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Essays in the Political Economy of Central Banking

Sebastian Diessner

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Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

 I declare that the final word count of my thesis is 43,218 words (excluding bibliography and appendices).

Statement of conjoint work

I confirm that Chapter 2 was jointly co-authored with Giulio Lisi and I contributed at least 50% of this work.

Statement of inclusion of previous work

I confirm that chapter 1 was in part the result of previous study for an MSc in Political Economy of Europe I undertook at the London School of Economics and Political Science.

Abstract

This doctoral thesis engages the political economy of central banking and central bank independence (short: CBI) by challenging and qualifying prevalent pre-crisis and post-crisis accounts of CBI as well as existing explanations of the policy-making of major central banks. Central banks have emerged from the economic and financial crises of the late-2000s as one of the key actors in the macroeconomy of advanced political economies. Understanding their actions and motivations, as well as the evolving relationship and communication between central banks and their variegated stakeholders, has thus become a more relevant feat than hardly ever before. The thesis consists of a set of three essays, employing a mixed-methods strategy which combines quantitative text analysis (in the first essay) with élite interviews (in the second and third essays) as well as qualitative document analyses (in all three essays). The first of the three essays revisits the Eurozone's unparalleled monetary-fiscal 'divorce' in light of an equally unparalleled involvement of the ECB in fiscal policy issues throughout the crisis. It argues that a situation best characterized as 'financial dominance' can help explain this puzzling observation, drawing our attention to the ECB's concerns about bearing financial risks on its balance sheet and its desire for fiscal solutions to alleviate these concerns. The second and third essays, in turn, pick up on and dig deeper into this apparent risk aversion on behalf of central banks in the context of unconventional monetary policy, probing into the understudied and perplexing political economy of central bank capital and concerns for central bank solvency. While the thesis as a whole is focused on the case of the Eurozone, it also leverages pertinent comparisons with other advanced political economies, notably the United Kingdom and Japan.

Acknowledgments

Writing a thesis is a long, challenging and gratifying journey. After years of study, months of fieldwork, hundreds of hours of interviews and transcriptions, thousands of analyzed texts, and countless drafts and discussions, the journey must eventually come to an end. In 'Science as a Vocation', Max Weber famously lectured his audience of students about the academic journey and cautioned that 'only a few men [or women] could endure this situation without coming to grief'. If I am among those lucky few, then it will have been due to the invaluable support of a number of people whom I would like to acknowledge in the following.

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I would not be anywhere without my marvellous family in Germany and France, my parents Martin and Isabelle and my brother Jonas, who inspire me on every level. Their love and support literally mean the world to me. About halfway into my doctoral studies, my beloved grandmother, Margot, passed away after a long and ultimately fulfilled life. When my brother and I were born, she started saving small monthly sums so that we could one day go to university or embark on the journey of our adult lives in another meaningful way. My weekly telephone conversations with Oma Margot, and the countless laughs we shared, have kept me going throughout all these years. I wish to dedicate this thesis to her memory.

To Margot and to my Family

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Central banks must feel like they have stepped through a mirror,[1] *and who can blame them? They used to struggle to bring inflation down or keep it under control; now they toil to push it up. They used to fear wage increases; now they urge them on. They used to dread fiscal expansion; now they sometimes invoke it. (...) What is going on in this topsy-turvy world?*
– Claudio Borio, OMFIF, London, 22 September 2017

1 – Introduction

Even though '*What is going on in this topsy-turvy world?*' does not exactly qualify as a research question for the purpose of my introduction, this thesis very much shares the above sentiment expressed by the Head of the Monetary and Economic Department of the Bank for International Settlements, colloquially also referred to as 'the central bank of central banks'. While the causes and consequences of the global financial crisis (GFC) and the ensuing Great Recession – triggered by the failure of Lehman Brothers Holdings Inc. in September 2008 – have been subject to controversial debates and conflicting interpretations,[2] there is little doubt that both have proved capable of stress-testing the very foundations of central banking. Figures 1 and 2 below illustrate this stress test and the shift from conventional (i.e. interest rate-setting) to 'unconventional' (i.e. balance-sheet) monetary policy which it has entailed.

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[1] Borio's (2017) reference to Lewis Caroll's 1871 classic *Through the Looking Glass* is in good company with a longer list of scholars who draw upon Alice's adventures to illustrate the absorbing world of central banking and central bank indepedence (and that of the Eurozone and the European Central Bank in particular). See Gretschmann's (1991) 'Malice in Blunderland' and especially Buiter's (1999) and Issing's (1999) notorious exchange at the outset of the Eurosystem ('Alice in Euroland' vs. 'Willem in Euroland') as well as an earlier version of Mabbett and Schelkle's (2019) recent article on central bank independence which had fittingly invoked 'The Smile of the Cheshire Cat'.

[2] For a comprehensive – yet ultimately inconclusive – overview and discussion of no less than 21 books on the subject, see Lo (2012).

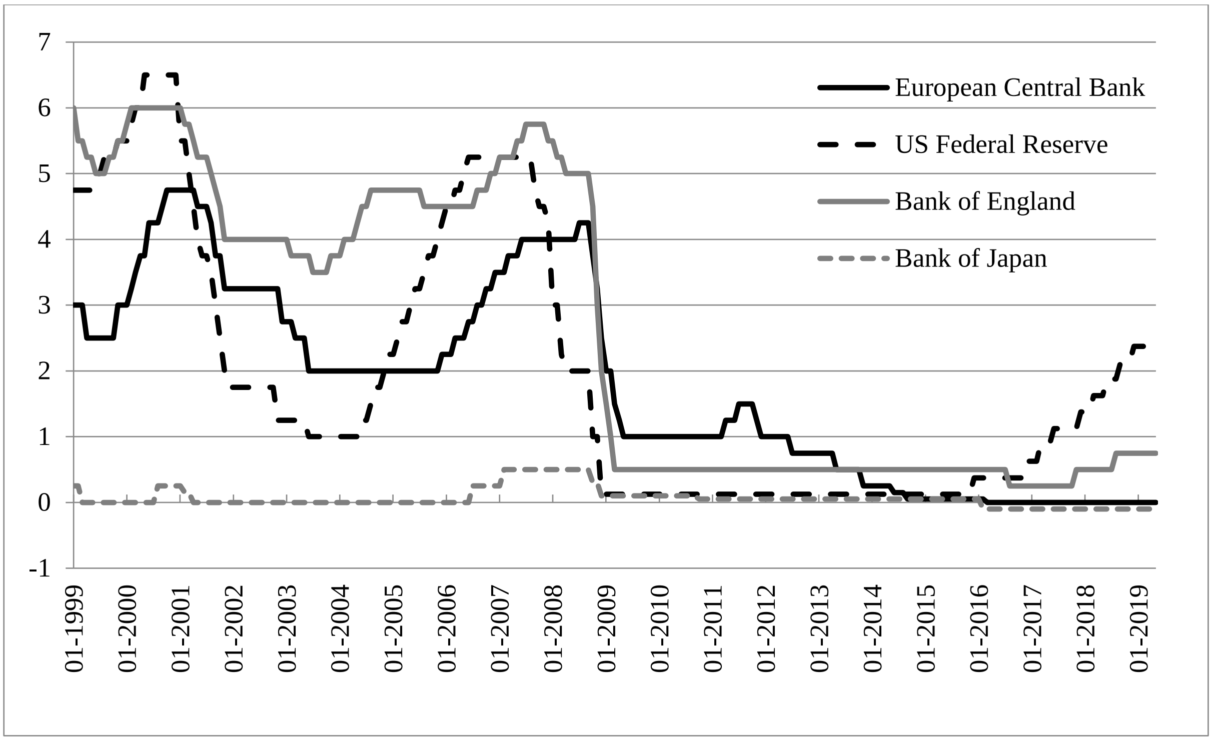

Figure 1: Policy rates of major central banks, 1999-2019 (percent, monthly)

Source: Own illustration based on Bank for International Settlements Statistics Warehouse

Figure 1 charts the main policy rates of four major central banks – the European Central Bank, the US Federal Reserve, the Bank of England, and the Bank of Japan –, demonstrating how all four moved to cut rates towards zero in late-2008 and early-2009 (or, rather, how the first three joined the BOJ which had already had near-zero rates since around the mid-1990s). Figure 2, in turn, shows how all four central banks' balance sheets expanded in light of reaching this so-called zero-lower bound (ZLB) on policy rates, which prompted monetary authorities to engage in large-scale bond-buying (also known as quantitative easing, or QE) so as to affect not only short-term but also long-term interest rates. Indeed, when choosing 2008 as the base year, balance sheets expanded dramatically in the decade that followed, namely by as much as 350% in the case of the ECB, some 440% for the Bank of England, and up to 500% for the US Federal Reserve and the Bank of Japan, respectively.

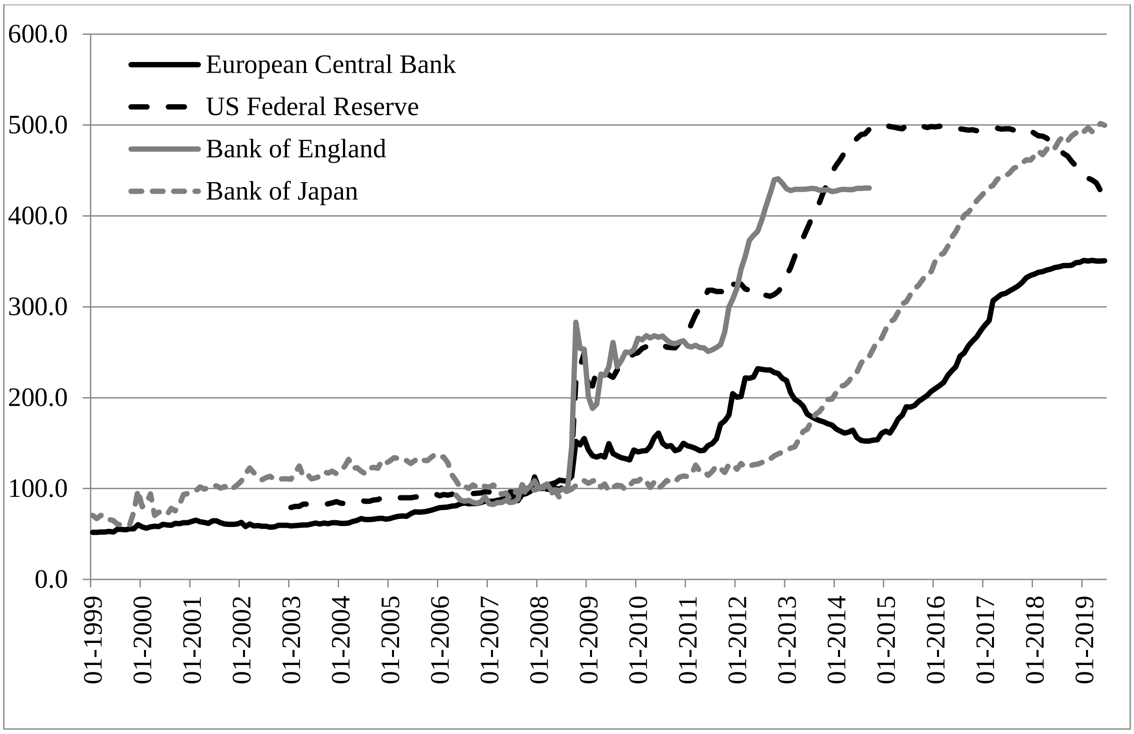

Figure 2: Total assets of major central banks, 1999-2019 (percent, monthly, 2008 = 100)

