turns central bankers into ‘scientists in their own right’ (Marcussen 2006, 90), also contributing to science—rather than just applying science. In short, one of the characteristics of scientisation is to blur the distinction between ‘science consumers’ and ‘science producers’ (Marcussen 2009, 370). Again, this phenomenon is observable beyond central banks, as a broader tendency across contemporary societies (Drori and Meyer 2006).

Goutsmedt and Sergi (2025) and Goutsmedt et al. (2025) reinterpreted the concept of ‘scientisation’, distinguishing between three different dimensions:

- ‘policymaking scientisation’: to conduct monetary policy, central bankers rely increasingly on the use of scientific knowledge and expertise;
- ‘legitimising scientisation’: in order to legitimise the conduct of monetary policy, central bankers rely increasingly on scientific discourse. Appealing and referring to science becomes a

⁸¹ For a complete survey of the related literature on ‘scientisation’ of central banks, see Goutsmedt and Sergi (2025). Note also that this literature has important connections to studies about other policymaking institutions, notably international organisations.

‘communication strategy’ devised to build credibility and authority vis-a-vis the public, and, simultaneously, to shelter monetary policy decision from political controversies;

- ‘contributory scientisation’: central banks actively contribute to the relevant science (here, economics).

Distinguishing these three dimensions of scientisation allows us to better grasp the actual novelty of the 2000s in the long-lasting, evolving relationship between academia and central banks. The use of ‘scientific’ knowledge to support policymaking is not such a novelty: the collection of data and statistical analysis conducted within central banks (*cf.* 2.) or the building of large-scale models (*cf.* 3.) had been increasingly pervasive within central banks well-before the 2000s. Similarly, legitimizing scientisation has been more and more recurrent since the 1980s: as discussed in Section 4, leveraging academic literature and scientific concepts to defend its policy (or to dismiss criticisms) played for instance a pivotal role in the monetarist episode. The new trend since the 2000s is the increasing propensity of central banks to contribute more and more to academic research, and for economists working inside central banks to think and act more and more like economists working in universities.

Again, this does not mean that, before the 1990s-2000s, there were no individual central banks (or no individuals within central banks) contributing to academic research. By contrast, contributory scientisation is the purposeful result of *institutional, collective* strategies (or, in short ‘research policies’), whose aim is to increase central banks’ staff inclination to (and opportunities for) making contributions to academic research and meeting the professional standards that also apply to academic economists. Depending on the central banks considered, these strategies entailed various institutional arrangements: creating dedicated spaces, within the institution, almost entirely devoted to this ends (‘research departments’, with their own full-time staff and material or financial resources, as the ECB’s ‘DG Research’); reshaping hiring and promotion policies, including by creating specific career pathways that emphasize meeting certain levels of qualification for hiring (such as holding a PhD in economics or having a track-record of academic publications); investing material, financial, or symbolic resources in promoting economic knowledge produced within the institution, for instance by creating working paper series, publishing books, or organising conferences.

Overall, the rise of these institutional arrangements can be observed qualitatively, at a fine-grained level, when analysing specific cases.⁸² When adopting a more general perspective, the literature on scientisation often relies on quantitative indicators, relating either to the characteristics of central banks' staff or to research outputs.

The first type of indicators show an increase in central banks' staff dedicated to research. Claveau and Dion (2018) estimate the number of 'staff research economists' in the Federal Reserve System. In 1993, an internal report recorded 360 economists; in 2017, Claveau and Dion identified 808 economists, corresponding to an average annual growth rate of more than 3%.⁸³ Moreover, a strong educational background in economics (typically, having completed a PhD training) has now become the norm in central bank hiring for this type of position. Also, 'hybrid' careers (from academia to central banking, and back to academia) are no longer exceptions, reflecting the alignment in professional standards between the two worlds.⁸⁴ Yet, these characteristics do not yet provide a clear advantage for accessing the upper echelons of central banking: other professional credentials (in-house central bank career, government offices, corporate executive functions, etc.) still open the way to a seat in monetary policy committees and governors' offices (Dogan and Lebaron 2025).

The second type of indicators focuses on research outputs, drawing specific attention to the publication of articles, authored or co-authored by central bank staff, in peer-review journals aimed at an academic audience. Claveau and Dion (2018) found that during the 2006-2015 period, 42,2% of articles published in monetary economics journals had at least one author working at a central bank—compared to 14,7% during the 1976-1985 period. The Federal Reserve System was a precursor in this direction, displaying a significant investment in academic research well before the 2000s, but many central banks followed then.

82 See e.g., Mudge and Vauchez (2016) for the ECB, Dutilleul (2025) for the Banque de France, Acosta et al. (2024a) for the Bank of England and Costa and Marçal (2024) for the Banco de Portugal.

83 Similarly, Mudge and Vauchez (2016) document the rapid and sustained growth of the number of 'visitors' to the ECB, facilitated by postgraduate, internship and fellowship programmes.

84 See Goutsmedt et al. (2025). Note that circulation of personnel across central banks (as well as between central banks and various international organisations) is also a significant trend.

5.2 Central Banks' Contribution to Macroeconomics: DSGE Modelling

From the mid-2000s, central banks all over the world established a new modelling practice—DSGE models (see Table 3)—replacing large-scale macroeconometric models that they had developed since the 1970s (*cf.* 2).⁸⁵ Although this practice also played a role in central banks policy routines (especially forecasting), DSGE modelling constitutes, foremost, an important contribution of central banks to the academic literature in macroeconomics. DSGE modelling is thus a key example of contributory scientisation: theoretical ingredients for this class of models proceeded from the academic developments of the new neoclassical synthesis (*cf.* 4.3); but modelling activities developed inside central banks were driving most empirical and computational innovations leading to the implementation of these theories into large-scale DSGE models.⁸⁶ Moreover, central banks' staff sustained publication activities contributed substantially to the surge of DSGE literature and therefore, to its establishment as the 'mainstream' in academic macroeconomics (*cf.* 5.1 and Table 4).

Table 3. DSGE Models in Central Banks

| Institution | Model Name | Year |
|-----------------------|-----------------|------|
| European Central Bank | NAWM | 2003 |
| Federal Reserve Board | SIGMA | 2005 |
| Bank of England | BEQM | 2005 |
| Czech National Bank | New Model or G3 | 2005 |
| Bank of Canada | ToTEM | 2006 |
| Norges Bank | NEMO | 2006 |
| Bank of Finland | AINO | 2006 |
| Banco de España | BEMOD | 2006 |

85 The involvement of central banks in DSGE modelling starts precisely with various attempts, made in the 1990s, of moving away from large-scale macroeconometric models. These older models did not match the cognitive infrastructure prevalent in central banks in the 1990s. One early attempt at creating new models, integrating some of the five distinctive elements of the new neoclassical synthesis, is the Reserve Bank of New Zealand model (Hunt et al. 2000).

86 'Large-scale' means here, of comparable descriptive detail as the models in operation since the 1970s.

| | | |
|---|----------|------|
| | | |
| Banco central de Chile | MAS | 2006 |
| Sveriges Riksbank | RAMSES | 2007 |
| Bank of Thailand | BOT-DSGE | 2007 |
| Swiss National Bank | DSGE-CH | 2007 |
| Banco Central de Reserva del Perú | MEGA-D | 2008 |
| Banco Central do Brasil | SAMBA | 2008 |
| Banco de la República (Colombia) | PATACON | 2008 |
| Reserve Bank of Australia | <NA> | 2008 |
| Banco de Portugal | PESSOA | 2008 |
| South Africa Reserve Bank | <NA> | 2008 |
| Reserve Bank of New Zealand | KITT | 2009 |
| Banco de España | MEDEA | 2009 |
| Banque centrale du Luxembourg | LOLA | 2009 |
| Bangko Sentral ng Pilipinas | <NA> | 2009 |
| Federal Reserve Board | EDO | 2010 |
| Bank of Japan | M-JEM | 2010 |
| European Central Bank | EAGLE | 2010 |
| Bank of England | COMPASS | 2011 |
| Federal Reserve Bank of Chicago | <NA> | 2012 |
| Bank of Israel | MOISE | 2012 |
| Banco de España and Deutsche Bundesbank | FiMOD | 2012 |
| Federal Reserve Bank of New York | <NA> | 2013 |

| | | |
|-----------------------------|-----------|------|
| Sveriges Riksbank | RAMSES II | 2013 |
| Danmarks Nationalbank | <NA> | 2013 |
| Bank of Canada | ToTEM II | 2013 |
| Swiss National Bank | <NA> | 2014 |
| Reserve Bank of New Zealand | NZSIM | 2015 |
| Norges Bank | NEMO II | 2017 |

Source: this is a non-exhaustive list of DSGE models developed in central banks for policy purposes. It is based on previous work by Sergi (2020), Yagihashi (2020), and Cherrier et al. (2023).

Computational and empirical aspects of DSGE modeling, especially in the case of very large models (and, notably, multi-country models) constitute one domain of specialization for central banks'. Although academics were also engaging with these aspects, we would argue here, taking two examples, that central banks' thrust the emergence of two very popular tools for DSGE modeling: the development of a solution algorithm, originally developed in the 1990s, by Jean-Pierre Laffargue, Raouf Boucekkine, and Michel Juillard, and embedded in a particular software (named 'Dynare'); and an equally distinctive econometric technique, Bayesian estimation. These two 'technical features' became two cornerstones of DSGE modelling, both for works developed within central banks and for academic contributions to macroeconomics.