Source: Own illustration based on Federal Reserve Economic Data (FRED)

(Note: US Fed data available from 01-2003; BoE data available from 05-2006 to 09-2014)

While far-reaching central bank interventions and continuous experimentation were required to alleviate systemic financial instability and mounting deflationary pressures after the crises, central banks' legal statutes have, somewhat paradoxically, remained broadly unchanged. Yet, this apparent continuity in *de iure* institutional arrangements is hardly reflective of substantive debates and extensive reinterpretations of central banks' *de facto* roles and political independence. With monetary authorities having emerged as one of the key policy-making institutions in advanced political economies across the globe, understanding central bankers' *de facto* actions and motivations – as well as their evolving relationship and communication with various stakeholders – has therefore become a more pressing feat than hardly ever before, and can be instructive even beyond the realm of monetary policy-making.

Against this backdrop, this doctoral thesis will revolve around the following focal questions: What happens to an agent's independence when its powers, objectives, and instruments change in times of stress? How, in particular, is central bank independence (CBI) affected when a central bank's main task becomes financial stability on top of mere price stability, and when its various stakeholders become ever-more attentive to the intended and unintended consequences of unconventional monetary policy? How is CBI reconcilable with an increased need for monetary-fiscal coordination in moments of crisis, despite conventionally being perceived as a strict separation between monetary and fiscal policy? How have monetary authorities resolved these coordination issues with their respective fiscal principals? And when and why have they done so in very different ways?

I will tackle these vexing questions against the backdrop of the crises of the 2000s and 2010s, thereby seeking to challenge and qualify prevalent pre-crisis and post-crisis accounts of CBI as well as existing explanations of the monetary policy-making of independent central banks. In this vein, this introductory chapter first traces and reviews extant debates in the literature – namely successive generations of CBI scholarship in general, and accounts of the Eurozone's monetary-fiscal divorce in particular – and then introduces the three essays that make up this thesis with a view to their motivating puzzles, core arguments, and methodological strategies.

1.1 – The political economy of central banking

The academic literature on central banking and central bank independence is vast and has come to span an array of disciplines in the economic and social sciences over the years. Indeed, central bank independence has often been portrayed as an academic brainchild *itself*, epitomizing the triumph of the rational expectations revolution over the then-prevailing Keynesian paradigm's failure to account for the vagaries of stagflation in the 1970s and 1980s

(Carlin & Soskice 2015: chapters 3 & 4; cf. McNamara 2002; Forder 2005). In the following, my aim should thus not so much be to try and recapitulate this literature in its entirety, not least since the three essays of this thesis are conceived as stand-alone papers and thus contain their own reviews of the relevant literature and its respective limitations. Instead, the objective is to identify common conceptions and underlying assumptions in established political economy accounts of central banking, which my thesis seeks to challenge and ultimately contribute to. In a nutshell, even though we have become accustomed to it across the globe, central bank independence is, after all, a relatively recent phenomenon which has manifested itself in various shades and different dimensions, not few of which have been increasingly called into question since the fallout from the global financial crisis and the protracted Eurozone crisis.

1.1.1 – Defining and assessing central bank independence

To begin with, I should try and provide a definition of central bank independence, or CBI. Most conceptualizations of CBI acknowledge that 'independence' can mean different things and come in a variety of shapes and forms. One of the most common and meaningful conceptualizations has been to think of CBI as encompassing *goal independence* (freedom to choose the objectives of monetary policy) and/or *instrument independence* (freedom to choose the tools of monetary policy) (Debelle & Fischer 1994; De Grauwe 2018: chapter 9; Orphanides 2018). Goal independence is relatively rare and can be further subdivided into *'ultimate' goal independence* (freedom to set the ultimate objectives of monetary policy) and *'operational' goal* or *target independence* (freedom to set the operational targets of monetary policy) (Buiter 2006: 41; Schonhardt-Bailey 2013: 19-20). In turn, instrument independence, frequently also referred to as *operational* or *economic* independence, is commonly seen as the norm for central banks. However, it encompasses a number of different dimensions itself, some of which may be thought of as discrete (or binary) variables, others as continuous ones.

Amongst these sub-dimensions of instrument/operational independence, we may define: *institutional* (or political) independence (i.e. not to seek or take instructions from other institutions or bodies); *personal* independence (i.e. security of tenure through fixed terms of office in combination with high legal hurdles for dismissal); and, lastly, *financial* independence (i.e. budgetary autonomy, specific arrangements for the distribution of profits and losses, as well as 'a secure capital base') (Buiter 2006: 43). The latter, financial CBI, stands out as perhaps the least legally developed and harmonized dimension of independence (Stella 2005; de Lhoneux 2005; Cukierman 2008: 734-735), and it arguably remains among the least appreciated to date. Both its relevance, and our lack of appreciation, forcefully came to the fore during the crisis (Reis 2013a; Posen 2017), revealing ample scope for (re)interpretation. Indeed, a substantial part of this thesis is motivated by the puzzling and understudied notion of central banks' financial independence post-crisis, as revealed through my essays.

Part of our lack of understanding of the causes and consequences of different *dimensions* of central bank independence might stem from a tendency to *aggregate* these dimensions into quantified, global indeces (Grilli et al. 1991; Cukierman et al. 1992; Eijffinger & Schaling 1993; Jacome & Vazquez 2008; Dincer & Eichengreen 2014; Garriga 2016; Romelli 2018). Various studies, however, suggest that different dimensions of CBI may affect policy outcomes to different *degrees* and in different *ways*. Jacome (2001) and Balls et al. (2018), for instance, decompose common indices of CBI and conclude that economic independence tends to be *correlated* with the achievement of policy goals, but not political independence (cf. Banaian et al. 1995; 1998). This is not to mention more long-standing debates and doubts about whether CBI should be considered the *cause* of monetary policy outcomes and, above all, of price stability (Posen 1993; 1995; Mas 1995; Campillo & Miron 1997; Oatley 1999).

What is more, aggregated indeces of CBI usually capture independence arrangements codified in central bank statutes and mandates – i.e. they are typically limited to *de iure* CBI. As a result, these have found little to no relevant change in CBI post-crisis (Romelli 2018). By implication, such measures rely on assumptions and interpretations of the strength of legal arrangements which are subject to the researchers who code them (de Haan et al. 2008: 718) and which have been found to produce conflicting interpretations or erroneous measurements (Eijffinger & Schaling 1992; Brumm 2000; 2002). In turn, studies that do aim to incorporate *de facto* criteria into quantitative indices are usually limited to a single measure of CBI, namely that of turnover rates for central bank governors (Cukierman & Webb 1995; Keefer & Stasavage 2003; Crowe & Meade 2007; 2008), which has entailed problems of endogeneity (Dreher et al. 2008; Vuletin & Zhu 2011). Another set of economic studies of *de facto* CBI relies on survey-based methods (Fry et al. 1996; Blinder 2000), although these have been questioned on the basis of limited coverage and comparability (Garriga 2016: 852).[3]

Yet, the importance of examining *de facto* CBI, even if empirically seemingly more challenging, can hardly be overstated. This is exemplified not least by two eminent cases in the political economy of central banking: the Volcker Federal Reserve and the Bundesbank. The former is – to this very day (see e.g. Barro 2019) – credited with enhancing the US Fed's independence by means of a steep rise in interest rates to curb runaway inflation in the face of

[3] Siklos (2008: 802-804) provides a more compreshensive index but stresses that 'no single definition of central bank independence is right for all countries', while observing that debates around *de facto* vs. *de iure* CBI bear a close resemblance to those around 'actual' vs. 'declared' exchange rate regimes (Reinhart & Rogoff 2004; Levy-Yeyati & Sturzenegger 2005). On the latter, see also Broz (2002).

sweeping popular protest (known as the Volcker shock). Even though Volcker's presidency was preceded by the Federal Banking Agency Audit Act of 1978 – which exempted monetary policy from key accountability provisions (Labonte 2017) –, it is widely acknowledged that the Fed's enhanced independence ultimately stemmed from political agreement over the desirability of monetary policy autonomy (Bernanke 2010), while formally the central bank continues to be beholden to the US Congress (Binder & Spindel 2017; Broz & Clark 2018).[4]

Similarly, even though the post-war German Bundesbank is habitually characterized as the archetypal independent central bank (and indeed as the blueprint for the supranational ECB), it actually enjoys decidedly less statutory independence than is often assumed (Sturm 1995). In fact, its independence is unmentioned in Germany's constitution (*Grundgesetz*/Basic Law) and the legislation through which it is governed (*Bundesbankgesetz*/Law of the Bundesbank) does not enjoy constitutional protection in the form of changes being subject to an absolute veto by the upper house (*Bundesrat*) (ibid.: 28-29). Thus, the central bank's independence could in principle be amended by means of a simple majority in the lower house (*Bundestag*). Much rather, the Bundesbank's *de facto* CBI has, similar to that of the Fed, been located in the political system and partisan dynamics of the German Federal Republic (Lohmann 1998) and it continues to rest on a specific popular view of interwar monetary history (Mee 2019). Hence, a relevant preliminary conclusion of this concise literature review is that *de facto* interpretations of CBI are vital and – ultimately – grounded in the politics of central banking. In the following, I shall therefore focus my attention on the literature dealing with the *political* sources, and limits, of CBI.

[4] Note that accountability structures and practices are frequently seen as closely intertwined with CBI. While the essays in this thesis are not directly concerned with accountability issues, I have reflected on these elsewhere. See Collignon & Diessner (2016), Diessner (2018a), Jourdan & Diessner (2019).

1.1.2 – The politics of central bank independence

Moving on from definitions of CBI ('what') to motivations for delegating monetary policy to an independent central bank ('why'), any student of central banking will sooner rather than later notice the pervasive influence of the time inconsistency literature on the field. Indeed, hardly an article on the subject starts without referencing the seminal works of Kydland and Prescott (1977) and Barro and Gordon (1983) – as does the first essay of this thesis, in fact – who demonstrated that elected policy-makers cannot credibly commit to stable low inflation. The proposed solution to this problem of time inconsistency has been to divorce monetary from fiscal policy-making – i.e. to depoliticise the conduct of monetary policy by delegating it to an independent authority – and to advocate for CBI as the principal institutional means through which to achieve price and overall macroeconomic stability (cf. Wren-Lewis 2013). A corollary of this line of reasoning is that fiscal policy-making is seen as constantly at risk of spilling over into, and ultimately dominating, the inflation-fighting efforts of independent central banks, rendering a separation of the two indispensable (Goodfriend & King 1997; Artis & Winkler 1998; Bini Smaghi 2007; Leeper 2010; cf. Schelkle & Hassel 2012: 19) – a proposition that can be traced all the way back to at least David Ricardo (1871[1824]).[5] Another key corollary is that CBI is frequently seen as incompatible with extensive levels of cooperation and coordination between monetary and fiscal authorities, even though this might become necessary in periods of stress (Walsh 2011; Blinder 2012; Meltzer 2014; Sims 2016).

Consequently, much of the literature on CBI has been preoccupied with questions of how to *design* and instate an effective separation of monetary policy from other government policies. According to Pierre Siklos (2008: 804, emphasis added), in a 2008 special issue of the

[5] One may also characterize this school of thought as theorizing independence as 'negative freedom', i.e. freedom from government interference. I thank Waltraud Schelkle for alerting me to this.

European Journal of Political Economy, which grappled with the straightforward question 'Does Central Bank Independence Still Matter?' (de Haan et al. 2008):

> 'most importantly, the literature on CBI has tended to focus on the narrow aspects of the freedom given to the central bank to deliver monetary policy without political interference, and less on the (...) *mechanisms* that can protect the central bank from governments infringing on its autonomy'.

Yet, while this may hold true for the *economics* literature on CBI, it applies relatively less to political science and political economy accounts of independent monetary policy-making. As Mabbett and Schelkle (2019) note, a '"second generation" of research into CBI (...) looks for endogenous factors that can explain how interference by governments is prevented', namely by 'locating the basis of independence in the properties of the political system' as well as by assessing the 'strategies available to central banks themselves' (2019: 5, 20). Among the latter, pertinent resources leveraged by central bankers may include 'expertise', 'networks', and 'key audiences' (ibid.; Goodhart 2015; Johnson 2016; Lohmann 2003). Notably, however, this second generation appears to share the same underlying conception of independent central banking found in the economics literature – that is, an understanding of CBI as protection from government interference – and merely aims to explain differently how it may be brought about (namely, not by emphasizing the design of CBI itself, but by analysing how autonomous central bankers navigate their respective institutional and political environment).

Interestingly, a congruent literature in political science and political theory conceptualizes many of the same phenomena – i.e., delegation of policy autonomy to agents and trustees – but has tended to rely on the opposite underlying assumptions when it comes to independent central banks. Instead of departing from the preconception of governments (i.e., principals) seeking to interfere with the sound conduct of monetary policy-making, studies in this mould are more concerned with central banks (agents) shirking from their assigned responsibilities. In this vein, political scientists have recently come to pay increased attention to central bankers' latent ideas, preferences and motivations (Adolph 2013; Fernandez-Albertos 2015; Lombardi & Moschella 2016; Schulz 2017; Van Esch & de Jong 2019). This has entailed propositions of monetary authorities engaging in discretion-seeking and power-maximization (Conti-Brown 2016; Conceição-Heldt & Müller 2017; Dietsch et al. 2018), thereby ultimately giving rise to the spectre of central banks becoming 'overmighty citizens' (Tucker 2018).[6]

In a way, many of these issues and contentions hark back to what is perhaps one of the most prominent debates among students of independent central banking – fuelled not least by the aforementioned time inconsistency school – namely that of 'rules versus discretion', i.e. the question whether monetary policy should best be conducted according to some predetermined monetary rule or whether it should be left entirely to the discretion of macroeconomic policy-makers (Simons 1936; Friedman 1968; Kydland & Prescott 1977; Barro & Gordon 1983; Blanchard & Fischer 1989; Laidler 1991; Taylor 1993; McCallum 1997; Stokey 2003). Unsurprisingly, perhaps, the truth is most likely to be found between these stylized extremes. As has become increasingly evident, a key problem with this stark a distinction is that monetary policy-makers themselves hardly ever profess to think along these lines in practice (King 1997: 85; Greenspan 1997; Blinder 1998) including, most probably, not even Paul Volcker himself (see, e.g., The Economist 1991).

[6] For a deeper investigation into the constitutional and political-theoretical problématique of independent central banking, see Lokdam (forthcoming).

Instead, more accurate depictions of independent central banking in practice have demonstrated that policy-makers are prone to exhibit 'rule-*like* behaviour' (Issing et al. 2005: 75-76, emphasis added), which is more akin to a framework of 'constrained discretion' (Bernanke & Mishkin 1997), thereby allowing for 'flexible commitment' on behalf of monetary authorities (Lohmann 1992; 2003; cf. Arestis & Mihailov 2009). This captures more succinctly not only the fact that central bankers typically have discretion over the tools of monetary policy, while being bound by the ultimate goals specified in their mandates, as discussed above. It is also more reflective of the trade-offs inherent in monetary policy decision-making (Stiglitz 1998; Bernhard et al. 2002; Kirshner 2003), which give rise to processes of extensive deliberation and persuasion within monetary policy committees (Schonhardt-Bailey 2013). In Lohmann's (2003) insightful account, for instance, central banks can make credible commitments all the while retaining a degree of policy flexibility by means of establishing and cultivating ties with key audiences.[7] Importantly, however, those key audiences are more often than not assumed to comprise 'the markets', rather than 'the people', despite growing evidence that the latter have become increasingly attentive to central bankers' actions in the aftermath of the crisis – and vice versa (Braun 2016).

At a more general level, the *rules* versus *discretion* controversy maps – albeit imperfectly – onto long-standing theoretical debates in the social and political sciences that may broadly be synthesized under the headline of *structure* versus *agency*. Without wading too deeply into such contentious debates, I posit that, once again, the accounts which have proved most promising in terms of analytical leverage have tended to be those aiming for a fruitful middle ground between the outermost extremes. This is exemplified, amongst others, by a growing

[7] In the terminology of Schmidt's (2008; 2013; 2014) discursive institutionalism, Schonhardt-Bailey's (2013) and Lohmann's (2003) propositions could be seen as congruent with those of a 'coordinating' and a 'communicative' discourse, respectively.

literature which has sought to leverage the insights of both actor-centred institutionalist and constructivist political economy approaches (e.g., Hay & Rosamond 2002; Blyth 2002; Parsons 2002; Jabko 2006; 2019; Woll & Jacquot 2010; Saurugger 2013; 2016; Carstensen & Schmidt 2016; Diessner 2017; Matthijs & Blyth 2018; Zeitlin & Vanhercke 2018; Schulz 2019; Ban & Patenaude 2019).[8] In the realm of central banking, for instance, McNamara (2002: 48) has prominently argued that CBI constitutes a 'rational fiction' which actors seek to instate and uphold not *only* for narrow functional reasons, but *also* due to its 'important symbolic properties', whereas Matthijs and Blyth (2018) demonstrate how macro-economic policy-makers can come to find it 'rational to learn the wrong lessons'. The three essays of this thesis are situated within this broader debate, as introduced in section 1.3 and as developed further in its application to the case of the Eurozone's ideational consensus below.

In sum, this section has sought to identify several common conceptions and underlying assumptions in extant political economy scholarship on central banking and central bank independence which my thesis aims to challenge and ultimately contribute to. These are: (1) First, a conception of central bank independence as *protection from outside interference* – and, in particular, protection from interference or even dominance by fiscal policy-makers. (2) Second, and following on from the first, an underlying assumption of CBI as *foreclosing meaningful coordination* and outright cooperation among monetary and fiscal policy-makers. (3) Third, an underdeveloped and/or mostly implicit understanding and conceptualisation of a central bank's *financial independence*, i.e. its financial relationship with its fiscal principals.

[8] See Saurugger and Thatcher (2019) for a recent special issue discussing 'strategic constructivism', broadly defined as 'a specifically actor-centred perspective, insisting that although actors are embedded in cognitive frames they are equally able to develop a strategy that will help them to achieve their goal[s] (...) From this perspective, cognitive frames do not solely constitute the environment in which actors are embedded (a constitutive logic), but are also tools, consciously used by these same actors to attain their goals' (2019: 468).

(4) Fourth, an assumption that CBI (and indeed delegation to independent agents in general) entails *discretion-seeking* and *power-maximization* on behalf of the central bank (the agent). (5) And finally, a conception of central banks' core audience and most important constituency as *monetary policy experts*, especially market participants and other expert observers.

My essays tackle these conventions one-by-one within a broad, actor-centred framework of strategic constructivism, which manifests itself as *constrained discretion* in so far as central bankers seek to navigate their institutional and political-economic environments in order to obtain a degree of flexible commitment vis-à-vis their variegated audiences. In particular: The first essay challenges the first convention (1) by emphasizing the *structural* pressures brought about by central banks' newly-acquired financial stability roles throughout the crises. The second essay tackles the second, third and fourth conventions (2, 3 and 4) by tracing *interpretations* of CBI in the face of growing risks accumulated on three major central banks' balance sheets. The final essay engages the third and especially the last convention (3 and 5) by leveraging a *strategic-constructivist* framework in which central bankers make recourse to the public's perceptions so as to balance monetary policy effectiveness with concern for their institutional legitimacy. A more detailed synopsis of all three essays is provided below, after introducing the peculiar empirical case of the Eurozone and its crisis, which this thesis revolves around.