The Laffargue-Boucekkine-Juillard algorithm embedded within Dynare allows for tractability of large-scale DSGE models: that is, the possibility of solving the model (determining the intertemporal equilibrium values) using a 'reasonable' amount of computational resources. This algorithm was particularly essential for formulating large-scale DSGE models, where the dimensionality of the mathematical system posed the more substantial challenges (Cherrier, Saïdi, et al. 2023). Right after the development of the algorithm in the early 1990s, Juillard developed a user-friendly interface to implement it: this started to circulate under the name 'Dynare' (for 'Dynamic Rational Expectations'). In the subsequent decade, the dissemination and the development of Dynare was crucially sponsored

by central banks (and other policymaking institutions), thus enabling their use of large-scale DSGE models (Cherrier, Saïdi, et al. 2023).

The rise of Bayesian estimation as an empirical method for DSGE modelling is often associated with the work conducted at the ECB by Frank Smets and Raf Wouters.⁸⁷ In their effort to build a new, DSGE-type model for the ECB, Smets and Wouters (2003) implemented Bayesian estimation and proved that such an approach could provide a satisfying fit for data. This result opened the door to the use of DSGE models in forecasting and quantitative policy analysis.

Both the work on Dynare and on Bayesian estimation took place within a network of central bank economists but also with significant involvement by some academic economists—illustrating the nature of DSGE models as boundary objects. In 1998, an annual ‘Central Bank Macroeconomic Modelling Workshop’ was established (at the initiative of Douglas Laxton, a modeller from IMF) and met annually in a different central bank.⁸⁸ This networking initiative proved crucial, in the early 2000s, for the three teams building the first large-scale DSGE models: besides Smets and Wouters’ team at the ECB, the Fed Reserve Board created SIGMA (Erceg et al. 2006) and the IMF produced the GEM model—as a collaboration between Laxton and New York Fed economist Paolo Pesenti (Bayoumi and Laxton 2004; Laxton and Pesenti 2003). Moreover, it was during a workshop held at the Bank of Finland in 2002, that Juillard (Dynare’s creator) was approached to integrate Bayesian estimation techniques into Dynare (Cherrier, Saïdi, et al. 2023; Cherrier et al. 2025). The Norges Bank funded the project, and Dynare 3.0 (released in 2004) came to integrate, in one single piece of software, all the technical features enabling the development of large-scale DSGE models. Moreover, several central banks established a new initiative, named ‘DSGE-net’, which funded Dynare.⁸⁹ These financial resources ensured the continuous development and maintenance of the software, which had become a ‘digital commons’ for both the central banking and the academic community (Cherrier et al. 2025).

⁸⁷ For a more complete history of this method, see e.g., Fernández-Villaverde (2010).

⁸⁸ See <http://www.douglaslaxton.org/id38.html> [retrieved 03/05/2025].

⁸⁹ For ‘International Network for DSGE Modelling, Monetary and Fiscal Policy’. See <https://www.dsgenet/> [retrieved 03/05/2025].

Central banks' staff heavily capitalised on these developments of DSGE modelling practices for academic publication. Table 4 shows most recurrent authors' affiliations, in more than 2600 journal articles on DSGE, published between 1998 and 2021: authors are, overwhelmingly, affiliated with central banks.⁹⁰

Table 4. Authors' affiliation for academic articles about DSGE models

| Articles' Affiliations | Occurrences |
|-------------------------------|--------------------|
| Federal Reserve Banks | 127 |
| European Central Bank | 79 |
| Cardiff University | 64 |
| International Monetary Fund | 60 |
| Federal Reserve Board | 56 |
| University of Pennsylvania | 53 |
| Bank of England | 49 |
| Sveriges Riksbank | 41 |
| University of Pretoria | 29 |
| Banque de France | 28 |
| Deutsche Bundesbank | 28 |
| European Commission | 28 |

⁹⁰ Data comes from the Scopus database. We conducted a search for titles and abstracts containing the terms 'DSGE' or 'Dynamic Stochastic General Equilibrium'. For each paper, we recorded all unique institutional affiliations—that is, if multiple co-authors were affiliated with the same institution (e.g., the European Central Bank), the institution was counted only once per paper. Based on this method, we identified, for instance, 79 papers that included at least one author affiliated with the ECB. Additionally, all individual Federal Reserve Banks were aggregated into a single entity for the purpose of this analysis.

6. Recent Challenges to Economists and Economic Knowledge in Central Banks

The 'Great Financial Crisis' and the ensuing 'Great Recession' triggered, along its financial and economic consequences, harsh criticism of central banks. Policymakers and their economic staff were called out for failing to anticipate an event of such magnitude. The backlash extended beyond central banking, targeting economics as an academic endeavor. As far as macroeconomics was concerned, such criticism seems relevant. After all, as outlined in the two previous sections, central bank economists and academic macroeconomists of the new neoclassical synthesis had forged a shared understanding of the pre-2008 world, defining a specific role for central banks and monetary policy. In turn, central bank economists had actively contributed in fuelling the academic macroeconomic mainstream now under fire.

In his popular opinion column in the *New York Times*, economist Paul Krugman (2012) summarised three main criticisms addressed to his profession, and particularly to macroeconomists of the new neoclassical synthesis. They failed to foresee the crisis, but also struggled to explain the mechanisms that led from the 2008 Lehman Brothers' collapse to the Great Recession. Finally, they were ill-equipped to propose—or even advise on—relevant policy responses.

In this final section, we suggest that the Great Financial Crisis did challenge the relationship between economists, economic knowledge, and central banks. However, ultimately, this relationship became even stronger: central banks had been asking their economists to provide new perspectives—new styles of reasoning, new policy devices—to make sense of the post-2008 economic circumstances and for supporting new policy needs. This entailed two distinctive effects, on academic economics (6.1) and another on economic knowledge produced within central banks (6.2).

6.1 Looking for New Perspectives

The Great Financial Crisis questioned what we have termed the ‘cognitive infrastructure’ coproduced by central banks and academic economists in the 1990s (*cf.* 4.1). On the one hand, the crisis uncovered biases in the pre-crisis style of reasoning: a macroeconomic perspective dominated among staff and policymakers, focusing primarily on inflation while sidelining financial issues. On the other hand, the crisis exposed the irrelevance of existing policy devices or the lack of new appropriate ones.

Fligstein et al. (2017) provides an example of the biases in the style of reasoning. The authors highlight how, in the United States, the Federal Open Market Committee failed to ‘recognise the impending collapse of the financial system and its broader consequences’, *because* of its way of ‘seeing’ the world. The ‘framing effect’ of the new neoclassical synthesis ‘blinded’ the Fed, insofar as, among other shortcomings, this framework ‘overwhelmingly brackets the real economy from the financial system’ (*ibid.*, 887).⁹¹ Indeed, new neoclassical synthesis macroeconomics neglected the role of financial markets and of the banking system in determining aggregate fluctuations in output, employment, and prices.⁹²

An example of the shortcomings of existing policy devices pertains to the role played by economists in implementation of Quantitative Easing (QE) policies by central banks during the crisis.⁹³ Acosta et al. (2024a) and Cassar (2023) documented, for instance, the case of the Bank of England’s QE implementation. Policymakers soon realised the irrelevance of existing analytical tools (particularly, of macroeconomic models based on the new neoclassical synthesis) when the interest rate reached the ‘zero lower bound.’ This entailed a difficulty in understanding the mechanisms at work with this type of policy, but, most importantly, in conceiving the concrete operationalisation of QE (e.g., the amount, structure, and maturity of asset purchase). As a policymaker recalls, ‘operational design was done in a rush [...] It was a breakdown of communication. The economists had done some economic analysis but hadn’t thought about how you might implement [it] in the market.’ (Acosta et al. 2024a, 28) As a result,

⁹¹ Other relevant shortcomings, for these circumstances, in the style of reasoning of the new neoclassical synthesis include: the concept of equilibrium (which exclude the possibility of large fluctuations), the idea of business cycles as driven by shocks (exogenous to the functioning of the economy), the idea of rationality (marginalising thus the possibility of panics, mimetic behaviours, etc.).

⁹² For instance, few pre-2008 DSGE models included a representation of these sectors (see e.g. Caballero 2010).

⁹³ For a presentation and discussion of QE, see notably Benford et al. (2009).

policymakers ‘essentially knocked up the QE plan (‘That’s how it will work, end of story’) in about three days’ (ibid.), thus without relying on expertise produced by in-house economists. After QE started, the Bank initiated new research to provide a rationale for the policy, and an assessment of its actual effects (ibid., 29-30).

Despite these shortcomings, the cognitive infrastructure prevalent before the crisis did not disappear. Actually, the prevailing style of reasoning about monetary policy—the necessity for central banks to be independent, the need to build their credibility, notably by prioritising price stability and using inflation targeting, etc.—remained largely uncontested. Nonetheless, central banks have been ‘layering new elements onto the old’ (J. Johnson et al. 2019, 547), gradually transforming their style of reasoning to incorporate the imperatives of maintaining financial stability and developing macroprudential regulation.⁹⁴ However, this transformation is not without contradictions. Central banks’ additional objectives, such as financial stability, increase the likelihood of new policy trade-offs (Goutsmedt and Fontan 2024) and require new types of expertise (*cf.* 6.2).