1.2 – The case of the Eurozone: Europe's macroeconomic policy consensus and an 'unprecedented' monetary-fiscal divorce[9]

Why 15 member states of the then European Community came to officially agree on the adoption of a single currency in Maastricht in February 1992 is subject to debate to this day.

[9] Parts of this section have been published in Diessner (2017) which provides a more detailed review and discussion of EMU's prevalent policy consensus and how it fared throughout the Eurozone crisis.

Notable justifications range from functional-economic pressures in the face of increased capital mobility (Padoa-Schioppa et al. 1987; Eichengreen & Frieden 1998; Moravcsik 1998; Iversen et al. 2016), to the global hegemony of monetarism and neo-liberalism (Moss 2004), to some combination of both (McNamara 1998; 1999). Others stress reasons beyond the economic realm, such as geo-strategic considerations of tying a recently reunified Germany to the West (Katzenstein 1997; Szász 1999; Marsh 2011; Jones 2013; De Grauwe 2013a). Interestingly, however, there is markedly less dispute about what *facilitated* this agreement, compared to earlier attempts at establishing an Economic and Monetary Union in Europe. In short, monetary integration is seen to have been founded on a conspicuous policy consensus which scholars have come to refer to as a paradigm of 'sound' money and public finances (Dyson & Featherstone 1999; Sadeh & Verdun 2009) or the 'Brussels-Frankfurt consensus' (De Grauwe 2006: 724-727; Schelkle 2013: 41; Jones 2013). From the outset, central bankers have been pivotal in shaping this consensus, as they formed part of – and in many cases spearheaded – the 'epistemic communities' of policy experts who guided and lobbied for the introduction of the euro or who were even directly tasked with the institutional design of the monetary union, such as the Committee of Governors, the Committee for the Study of Economic and Monetary Union (the 'Delors Committee'), and the Association for Monetary Union in Europe (Verdun 1999; Collignon & Schwarzer 2003; James 2012; Jones 2019).

In this reading of EMU, the run-up to the single currency was characterized by a convergence in beliefs about the virtues of price stability and central bank independence among two camps of scholars and policy-makers which had been loosely labelled as 'monetarists' and 'economists' since at least the 1970s (Tsoukalis 1979; Torres 2008).[10] What tipped the

[10] Other intriguing accounts of the ideas and politics surrounding EU economic and monetary cooperation include Ludlow's (1982) longue durée view of the politics behind the establishment of the

balance in favour of the former camp was the ascendance of persuasive monetarist ideas – such as those championed by the aforementioned time inconsistency school – as a powerful alternative to the Keynesian paradigm's failure to account for the persistence of stagflation, coupled with the real-world experience of free capital movement in the European Monetary System as well as the German Bundesbank's successful track record of maintaining stable low inflation (McNamara 1998; Dyson & Featherstone 1999). The final outcome was an agreement on EMU that put ostensibly little emphasis on supranational macroeconomic governance beyond an independent central bank mandated to achieve the primary objective of price stability (so as to ensure 'sound money'), complemented by a looser framework of rule-based fiscal surveillance (so as to maintain 'sound public finances' and thereby safeguard central bank independence) (ibid.; Artis & Winkler 1998; Collignon 2002; Buiter 2004; Heipertz & Verdun 2010; Chang 2016; De Grauwe 2016).[11]

This confluence of factors has yielded what is without doubt a highly intriguing case of CBI. Hardly anyone would deny that EMU's central bank, the supranational ECB, embodies the most independent monetary authority in the developed world, and with a margin. What renders the ECB uniquely independent is the 'asymmetrical' nature of EMU (Verdun 1996): while monetary policy-making has been centralized at the federal level, fiscal and other economic policies have remained predominantly in the hands of member state governments. This macroeconomic divorce is 'unprecedented' (Goodhart 1998: 410) in that it is not merely horizontal, but also vertical: there simply is no supranational fiscal authority in Europe that

European Monetary System and Garrett and Weingast's (1993) construction of the EU's Internal Market. A concise synthesis of different studies is also provided by McNamara (1998: chapter 3).

[11] To be sure, political palatability most probably constitutes another confounding factor for this stark outcome, with national constituencies not aspiring for larger-scale fiscal and political integration at EU-level, as evidenced not least by the failure of the Constitutional Treaty after the creation of EMU.

the ECB could be separated or independent 'from' (see Diessner & Lisi 2019: 6-7). The ECB scores highly on conventional indicators of CBI as well. First, its mandate is particularly narrow, ascribing overriding priority to the objective of price stability, while ultimately remaining vague about the relative weight of other objectives. Political independence is mandated in Article 130 of the Treaty on the Functioning of the European Union (TFEU) which states that the central bank shall not 'seek or take instructions from Union institutions, bodies, offices or agencies, from any government of a Member State or from any other body'. Article 127(1) TFEU attests to the 'primary objective' of price stability which is lexico-graphically superior to the decidedly vaguer notion of 'support[ing] the general economic policies in the Union with a view to contributing to the achievement of the objectives of the Union'. Second, and related, the mandate's relative vagueness about which other objectives are to be pursued leaves the ECB with the autonomy not merely to choose the appropriate instruments to achieve its objectives, but also to choose the objectives themselves as long as these do not violate the lexicographic order in favour of price stability or constitute outright debt monetization (De Grauwe 2018).

Taken together, this endows the central bank not simply with operational or instrument CBI, but arguably also with a degree of ultimate goal independence. Moreover, the statutes are not explicit in terms of how price stability ought to be defined, thus leaving it to the ECB itself to decide on the appropriate rate of inflation it aims to achieve, i.e. bestowing it with target CBI. Against this backdrop, Europe's central bankers have defined price stability as 'a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the Euro Area of below 2%' (ECB 1999), which was later specified as meaning 'below, but close to, 2%' (ECB 2003). Last, but certainly not least, overruling the central bank by means of changing its statutes is notoriously difficult: it necessitates orchestrating a change in the EU Treaty framework through an intergovernmental conference that arrives at a unanimous decision among all EU member states (i.e., not merely the Eurozone countries) as well as subsequent ratification by national parliaments (and, in a number of cases, endorsements through popular referendums).

On the whole, the ECB indeed turns out to be a uniquely independent monetary authority. In his perceptive critique of then-prevalent optimal currency area (OCA) analyses and their influence on the EU policy debate, Charles Goodhart (1998: 410) noted that for the proponents of such an unparalleled monetary-fiscal separation, 'this divorce is all to the good; indeed it is largely the purpose of the exercise'. Others have not shared this alleged optimism. Shortly after the creation of the euro, early observers rather stressed that 'something ha[d] been lost' in terms of monetary-fiscal coordination in EMU and hypothesized that 'the fear (...) of a threat to the independence' of the Eurozone's novel institutions would uphold this separation (Bini Smaghi & Casini 2000: 375, 388) and pose problems 'for some time to come' (Buiter 1999: 204; see also Dyson & Featherstone 1999; Verdun 2000).

In the same vein, reviewing her account of policy consensus in EMU, Kathleen McNamara (2006) stressed that her earlier argument faced limitations especially over questions of monetary and fiscal cooperation in the Eurozone, thus exposing 'a situation quite far from an ideational consensus' (2006: 819). This chimes in with the prominent proposition that the move to EMU has lead to a crucial loss of central banks' 'signalling' capacities not only towards fiscal policy-makers (Stéclebout-Orseau & Hallerberg 2006: 14), but also towards other economic agents such as wage-setters (see Hall & Franzese 1998; Hancké & Soskice 2003; Hancké 2013). In stark contrast to this, however, the ECB's striking involvement in controversial discussions about how to achieve fiscal discipline in EMU – for example around the time of the suspension and reform of the Stability and Growth Pact (Howarth

2004; Chang 2006; Matthijs & Blyth 2018) – has been but one indicator for the important links between monetary and fiscal concerns *even* in the Eurozone, and *even* in relatively 'normal' times.

These tensions have forcefully re-emerged over the course of the Eurozone crisis. On the one hand, the ECB's crisis interventions are commonly found to have no less than 'saved the Euro' (Iversen & Soskice 2013: 15; Wallace 2015: 175) and its 'leadership' and 'pro-active entrepreneurship' are attested to in numerous studies (De Rynck 2016: 121; Verdun 2017; Schoeller 2018; 2019; Tortola & Pansardi 2019).[12] On the other hand, however, the ascent of the central bank to become the Eurozone's guarantor of financial stability and its use of a wide range of unconventional instruments have sparked a debate about whether its actions qualify as quasi-fiscal policy and have overcome the monetary-fiscal divorce (Schelkle 2014; Diessner & Lisi 2019), thus further exacerbating its precarious reliance on 'output legitimacy' against the backdrop of EMU's much-debated 'democratic deficit' (e.g., Verdun 1998; Jones 2009; Enderlein & Verdun 2009; Majone 2010; Torres 2013; Sánchez-Cuenca 2017; Sadeh 2018).

Proponents of the ECB's interventions point to the vital role of central banks in supporting governments to prevent financial meltdowns and avert self-fulfilling dynamics (De Grauwe 2011; Blinder 2012) while opponents see any fiscal support provided by monetary authorities as opening the door to an overt re-politicisation of monetary policy and thus marking the beginning of the end of the monetary union (Stark 2012; Weidmann 2013; Feld et al. 2016). Yet, what unites both sides of the argument is the underlying assumption that the monetary-fiscal separation has been overthrown because the ECB ultimately pandered to the explicit or

[12] For a concise overview and timeline of ECB policy actions throughout the crisis, see, e.g., Henning (2016).

implicit needs of Eurozone governments. This corresponds closely to the aforementioned preoccupations underpinning central bank independence in the first place: much attention was paid to safeguarding central banks from the short-termed demands and activism on behalf of fiscal policy-makers. It is precisely here that the first essay of this thesis shall pick up from. While all three essays start from the recognition of the ECB being the most independent central bank in the world, each also suggests that this neither renders it incomparable, nor that it should lead us to foregone or inevitable conclusions.

1.3 – Synopsis of the thesis

1.3.1 – Synopsis of first essay: *Masters of the 'Masters of the Universe'? Monetary, Fiscal, and Financial Dominance in the Eurozone*

The first essay of my threefold exploration of the political economy of central banking revisits Europe's 'unprecedented' monetary-fiscal divorce in light of an equally unprecedented engagement of the ECB in fiscal policy issues throughout the Eurozone crisis. In particular, it takes on and questions conventional interpretations of government–central bank interactions as a perennial struggle for monetary versus fiscal 'dominance', framed near-exclusively around central bankers' pre-eminent preoccupation with unsustainable debt developments due to governments' fiscal activism and indiscipline (see, in particular, Sargent & Wallace 1981). In the case of the Eurozone crisis, recent studies have explicitly or implicitly attributed the ECB's behaviour – and its orthodox preference for fiscal austerity measures – to precisely this supposedly all-pervasive preoccupation (see, e.g., Allard et al. 2013; Yiangou et al. 2013; Lombardi & Moschella 2016; Bodea & Higashijima 2017). The essay challenges this interpretation and qualifies it by means of a more nuanced conceptual framework which accounts for what we may call a situation of 'financial dominance', propelled by central bankers' growing financial stability concerns. In particular, a financial dominance view of the Eurozone suggests that the ECB's interference with fiscal policy-making is not merely driven by a threat of unsustainable government *activism*, but rather by the prospect of precarious government *inaction* in the face of deteriorating financial stability.

Empirically, the essay first aims to establish the degree of intensity of the ECB's fiscal policy concerns over time, and especially throughout the Eurozone crisis. To this end, it devises an innovative mixed-method approach on the basis of a quantitative-cum-qualitative text analysis of major ECB communication documents from late-2003 to early-2016 (namely, the entire corpus of ECB executive board members' speeches, introductions to press conferences, and hearings in front of the European Parliament, amounting to a total of 1,097 documents). In particular, the essay creates a novel indicator of ECB fiscal communication by means of the quantitative text analysis technique of topic modelling and, more specifically, Latent Dirichlet Allocation (LDA). In a nutshell, topic models are sets of statistical algorithms which can be employed so as to scan large corpora of texts for co-occurring words and bi-grams, thereby creating baskets or clusters of terms which can be identified and labelled by the researcher as belonging to particular topics. This yields two types of data which can then be leveraged for further analysis: the contents of each of the identified topics, and the probability of documents being about a certain topic. The latter can further be plotted over time in order to gain a sense of the proportion or *intensity* of that topic across the entire corpus of texts. The essay does precisely this, first demonstrating that a 'fiscal policy' topic is clearly identifiable in the ECB's communication, and then uncovering a remarkable variation in its intensity across the sample.

Following on from this – and in order to both substantiate the aforementioned quantitative text analysis and shed light on the different propositions which can be derived from the conceptual frameworks of fiscal and financial dominance –, the essay then engages in a close reading of selected documents within the dataset as well as additional qualitative resources. In particular, it traces the development of the ECB's communication on fiscal policy issues (both 'publicly', as in the aforementioned major communication documents, and 'privately', as in several then-secret letters to different Eurozone governments) throughout the crisis, emphasizing that the central bank displayed stark concerns for risks to its balance sheet and repeatedly urged member state governments to pool and shore up fiscal resources in order to alleviate those risks. Ultimately, one of the key implications of the analysis is that prominent interpretations of the ECB's crisis policy-making as being driven by an orthodox austerity ideology (e.g. Blyth 2013; Ban 2016; Matthijs & Blyth 2017) and by invariable fears of fiscal dominance are too thin and contingent to fully account for the central bank's shifting preoccupations in times of stress. Instead, an appreciation of financial dominance concerns can help provide a fuller picture of the ECB's preferences and actions, thus constituting a case in point for independent policy-makers' increasing apprehension not only of government activism, but also of the fallout of harmful government inaction.

1.3.2 – Synopsis of second essay: *Limiting the Unlimited? The Spectre of 'Central Bankruptcy' in Europe and Japan*

In the second essay of this thesis, I closely follow up on and dig deeper into one of the core findings established in the first: for better or worse, the ECB's crisis management has been marked by stark concerns about the soundness of its balance sheet, and especially concerns about the risk of balance sheet losses which are seen to undermine this perceived soundness. To do so, the essay extends the empirical focus of the thesis beyond the Eurozone by probing into the varieties of monetary-fiscal coordination which major central banks across the globe have engaged in as a means to shore up their 'financial independence' throughout the crisis. While the ECB's independence is indeed in many ways unique, as outlined above, the policy challenges which it is faced with – as well as the actions it undertakes in response to these – are far from incomparable. In this vein, the essay relies on a comparative case study design, enlarging the scope of analysis so as to include the Bank of England (BoE) as well as the Bank of Japan (BOJ). While all three central banks took on their current independent forms in the late-1990s, and have been faced with similar coordination issues in terms of their balance sheets post-crisis, their respective approaches to resolving these have differed considerably.

For instance, the contrast between the ECB's and the BoE's approaches to protecting their balance sheets from risks could not be more striking: while the BoE obtained an official fiscal indemnity for its operations, the ECB did not, and instead moved to increase its capital base. Such contrasts are frequently put down to the challenge of monetary-fiscal coordination in a setting where the central bank's fiscal counterpart is not a unified Treasury (as in the UK), but a collective of 19 finance ministries (as in EMU) (e.g. Illing & König 2014; Bruegel 2018). However, the inclusion of an additional case spells doubts on this interpretation, namely one in which a unified fiscal counterpart does exist, but coordination, such as in the form of an indemnity, is still not accomplished. The Bank of Japan makes for precisely this type of case.

To resolve this conundrum, the essay puts forward a two-fold argument. First, it argues that independent central bankers' shared desire for balance sheet protection is best understood as a quest for *self-limitation* of their otherwise virtually unlimited capacities to create liquidity, which is in stark contrast with the expectations of extant scholarship stressing a tendency of independent agents to engage in discretion-seeking and power-maximization. Second, with regard to the different strategies of self-limitation undertaken by major central banks, I argue that while different *de iure* CBI arrangements generally matter, these turn out to be broadly indeterminate when it comes to the arrangements for monetary-fiscal coordination which different central banks seek to attain. Much rather, differing interpretations of *de facto* CBI – either as a strict and insurmountable divorce between monetary and fiscal policy-making, or as allowing for some degree of cooperation – can serve to fill this void.

Empirically, the essay provides three concise case studies illustrating how the three central banks have tackled the prospect of balance sheet losses in variegated ways, namely through *implicit* and *informal* coordination (ECB), *explicit* and *formal* coordination (BoE), and *provisional* and *limited* coordination (BOJ). To do so, I invoke a range of empirical data, first by analysing the financial independence arrangements in the central banks' legal mandates, and then by teasing out their different strategies of self-protection through an analysis of policy decisions and relevant secondary sources. Both of these are further complemented by primary data obtained through semi-structured élite interviews conducted with current and former officials during fieldwork in Frankfurt, London and Tokyo, between February 2018 and February 2019 (yielding a total of 32 formal interviews as well as a higher number of background talks with monetary policy experts in academia, banking/finance and journalism). The majority of interviews have been conducted at the executive, i.e. decision-making level (18), with the rest at senior official level.[13] Even though achieving gender balance when interviewing senior central bankers is a near-impossible feat – given that women are woefully underrepresented in central banking (OMFIF 2019; Jourdan & Diessner 2019) – I have been able to speak to both female and male current and former officials at all three central banks.

[13] Ethics approval has been sought from the Department and from the School, written consent has been sought from interviewees, and interview recordings and notes have been transcribed.

1.3.3 – Synopsis of third essay: *The Power of Folk Theories in Economic Policy-Making – The Curious Case of the ECB's Balance Sheet and Capital Base*

The third and final essay of my PhD thesis zooms both into and out of the puzzling political economy of central bankers' loss aversion, by providing a deeper investigation of the case of the Eurozone and by highlighting how it can inform our understanding of macroeconomic policy-making more generally (i.e., what it is a case 'of'). In particular, I leverage a pertinent – yet understudied – empirical puzzle of post-crisis central banking and develop its broader relevance. In the heat of the crisis in late-2010, the ECB governing council moved to double the central bank's capital base from around €5 billion to around €10 billion (ECB 2010a). Whichever signal Europe's central bankers may have wanted to convey with their move, its announcement turned out to be 'surprising to most observers' within financial markets, with investors at financial firm Nomura stating that 'the puzzle remains' in spite of efforts by the central bank to explain that a capital increase was necessary in order to 'sustain the adequacy of the capital base needed to support the operations of the ECB' (ibid.; ECB 2010b; FT 2010).

In essence, this alleged puzzle goes back to a wider debate, namely the contention that central banks, unlike commercial banks, should not fear situations of negative capital: in modern (fiat) currency regimes, their legally guaranteed money-creation powers should allow them to always honour their commitments and thus prevent them from perceptions of 'insolvency' (cf. Robinson & Stella 1988). In this line of reasoning, central banks do not require a certain amount of capital on their balance sheets in the first place, nor do they need to fret about the repercussions of losses from their monetary policies – contrary to the ECB's stated motives. This cautions us to consider alternative motivations than those provided by the central bank for its puzzling move. The issue becomes particularly relevant if we bear in mind that the ECB's fear of losses and its apparent desire for protection – irrespective of whether 'justified' or not – have been suspected to be key factors in restraining the central bank from further monetary stimulus at a time of crisis when swift policy action was required ever so badly (Buiter 2009; Whelan 2012; De Grauwe 2013b: 525-526). Why, then, did the ECB let itself be held back by something which many claim to be a non-issue?

In order to situate and resolve this puzzle, the essay develops a novel conceptual framework. It departs from a perennial dual struggle faced by policy-makers, namely that of devising and delivering both effective *and* legitimate policy (Scharpf 1999), and argues that one under-appreciated strategy through which central bankers safeguard and shore up their legitimacy is to assert and play along the economic sentiments and intuitions of their respective audiences – even up to an extent that may directly contradict the rationalist economic foundations on which the institution of independent central banking was supposedly built on in the first place (McNamara 2002). To conceptualize this, I draw upon a nascent literature on 'folk theories' (Braun 2016; Swedberg 2018) and invoke an audience-costs framework of institutional commitment (Broz 2002; Lohmann 2003) theorizing the ways in which public policy-makers engage in signalling efforts towards a diverse set of audiences (namely, financial market participants, political principals, and the general public).