Similarly to the style of reasoning forged in the 1990s, DSGE models maintained an important role after the crisis, both in central banking and in academia. As illustrated by Table 3 and 4 (*cf.* 5.2), central banks around the world continued, after 2008, to produce in-house DSGE models; in the meantime, central bank staff pursued their research publication activities based on DSGE modelling. There have been various interpretations about the reasons for this resilience of DSGE models. For instance, it has been suggested that central banks had already invested, in the pre-crisis years, such a significant amount of material and symbolic resources, making these models ‘too embedded to fail’ (Mudge and Vauchez 2018).⁹⁵

However, these analyses, emphasising the permanence of new neoclassical synthesis macroeconomics and DSGE modelling, often understudy the elements of change within DSGE modelling. Actually, the consensus in academic macroeconomics has been on the move since the crisis. Public criticisms, such as

⁹⁴ On the transformations of central banks objectives and communication following the financial crisis, see e.g. Moschella (2024).

⁹⁵ An alternative explanation pertains to the ‘gatekeeping’ role of mainstream economists, which prevents alternative frameworks from emerging and gaining recognition within the profession (see e.g., Helgadóttir and Ban 2021).

those summarised by Krugman (2012), have been obviously one driver for this movement; yet, given central bank economists' have been also fostering new developments, especially with the intention of meeting the demands for new perspectives coming from policymakers.

One substantial part of these new developments simply consisted in the extension and amendment of the DSGE modelling framework. This included notably a more detailed integration of financial markets and the banking sector, as well as fleshing out their linkages with the real economy. This constituted an attempt at explaining the underlying mechanisms of the Great Financial Crisis.⁹⁶ The inclusion of financial markets and the banking sector in DSGE models was the most notable element of a general shift of macroeconomics towards studying these topics, as highlighted by Glandon et al. (2023) quantitative analysis of publications in macroeconomics. A related novelty has been the more detailed account given to alternative channels of monetary policy, trying thus to provide a rationale to QE: literature on monetary policy at the 'zero-lower-bound' flourished.⁹⁷ Another substantial trend has been the exploration of new hypotheses about economic agents' behaviour, amending several distinctive elements of the new neoclassical synthesis (such as rational expectations, the homogeneity of economic agents, intertemporal optimisation). Examples of this trend include a literature on 'heterogeneous agents', and another importing into macroeconomics some insights from behavioural economics. Both strains of research have their own roots in distinct intellectual and modelling traditions, often at odds with the new neoclassical synthesis (Cherrier, Duarte, et al. 2023; Passard and Sergi 2026). And yet, some ideas from behavioural and heterogeneous agents macroeconomics could be integrated into DSGE models, creating new avatars of the new neoclassical synthesis (see e.g., De Grauwe 2011; Kaplan et al. 2018).

Other approaches to economics, departing more radically from the new neoclassical synthesis, have also gained further space in academia, taking advantage of the criticisms against the 'mainstream'. Some have been trying to make their way into central banks, and gained some institutional support within them: a good example is agent-based modelling (see Axtell and Farmer 2025 for a survey), which became part of

⁹⁶ See for instance Iacoviello and Neri (2010) and Boissay et al. (2016).

⁹⁷ See for instance Bhattarai and Neely (2022) for a survey, and Harrison (2012) and Hohberg et al. (2019) for two examples produced by central bank economists.

a new research programme of the Bank of England in the early 2010s, despite being also met with resistance and criticism both within and outside the institution (Plassard 2020).⁹⁸

6.2 Strengthening Central Banks' Expertise?

Yes, the macroeconomic bias of economic analysis within central banks and the use of DSGE modelling were seriously challenged by the Great Financial Crisis. The work of economists within central banks came under intense criticism, as existing models failed to anticipate or adequately explain the unfolding crisis and its consequences. Yet, if anything, the crisis ultimately strengthened central banks' reliance on economic expertise, insofar as new missions emerged, requiring specialised knowledge and analytical tools.

To support this statement, let's turn to the usual indicators to assess scientisation (both, in its 'policymaking' and 'contributory' dimensions; *cf.* 5.1).⁹⁹ The crisis triggered a temporary slowdown in academic publications for some central banks, such as the Bank of England (Goutsmedt et al. 2025), though this was not the case for others, like the ECB (Mudge and Vauchez 2016). Overall, since 2008, central banks have continued to increase their academic publication output. Similarly, there is no evidence of a slowdown in the recruitment of PhD economists across most central banks (Dogan and Lebaron 2025; Goutsmedt et al. 2025). Finally, the appointments of economists with strong academic credentials to top leadership positions also persisted in the aftermath of the crisis—with figures such as Janet Yellen at the Fed, Mario Draghi at the ECB, and Mark Carney at the Bank of England exemplifying this trend.¹⁰⁰

⁹⁸ Beyond models, other ideas or concepts previously at the margins had entered the style of reasoning of central bankers: one example is Minsky's 'paradox of tranquillity' (and the related concept of financial instability); see for instance Yellen (2009).