Empirically, the essay leverages a single-case study which traces key historical events and decisions leading up to the ECB's capital increase. In particular, it scrutinizes both the central bank's approach towards its own balance sheet as well as towards national central banks' capital holdings in the European System of Central Banks (ESCB). To do so, it analyses data gathered from the full range of primary sources on the subject, including legal provisions and decisions, central banks' in-house research and reports, official communication documents, and balance sheet developments. It further draws on a subset of 12 coded, semi-structured élite interviews with current and former Eurozone monetary policy-makers at the advisory, senior staff, executive, and governing council levels. The available evidence suggests that while central bankers do acknowledge that their capital holdings should not necessarily matter to them *in theory*, they opt to attach a degree of importance to them for both strategic and wider symbolic reasons. Strategically, attaching importance to central bank capital places a visible and 'hard' budget constraint on the scope of 'risky' monetary policy operations the central bank can credibly commit to undertake, thereby tying in the support and commitment of other macroeconomic actors (most notably, the government and its treasury), as pointed to in the second essay. Symbolically, the central bank further seeks to uphold an appearance of financial strength and soundness that is not necessarily justified on narrow technical grounds, but that it might find relevant in order to maintain and shore up public trust in its policies – thereby relying on the 'folk theory' of its balance sheet functioning along similar lines as that of a commercial bank.

To conclude, the three essays of this doctoral thesis are conceived as stand-alone articles. Hence, each entails its own literature review, conceptual framework, analysis and conclusion. Taken together, these three puzzle pieces can serve to inform a bigger picture of the changing fortunes of central banking and central bank independence post-crisis, and thereby enhance our understanding of the political economy of macroeconomic policy-making more broadly. The final, concluding chapter of this thesis critically discusses the most important findings and carves out their implications for future research.

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2 – First essay: Masters of the 'Masters of the Universe'? Monetary, Fiscal, and Financial Dominance in the Eurozone[14]

Abstract

The rise of central bankers to the status of new 'masters of the universe' has been matched by mounting allegations of political overreach. In the Eurozone, for instance, the ECB has increasingly been accused of straying into the fiscal realm. Why do politically independent central banks engage intensely and publicly with government policies, thereby threatening the neat separation between monetary and fiscal policy that was meant to protect central banks themselves from interference? While existing political economy accounts have focused squarely on the issues of government debt and central bankers' fears of fiscal dominance, we argue for the emerging role of 'financial dominance' throughout the crisis, thereby shedding light on the structural forces that master the new masters of the universe. To this end, we pursue a mixed-methods approach, combining quantitative text analysis techniques with a qualitative understanding of the context in which central banks communicate on fiscal policy.

[14] This essay is co-authored with Giulio Lisi and has been published in *Socio-Economic Review* (Diessner & Lisi 2019).

[C]entral banks cannot take our measure of independence for granted. (...) the case for independence weakens to the extent that central banks stray into issues that the legislature has not assigned to us.

– Jerome Powell, 350th Anniversary of the Swedish Riksbank, Stockholm, 25 May 2018

[I]ndependence from the rest of the government (...) is certainly the concept of independence on which both the academic literature and the Maastricht Treaty focus. (...) But there is another type of independence that, while just as important, is rarely discussed: independence from the financial markets.

– Alan Blinder (1998: 59-60)

2.1 – Introduction

Over the past crisis-stricken decade, central bankers' newly-recognised powers as financial stabilisers of last resort and their forays beyond conventional forms of monetary policy-making have been met with mounting accusations of political meddling. The Bank of England, for instance, recently found itself in the limelight when its governor warned of financial instability and other risks surrounding the UK's departure from the European Union, prompting a backlash from parliamentarians in the Commons' Treasury Select Committee. The Eurozone, in turn, has come to be seen as one of the most contested cases of alleged overreach: during the currency bloc's protracted crisis, the ECB sought to influence member states' economic policy-making by formulating fiscal preferences in press conference statements and public speeches, addressing confidential letters with policy prescriptions to Eurozone governments, and designing the settings of its unconventional monetary policies with a view to their impact on governments' fiscal behaviour (Cour-Thimann & Winkler 2012: 779; Lombardi & Moschella 2016; Henning 2016; Woodruff 2016).

Such interventions went alongside the ECB's role as a member of the 'Troika', through which it played a significant part in designing fiscal conditionality for countries under a macroeconomic adjustment programme (see, e.g., Lütz et al. 2019). However, many of the ECB's fiscal engagements were not limited to programme countries and were often directed towards Eurozone governments more broadly. This points to a puzzle. If central bank independence is understood as the divorce between monetary and fiscal policy, and if the ECB is more divorced from fiscal authorities than any other central bank in the world, why did the divorce come to be overthrown in the Eurozone of all places? What is it that makes a singularly independent central bank reach out to, and seek co-habitation with, fiscal policy-makers? In a nutshell: why did the ECB engage so intensely and publicly with fiscal policy, despite conventional wisdom suggesting that this would threaten its treasured institutional independence?

The commonplace way of thinking about central bank independence (CBI) is to characterise it as the degree to which monetary authorities (central banks) are protected from interference by fiscal authorities (governments). The often-invoked rationale behind the need for protection is that governments cannot credibly commit to keeping inflation low due to electoral and other dynamics (Kydland & Prescott 1977; Barro & Gordon 1983) and that unsustainable fiscal policies pose a pertinent threat of dominating the sound policy-making of central banks (Sargent & Wallace 1981). The established solution to this problem of interference has been to separate monetary from fiscal policy-making, i.e. to depoliticise the conduct of monetary policy by delegating it to a politically independent central bank. Most observers agree that this kind of institutional 'divorce' (Goodhart 1998: 410) has been perfected in the European Economic and Monetary Union (EMU) and that the European Central Bank (ECB) is the most independent among the world's major central banks.

A moot point in this story, however, is whether the principle of non-interference cuts both ways. Does the protection from government intervention imply that central banks, for their part, refrain from interfering with government policies? Or do central banks seek to interfere with fiscal and other economic policies and thereby jeopardise the separation between monetary and fiscal policy-making that was meant to protect themselves from interference? That politics can have a bearing on monetary policy is well-established in the political economy literature (see Frieden 1994; Cukierman & Webb 1995). However, as Morrison (2015: 243) suggests, only lately and more partially have we begun to consider the reverse as well, namely 'evidence of central bankers manipulating politics'. This paper makes a novel attempt at filling this void. Much of the existing scholarship on central bank-government interactions has relied, explicitly or implicitly, on a model that emphasises government debt developments and fears of fiscal dominance to account for central bankers' excursions into fiscal and other economic policies (Sargent & Wallace 1981; Mishkin 2012; Walsh 2012), not least in the case of the ECB throughout the crisis (Allard et al. 2013; Yiangou et al. 2013; Bodea & Higashijima 2017). In contrast, we draw on the idea of 'financial dominance' to explain central banks' increased fiscal policy concerns. Highlighting the case of the Eurozone and its wider ramifications, we argue that extraordinary actions undertaken by the ECB to limit financial instability and the absence of collective fiscal instruments pushed the central bank to call upon governments to mitigate the increasing financial risks associated with its balance sheet interventions.

This challenges and qualifies existing political economy accounts of the financial crisis and its management by major central banks. While some have highlighted the collective responsibility of bankers for the North-Atlantic predicament – appearing to be 'masters of the universe', yet turning out to be 'slaves of the market' (Bell & Hindmoor 2015) –, the verdict on central banks has been that these acted 'autonomous[ly] from' those markets (Nelson & Katzenstein 2014: 381-383) and ultimately managed to contain the worst of calamities. In a sense, central bankers thus came to be revered as the new masters of the universe themselves, earning the title when rescuing its previous holders – together with much of the developed world – from collective financial meltdown (Irwin 2013; Sentance 2015; Weidmann 2015). Yet, what if central banks turned out to be slaves of the market as well in one way or another? That is, what if central bankers were not all that autonomous from, but equally dominated by, financial market concerns? It is this wider question – the question of who or what 'masters the masters' of our political-economic universe – that a study of financial dominance can help illuminate.

2.2 – Methods, approach and contribution

Our analysis proceeds in three steps. After spelling out the theoretical expectations of fiscal and financial dominance, we first create a novel indicator of ECB fiscal engagement from the start of Jean-Claude Trichet's presidency until the beginning of 2016 on the basis of official ECB communication transcripts (namely, a total of 1,097 speeches, press conferences and hearings before the European Parliament). For this purpose, we rely on an unsupervised quantitative text analysis technique, topic modelling, that allows us to extract distinct latent topics from our dataset. We then identify a 'fiscal policy' topic among these different topics and track its intensity and variation over time. Lastly, we perform a qualitative discussion of documents within our dataset as well as supplementary sources, highlighting several episodes of Eurozone crisis policy-making that provide a context for the ECB's discourse. Our study thus stands in line with recent mixed-method scholarship on central bank deliberation that aims at combining quantitative text analyses with more qualitative approaches in order to increase the robustness of results (Schonhardt-Bailey 2013; Fligstein *et al.*, 2017).

While the economics literature which deals with the determinants and effects of central bank communication is well-established, and growing,[15] political economists have started to pick up on the subject only more recently (Hall 2008; Gabor & Jessop 2014; Braun 2016). Our analysis contributes to these established and nascent debates in at least three ways. First, our work speaks to a growing literature which examines the drivers of central bankers' policy preferences (Adolph 2013; Lombardi & Moschella 2016) as well as evolving discussions around central bank independence and the politics of monetary policy in a world of financial instability (Fernandez-Albertos 2015; Dietsch et al. 2018). Second, we shed new light on a particular aspect of central banks' management of the global financial crisis and the protracted Eurozone crisis (De Grauwe & Ji 2015), namely the striking engagement with fiscal policy issues (Allard et al. 2013; Gabor 2014; Ban & Patenaude 2019). Lastly, we make both a methodological and an empirical contribution to political economy approaches to the crisis, and to studies of policy-makers' 'communicative discourse' more generally (Schmidt 2016), by way of applying topic modelling techniques to official documents of the ECB. While topic modelling has enjoyed growing interest both in political science and, more recently, in economics (Hansen et al. 2018), applications in political economy and economic sociology remain very few and far between (Fligstein et al. 2017). In combining this text analysis approach with a qualitative assessment of Eurozone monetary policy-makers' revealed preferences, we propose an innovative way towards studying the drivers of central bankers' engagement with the sensitive subject of fiscal policy.

Before proceeding, however, a word of caution is in order. In particular, our quantitative-*cum*-qualitative text analysis approach raises the question whether central bank communication can be taken as an indication of central bankers' actual policy concerns. We

[15] For an insightful discussion of the pre-crisis state of that literature, see Blinder et al. (2008).

assume this to be the case and consider it a reasonable assumption: monetary policy-makers have strong incentives to express actual policy concerns in their communication as part of their 'expectation management', i.e. to enable a variety of audiences to understand and anticipate their reasoning (Lohmann 2003). The almost instantaneous impact of ECB announcements bears testimony to this, with market participants reacting to ECB statements as if these constituted an actual implementation of policy, especially in times of crisis (Brand et al. 2010; Altavilla et al. 2014). We would therefore find it unlikely that ECB officials engage with the salient topic of fiscal policy in public unless this is relevant for their decision-making process. The implications of our analysis for a political economy of central bank independence post-crisis, both within and beyond the Eurozone, are discussed in the concluding section of this article.

2.3 – Monetary, fiscal and financial dominance

To make sense of the delicate separation between monetary and fiscal policy-making, and the reasons for which a central bank might seek to interfere with government policies, we can distinguish two approaches: a conventional view of CBI, modelled as a struggle for dominance between monetary and fiscal authorities, and a nascent approach that pays increased attention to how financial markets and concerns for financial stability have a bearing on the relationship between these two. The first is firmly rooted in the time inconsistency literature (Kydland & Prescott 1977; Barro & Gordon 1983) and subsequent New Keynesian applications thereof. According to these, fiscal policy-making is constantly at risk of spilling over into, and ultimately undermining, the inflation-fighting efforts of independent central banks, rendering a separation of the two indispensable. In the worst case, a situation of fiscal dominance could develop, within which government debt grows uncontrollably and thus either ends up in sovereign default or in outright monetary financing by the central bank, both of which ultimately undermine price stability. In the words of Mishkin (2012: 35), fiscal dominance inevitably 'puts a central bank between a rock and a hard place', up to a point where central bank independence simply becomes 'meaningless' (Walsh 2012: 19). The upshot of this line of reasoning is that the essence of a central bank's independence is the degree of its separation from fiscal authorities: the more a central bank is shielded from activism and interference on behalf of fiscal policy-makers, the more independent it is.

A notable underlying assumption of this view is that a government's fiscal policies are exogenous to the central bank which, as a disinterested technocratic institution, is merely concerned with its own monetary policy-making (cf. Fernandez-Albertos 2015: 226-227). One may wonder, however, to what extent this proposition is in need of qualification. In case a central bank's autonomy and capacity to act were uniquely threatened by another actor's behaviour, would the bank simply sit idle – as exogeneity implies – or would it seek to have an impact on that behaviour in some way or another? Allowing for some degree of endogeneity paints a different picture of the relationship between fiscal and monetary authorities: instead of taking fiscal dominance as a given, their interactions become a constant struggle for dominance over one another.

In such 'games of chicken' between the monetary and the fiscal authority (Sargent & Wallace 1981), one of the mechanisms through which a central bank can interfere with government policy-making is its setting of the official interest rate: in essence, the bank may counter government debts and deficits that it deems 'excessive' by raising its main policy rates, thus affecting the fiscal authority's borrowing costs, bringing inflation down and, in consequence, exerting pressure on government finances (Canzoneri et al. 2002: 373; Hughes-Hallett &

Lewis 2015; Bodea & Higashijima 2017). What is more, the bank may merely communicate its *intention* to tighten monetary policy in the face of rising deficits and debt, thereby sending a strong signal to the government which is rendered credible through financial markets' altered expectations and reactions (Krippner 2007; Bodea 2013: 84-85). In the more constructivist terminology of Hall (2008: 223), central banks can thus make use of their 'deontic power' in order to 'influence government fiscal policy through advice, and (...) public judgment pronouncements' (see Fernandez-Albertos 2015: 227).

To be sure, the conventional justification for central bank independence has been far from uncontested in the political economy literature (see, e.g., Grabel 2003; Lockwood 2016). While proponents of the time-inconsistency view suggest that delegation of monetary policy to independent central banks ultimately heralds low inflation (Alesina & Summers 1993), early sceptics have argued that any correlation between the two is more likely to be driven by a set of underlying political and institutional factors (Posen 1993; 1995). In this spirit, even supposedly 'depoliticised' monetary policy decisions have to be seen as 'inescapably' political (Kirshner 2003), given that prioritising low inflation over full employment or output stabilization constitutes a fundamentally political trade-off (see Bernhard et al. 2003: 706). What both time-inconsistency scholars and their critics arguably have in common, however, is a focus on conventional forms of monetary policy-making and a concomitant neglect of the financial system dynamics that ultimately condition the successful transmission of central bank policies. Indeed, the prospect of a systemic financial crisis – and central banks' subsequent experimentation with a range of unorthodox monetary policy tools – has arguably been as unanticipated by critical political economy scholarship as it has been by mainstream macroeconomics (Cohen 2009; Katzenstein & Nelson 2013).

In contrast, we build on nascent post-crisis accounts of central banking and depart from the received wisdom of central bank independence being exclusively a matter of monetary-fiscal divorce. In particular, financial stability concerns are slowly but increasingly being recognised as an intermediary force in the struggle for dominance between fiscal and monetary authorities, adding what one may call a dimension of 'financial dominance' to the original set-up (Hannoun 2012).[16] The idea of financial dominance builds on the observation that systemically relevant financial institutions may be strategically weak, i.e. they may refuse or be unable to match the losses they have incurred with increases in their equity positions (Hellwig 2014). This power of *inaction* (Woll 2014), namely to recapitalise oneself, forces the hand of the public sector which will have to step in and provide for recapitalisation if it is keen to avoid a systemic financial crisis.

In terms of the relationship between monetary and fiscal authorities, this introduces the problem of whether the government absorbs the losses accrued in the financial sector (through explicit bailouts that increase the public deficit) or whether the central bank does so (by supplying banks with extensive credit that allows for implicit or ‘stealth’ recapitalization) (see Leeper & Nason 2015: 45-46; Brunnermeier 2015: 18). In addition, financial dominance may not only stem from lending direct support to financial institutions in the traditional banking sector, but also from injecting liquidity via shadow banking and repo markets, thus compelling central banks to provide 'asymmetric support for falling asset prices' (Gabor 2016; Hannoun 2012: 9-11). On the whole, this tripartite set-up has implications for our study in that it adds a financial stability dimension to central bank independence that has arguably

[16] The first reference to financial dominance can be traced to Fraga et al. (2003), albeit in the context of emerging market economies' experiences with inflation-targeting regimes.

been omitted in the established CBI literature. We now turn to how these considerations bear on the puzzling case of ECB fiscal engagement.

2.4 – The case of the Eurozone

The Eurozone provides an intriguing case of CBI. Hardly anyone denies that EMU's central bank, the supranational ECB, embodies the most independent monetary authority in the developed world. Besides scoring high on conventional indicators of CBI – such as ascribing overriding priority to the objective of price stability while remaining vague about the relative weight of other objectives (De Grauwe 2018) –, the crucial difference between EMU and other currency areas lies in the nature of the Eurozone's monetary-fiscal divorce, which is not merely horizontal, but also vertical: there simply is no supranational fiscal authority that the ECB could be separated or independent 'from'. After its creation, observers thus found that 'something ha[d] been lost' in terms of monetary-fiscal policy coordination in EMU, and further hypothesised that 'the fear (...) of a threat to the independence' of the Eurozone's novel institutions would uphold this separation 'for some time to come' (Bini Smaghi & Casini 2000: 375, 388; Buiter 1999: 204). This reasoning resonates with practitioners and scholars of central banking to this day. In the words of Lucrezia Reichlin, for instance, '[y]ou should be careful about talking beyond policy, if you want to retain independence' (quoted in Giugliano 2015). How come, then, that the ECB engaged intensely and publicly with fiscal issues in the Eurozone, thereby purportedly threatening the monetary-fiscal divorce that was meant to protect its very independence?

A conventional understanding of central bank independence would stress the inextricable links between fiscal policy outcomes and the inflation-fighting efforts of central banks: if government debt grows unsustainably, a central bank's ability to control inflation will eventually be eroded. It follows that monetary authorities should have a natural interest in avoiding this kind of domination by fiscal authorities, which is why they might openly propagate fiscal discipline. Recent studies by Yiangou et al. (2013: 230-231), Allard et al. (2013: 2-3), Lombardi and Moschella (2016: 856) and Bodea and Higashijima (2017: 47-51) explicitly or implicitly subscribe to this view when it comes to explaining the behaviour of the ECB during the crisis. In line with this logic, the primary driver for why the central bank engages with fiscal policy is its exposure to Eurozone government debt developments.

Besides, a financial dominance perspective would emphasise the monetary authority's entanglement with the financial sector, as reflected not least in the size and composition of a central bank's balance sheet. While balance sheet sizes grew across major economies during the crisis, striking differences could be discerned in terms of their composition. Importantly, the increase in size of the ECB's balance sheet until 2015 was mainly driven by providing more credit to Eurozone banks, while other central banks relied more heavily on purchases of government bonds (as in the UK or US) and private sector assets (as in the US) (Hall & Reis 2015). In consequence, the ECB effectively 'outsource[d] the task of financial stability to commercial banks' (Gabor 2014: 200), owing to what is often perceived as a heavily bank-based Eurozone financial system (Cour-Thimann & Winkler 2012).[17] In providing such credit easing for the financial sector, some argue that the ECB assumed unprecedented levels of credit risk without being able to rely on insurance against potential balance sheet losses (Gros 2012).

[17] Note Krippner's (2007) discussion of how central banks let financial markets 'do the work' for them, which, in turn, can give rise to the problem of markets' 'infrastructural power' (Braun 2018). See also Reis (2013b: 30-32).

One proposed way to insure against nominal losses would be for fiscal authorities to provide a backstop for the central bank's operations (Leeper & Nason 2015) or, more generally, to mitigate risks by means of regulating, supervising and recapitalising their banking systems as well as creating fiscal space by committing to fiscal and structural reform (Henning 2016: 185). Consequently, the reason for which an independent central bank may reach out to fiscal policy-makers is to make sure that there is adequate fiscal support for its monetary policies if need be. A financial dominance view of the Eurozone would therefore suggest that the ECB's interference with fiscal policy-making is not only driven by its exposure to government debt, but also by the state of credit risk on its balance sheet.