⁹⁹ Regarding what Goutsmedt and Sergi (2025) refer to as 'legitimising scientisation'—that is, the strategic use of economic expertise to justify policy decisions and deflect criticisms—we may ask to what extent central banks have altered their communication strategies. Indeed, in the wake of the crisis, executives at the Bank of England reduced the technicality of their discourse (Goutsmedt et al. 2025), while the ECB has broadened its communication efforts to appear more responsive to 'public contestation' (Moschella et al. 2020).

¹⁰⁰ In recent years, major central banks have bucked this trend: In 2020, Andrew Bailey (a historian by training, who spent 35 years working at the Bank of England), was appointed Governor. Similarly, Jerome Powell, a former lawyer and investment banker, became the Fed Chairman; while Christine Lagarde, a lawyer by training, with a political career and former IMF Managing Director, was appointed as the ECB President.

One reason for this strengthened role of economic expertise lies in the institutional transformations of central banks after the Great Financial Crisis. As they were entrusted with new responsibilities (including financial supervision and regulation) and pressured to address emerging issues (such as climate change and economic inequalities), central banks were compelled to develop new policy toolkits—which, in turn, called for novel forms of expertise.¹⁰¹ Macroprudential policies offer a useful illustration of this shift. ‘Macroprudential policies’ designate various regulatory frameworks designed to monitor and mitigate systemic risks within the financial system. Such policies stem from the recognition by central bankers and economists that monetary policy cannot ensure financial stability while prioritising price stability, and that central banks require dedicated tools to achieve it (Borio 2011; Smets 2014). To implement such policies, central banks need to collect extensive financial data, construct models, and, ultimately, produce credible policy recommendations (Thiemann 2024).¹⁰² This long process was made possible by a new alliance (featuring central banks, the BIS, and academic economists), whose aims was to bridge the ‘gap’ between macroeconomics and financial economics and to conceptualize ‘the financial system’s cyclical fragilities and potential impact on the macroeconomy’ (Thiemann and Priester 2024, 3).

Importantly, the development of these new tools reflects more than the persistence of economic expertise centrality in central banks; it signals the rise of a distinct form of economic knowledge, one that diverged from the previously dominant form. These tools emerged from the macroprudential framework developed by the BIS staff in the 2000s, designed to curb ‘systemic risk’ (Baker 2020). It thus called for economists with profiles distinct from the typical new neoclassical synthesis macroeconomists who were predominant in the 2000s (Thiemann 2024, ch. 3)..

Central banks’ new involvement in climate change mitigation illustrates a similar trend. In recent years, several central banks have adopted a more proactive stance, and taken responsibilities in this domain.¹⁰³

At the international level, this shift has led to the creation of the Network for Greening the Financial

101 On the debates about the new missions of central banks, see e.g. Tucker (2018) and Johnson et al. (2019). On the issue of monetary policy and inequality, see Fontan et al. (2016).

102 On the development of new models for macroprudential regulation, see also Coombs (2020).

103 On central banks’ new discourse and responsibilities regarding climate change mitigation, see e.g. Langley and Morris (2020), Deyris (2023), and Rosa (2025). See also Best et. al (2025) for a survey.

System (NGFS) in 2017—a coalition of central banks and financial supervisory authorities, aimed at stimulating debates on green finance and developing new solutions. Regarding expertise, for instance, the NGFS has issued a guide to assist central banks in building ‘climate scenario analysis’, assessing material risks to financial stability.¹⁰⁴ Beyond relying on scenario analysis—a standard expert technique used by the Intergovernmental Panel on Climate Change (Borie et al. 2021)—central banks have also developed new models to evaluate the financial risks posed by climate change.¹⁰⁵ This includes the adaptation of stress-test models to incorporate climate-related risks, resulting in the emergence of ‘climate stress testing’. In this case, unlike for macroprudential policies, the development of these new tools has been driven by competing forms of expertise, originating outside central banks, particularly from private finance professionals and green think tanks (see e.g., Quorning 2024).

While the focus has thus far been primarily on financial stability concerns, the development of new climate-related expertise within central banks is not limited to this domain. The resurgence of inflation since 2021, in the context of ongoing climate change, has introduced new policy trade-offs—notably the tension between raising interest rates and maintaining adequate funding for the energy transition (see e.g. Goutsmedt and Fontan 2024; Best et al. 2025). Central bankers and economists within central banks are increasingly adjusting their style of reasoning by conceptualizing price stability through the lens of climate-related risks, including the impact on prices of the dependence on fossil fuels, the acceleration of the energy transition, and climate-induced catastrophic events (see e.g. Angeli et al. 2022; Schnabel 2022). This evolving style of reasoning underscores the need to integrate climate risks into macroeconomic modelling, particularly within DSGE models (Chen et al. 2021)—which remains relatively uncommon to date.

Beyond the development of analytical tools, climate change also necessitates institutional reorganisation within central banks to ensure that climate concerns are seriously addressed—or at least to appear to be prioritised. Just as transformations in data collection (*cf.* 1.), model development (*cf.* 2.) and academic

¹⁰⁴https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs_guide_scenario_analysis_final.pdf (retrieved 13/05/2025).

¹⁰⁵ Economists have not entirely disregarded scenario techniques in the twentieth century (see e.g. Lenel 2023; Evrard 2023); however, they remain a relatively uncommon tool.

publishing (*cf.* 5.1) signalled shifts in the role of economists within central banks, organisational restructuring can symbolise a broader institutional commitment to transform expertise related to climate issues. For instance, in January 2021, the ECB established a ‘Climate Change Centre’ coordinating activities ‘on climate change and sustainable finance’.¹⁰⁶ Such organisational transformation may lead to the recruitment of increasing numbers of experts with backgrounds in climate science. In turn, this may facilitate the development of new tools, but also provoke epistemic tensions with more established forms of expertise—particularly those associated with macroeconomics or financial economics.

As we highlighted all along the book, central banks’ new responsibilities—ranging from inflation control and financial stability to climate change or digital currencies—entail expanding the range of required expertise. In turn, this diversification also fragments expertise, multiplying the types of knowledge and professionals involved in central banking. This tension is recurrent in the history of central banks: economists’ expertise, for instance, has been criticized on many occasions and has had to confront other forms of expertise, notably the practical knowledge derived from experience in banking or financial markets. One consequence is a greater potential for epistemic conflicts behind the scenes, which may occasionally surface in public controversies.

At the same time, the growing centrality of central banks in global economic governance exposes them to stronger national and international pressures. As Moschella (2024) argues, central banks are political institutions: this entails that they act to build up political support for themselves, through engaging their multiple audiences (politicians, citizens, financial markets, etc.). These ensuing dynamics, when the audiences respond to the ‘reputation’ (or ‘public image’) signalled by central banks, leads to forms of scrutiny, extending also to central bank economists. This dynamics unfolded during the Global Financial Crisis, as we summarised in this section. But the response by central banks economists to criticisms from that period did not prevent further rounds of controversy: central bank economists came again under fire for failing to anticipate the emergence and persistence of inflation in 2021–2022. Such criticism has sometimes come from central bank leadership, as illustrated by Christine Lagarde’s remarks qualifying economists of a “tribal clique” having a “blind faith” in their models (Foy et al. 2024).¹⁰⁷ In a

106 https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210125_1~3fc4ebb4c6.en.html (retrieved 13/05/2025). The Banque de France also created a ‘Climate Change Centre’ in 2021 (<https://www.banque-france.fr/en/banque-de-france/engaged-central-bank/climate-change-sustainable-finance>; retrieved 13/05/2025).

107 In the United States, since the beginning of Donald Trump’s second mandate, criticisms of the Fed’s monetary policy came from within the government itself, and it went hand in hand with a broader mistrust of public statistics (see e.g. C.

context marked by geopolitical instability and increasingly visible climate risks, central bank economists are likely to face even greater scrutiny. At the same time, they will be expected to develop new data, models, and policy instruments capable of guiding central banks through this evolving and uncertain environment.¹⁰⁸

7. Concluding Remarks: Paths for Future Research

This book covered a relatively diverse scholarship within social sciences, addressing the evolution of the role and place of economists and economic knowledge within central banks. What do economists do in central banks? Why do central banks hire economists? The first main takeaway is that the answer to these questions requires a historical perspective, insofar as the role and place of economists in central banks has significantly evolved along the twentieth century. Despite the peculiarities of each central bank's historical trajectory, we illustrated that the extant strains of literature document one characteristic trend: the closer proximity between central banks and academic economics. With respect to our initial questions, we documented that, along the twentieth century, central banks hired more and more economists with an academic training (or even, with an academic career) and that these economists contribute more and more substantially to central banking by providing forecasting and policy analysis based on methods (especially statistical analysis and macroeconometric modelling; sections 2 and 3) and theoretical frameworks (Section 4) resembling those in fashion within the academic standards of the time. These academic standards evolve, either following their own dynamics, or, in the most recent period, thanks to the contribution of central banks (what we termed 'contributory scientisation'; Section 5). This can create epistemic tensions between different forms of economic expertise (e.g., the tension between competing theoretical frameworks; see Section 4). In a nutshell, this general trend can be summarised as the tendency of central banks to become 'boundary organisations', navigating not only between the market and the State, but also carving a position with respect to academia. However, our reading of this historical trajectory does not simply boil down to arguing that there were 'more economists, more economics' within central banks; indeed, we emphasized that this overall trend is

Jones and Fleming 2025).

108 Another illustration of economists' role in producing new data and analytical tools in an evolving environment is the development of the *Geopolitical Risk Index*, introduced in the *American Economic Review* by two economists from the Fed (Caldara and Iacoviello 2022). This index has since become a recurring reference in central banks' communication.

subject to several countervailing influences. First, economists' expertise is challenged by other, competing expertise, by non-economists. One important reason for this challenge precisely resides in the boundary nature of central banks, which explains, for instance, the vision of policymaking as 'art' rather than 'science', the place granted to practical knowledge drawn from the world of banking and finance (Section 2), or the 'upper hand' of political priorities and decisions over the prevailing expert views of the day (Section 6).

Beyond these conclusions, it is important to emphasise how the research conducted so far still has substantial blindspots, calling for further investigation.

Heterogeneous historical trajectories drove each national central bank to develop a distinctive relationship with, on the one hand, national and international financial and banking actors, and, on the other hand, with other policymaking institutions and the public. For this reason, one could not expect to observe the same kind of central banking in (say) Montevideo, London, and in Manila. As obvious as this sounds, it is an important difference to highlight, insofar as there is now much that we know about central banking in London, but not much about central banking in Montevideo, in Manila, and in most countries of emerging economies and of the Global South.¹⁰⁹ There is, thus, still much to be learned from addressing these case studies. One should not under-estimate, though, the influence that Western central banks' 'cognitive infrastructure' had over Global South central banks: ideas like 'independence' of the central bank, or 'inflation-targeting', have been definitely held as universal principles to be adopted by any central bank—as for instance in the countries of the former Soviet bloc (J. Johnson 2016).¹¹⁰ Yet, most central banks in emerging countries or in the Global South are definitely adapting, resisting, and translating these Western ideas about central banking, building on their own local history and trajectory. What is mainly missing from the literature is to engage with cases in which the 'boundary position' of the central banks substantially diverges from that observable in most countries: one could notably think of central banks in economies where the State plays a more prominent role in organising

109 Note that this does not mean that Western central banks have been extensively covered by the literature: for instance, almost no coverage has been given to central banking in small European open-economies (such as Austria, Switzerland, Luxemburg, or Ireland).

110 One could distinguish here two rather different dynamics, one of emulation and one of imposition of Western standards. Both dynamics have been brokered, historically, by international organisations, especially the IMF and the BIS.

the economy than in Western capitalist economies. The central bank of the People's Republic of China represents, in this respect, one main case study that is so far absent from the literature covered in this book.

The different configurations in terms of State/market relationships with the central bank would thus be the main reason for observing heterogeneous roles and places of economists and economic knowledge across different national central banks. To say it otherwise, insofar as central banks are different, they will pick different kinds of economists for participating in their respective operations. However, one should not forget that economists within central banks 'live a double life' ('double participation'; *cf.* 5.1): besides their job position as a central bank economist, they also rely on credentials rooted in the intellectual and professional standards determined in academia. With respect to this latter set of defining characteristics, central bank economists' identity has converged, all over the world, towards a shared and unique identity, driven by the double process of internationalisation/Americanisation of academic economics (*cf.* 1.). This similarity is clearly visible in career patterns, most particularly the ability of central bank economists to move from one central bank to another.¹¹¹ Now, this global circulation of central bank economists has not been addressed *per se* by the literature; but, most importantly, its *effects* have not been investigated.¹¹² It seems obvious that the emergence of an international workforce of like-minded economists could constitute a key driver for integrating and homogenising the type of economic knowledge produced by central banks—and, eventually, forcing more 'Western' views over emerging and Global South countries. In short, economic knowledge (e.g., ideas, theories, and models) travel across central banks with economists, and there is thus something to be learned from these travels.

'What is an economist' is, however, not set in stone. Despite the internationalisation trend observed, several national intellectual traditions still play more or less significant roles. Moreover, approaches that have been or that are currently marginalised within academia can pick up a new pace—while dominant approaches can experience decline and relegation. Investigating these academic dynamics

111 See e.g. Dogan and Lebaron (2025) and Goutsmedt et al. (2025).

112 Note that this workforce circulates frequently across central banks and other national and international policymaking institutions, but also between central banks and private business, including financial corporations and commercial banks. The increasing role of economists and economic knowledge in financial corporations, and its consequences on monetary policy and financial regulation, constitutes another, related topic that has not yet been amply covered by current research.

should be a more central concern in future research about central banks. At least for some important subfields of economics, central banks are now important actors, insofar as their economists are major contributors to the academic literature. Thus, their ability to ‘spin’ the identity and research agenda of economics has to be acknowledged.

All these paths for further research present similar challenges. They would require to balance, as we have tried to do in this book, a comparative, global perspective with the idiosyncratic nature of case studies. This represents a challenge, insofar as access to sources could prove more difficult for some central banks than for others.

Despite these challenges, there are still exciting new opportunities for new research, getting to understand more comprehensively the evolution of the role and place of economists and economic knowledge in central banks around the world.

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