2.5 – Measuring ECB fiscal communication

Even though we are not the first to carry out some form of quantitative text analysis on (European) central bank documents,[18] an important methodological challenge for us is to derive a meaningful indicator of fiscal engagement by the ECB over the period considered. One possibility would be to perform simple counts of words or sentences pertaining to fiscal policy in selected central bank communications (an approach that is sometimes pursued by means of so-called dictionary techniques). This strategy was employed by Golub et al. (2015) who count words in Federal Reserve FOMC meeting transcripts, and Allard et al. (2013) who count words and sentences in ECB press conference statements, respectively. The latter provide the only study of ECB fiscal communication that we are aware of to date, finding the central bank's fiscal concerns to have peaked around 2004. However, the analysis only extends to the early years of the Eurozone crisis (namely to the end of 2011, thus omitting much of the ECB's extensive crisis management in the subsequent years) and draws on a fairly limited number of communication documents. One of the drawbacks of simple counts

[18] See, for example, Bennani and Neuenkirch (2014: 4-5) for an overview of different studies.

is that these require the researcher to subjectively predetermine a list of terms that relate to a particular policy area, thus leaving room for selection bias.

We address this concern by employing Latent Dirichlet Allocation (LDA) (Blei et al. 2003), a class of topic models, to derive a consistent indicator of ECB engagement with fiscal policy from our corpus. Topic models are statistical algorithms which seek to recover the underlying meaning of a text starting from the observed word use in the documents.[19] In terms of our study, making use of LDA provides us with two types of output. First, it generates a list of the likely vocabulary for each of the obtained topics. This makes it possible for us to interpret and label the topics. Second, it reveals the probabilities of documents being about a given topic. We can use these probabilities to trace the prevalence (i.e. intensity) of topics as well as their variation throughout the sample. Hence, the aim of our LDA analysis is to identify a 'fiscal policy' topic among the topics generated from all documents, and then to establish whether and how its intensity has varied over time.

We apply LDA to a dataset which consists of the introductory statements to ECB press conferences, introductory remarks during ECB policy-makers' appearances before the European Parliament as well as individual speeches delivered by ECB Executive Board members, in the period from November 2003 (the start of Jean-Claude Trichet's presidency) until the end of 2015.[20] We exclude the Q&A sections of press conferences and appearances before the European Parliament as we are primarily interested in the way the central bank

[19] A more detailed discussion of the LDA algorithm, its assumptions and its caveats is offered in the Appendix.

[20] Transcripts of press conferences, executive board member speeches and appearances in front of the EP are available from the ECB website (ecb.europa.eu/press/key/speaker/bm/html/index.en.html). The latter include presentations of the ECB's annual report as well as the quarterly 'Monetary Dialogue' with the EP's Economic and Monetary Affairs Committee.

describes and explains, in its own words and not conditioned by other participants' questions or interjections, the positions and reasoning of the governing council on different topics and especially on fiscal policy. In the same vein, we restrict the dataset to speeches by Executive Board members – as opposed to national central bank governors on the ECB's Governing Council – in order to limit the potential effect of 'national bias' that may stem from delivering different speeches to different national audiences (Bennani & Neuenkirch 2014: 15). In total, this amounts to a corpus of 1,097 documents (887 speeches, 139 press conferences and 71 addresses to the EP), thus constituting a sample large enough to allow some meaningful inference and which reflects the main universe of the ECB's official communication.[21]

2.5.1 – Quantitative text analysis

Table 1 presents the topic contents for ten out of 25 topics obtained through our LDA algorithm, displaying the ten most prominent terms per topic in stemmed form (a full table is provided in the Appendix). In a number of cases, the interpretation and labelling of the topic is relatively uncomplicated. Topic number 6, for instance, shows a high probability for stemmed terms such as *bank*, *resolut*, *singl* and *supervis* and can therefore be taken to relate to the EU banking union (with its single supervisory and resolution mechanisms). The terms *payment*, *sepa*, and *card* in Topic 10 seem to refer to payment services, while Topic 9 (containing *european*, *europ*, *union*, *institut*, *member* and *state*) could be labelled European Union, and so forth. Most importantly for our analysis, Topic 8 exhibits a high probability for terms such as *fiscal*, *govern*, *debt*, *deficit* and *fiscal_polici*, which directly reflect fiscal concerns. We thus draw on this topic as our indicator of engagement with fiscal policy in the ECB's official communication. What serves as a robustness check for our selection is that the

[21] While the dataset is to some extent dominated by board members' speeches, the results remain broadly similar if speeches are excluded from the analysis.

topic content is congruent with the fiscal 'vocabulary' identified by Allard et al. (2013: 12), increasing our confidence in the algorithm. It also corresponds to the fiscal topics obtained by van der Veer and Haverland (2018) in an LDA analysis of European Commission documents.

Topic content	**Number**	**Suggested label**
regul market clear risk regulatori transpar need trade central will	1	*Regulation*
euro_area competit price econom countri euro_area_countri averag also differ increas	2	*Economic developments (competitiveness)*
econom polici monetari see monetary_polici inflat paper price model central_bank	3	*Monetary developments (inflation)*
statist data inform account euro_area european report financi use avail	4	*Statistics*
countri can economi growth effect invest firm also demand structur	5	*Economic developments (growth)*
bank will resolut european singl ssm fund supervis supervisori nation	6	*Banking union*
euro_area expect remain continu govern support will council medium_term loan	7	*Economic outlook*
fiscal euro_area govern countri debt reform deficit econom fiscal_polici implement	**8**	***Fiscal policy***
european europ union econom nation institut polit member state govern	9	*European Union*
payment sepa bank will european card servic scheme nation competit	10	*Payment services*

Table 1: ECB communication topics, 2004-2015 (first ten topics of LDA with 25 topics)

In addition to providing topic contents, LDA enables us to track the intensity of different topics over time, as reflected in the probabilities of documents being about a given topic. To this end, we calculate monthly averages of the estimated topic proportions, yielding 146 monthly observations. In Figure 3 below we report these averages for two benchmark topics relating to regulation (Topic 1) and inflation developments (Topic 3), respectively. Despite some minor variation in intensity, the proportions for these two topics appear to have remained relatively stable during the period under consideration.

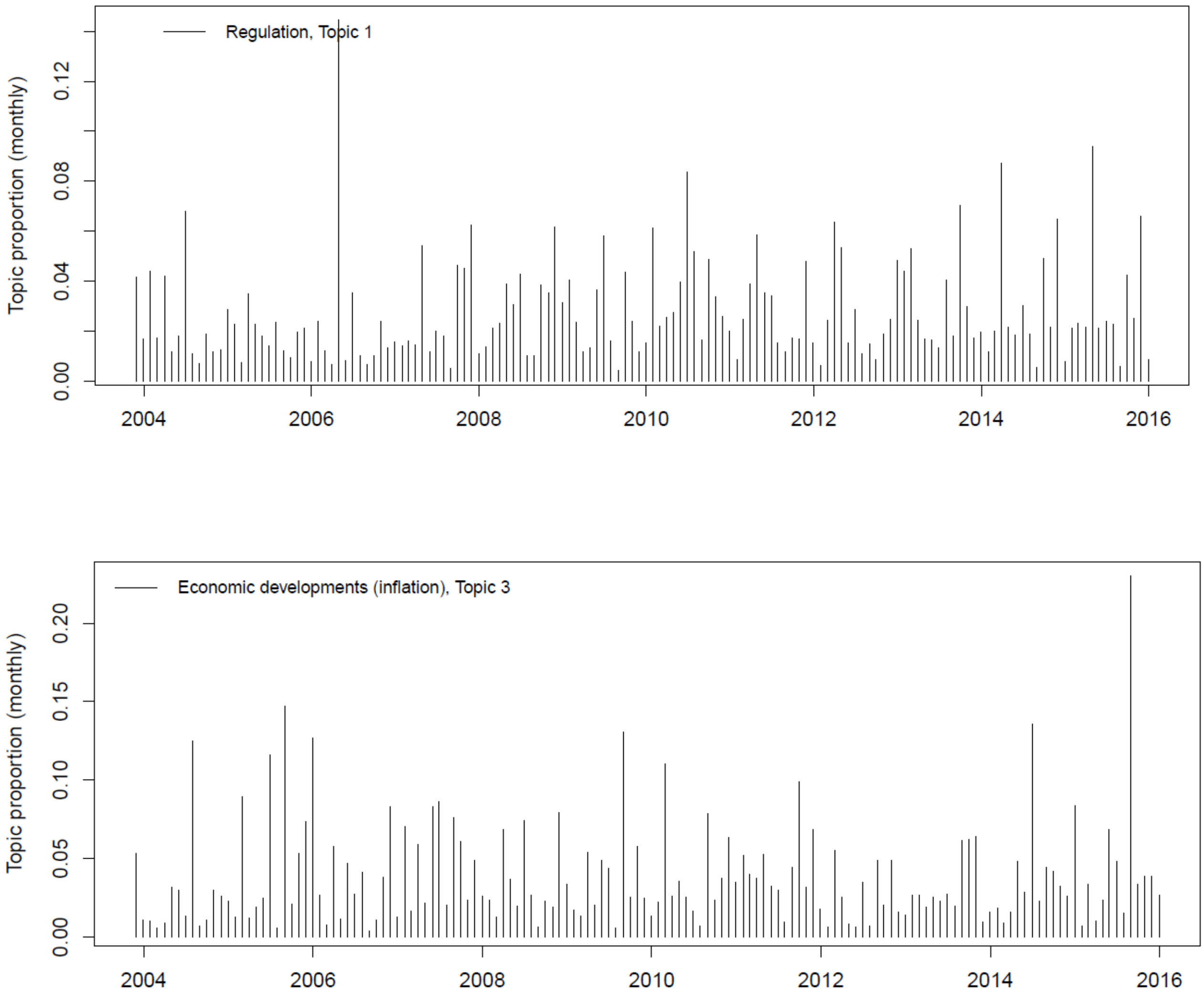

Figure 3: Intensity of ECB communication on benchmark topics, 2004-2015

(LDA monthly topic proportions for regulation and inflation developments topics)

In contrast, Figure 4 depicts the intensity of the identified fiscal policy topic. As mere eyeballing suggests, there has been a noticeable variation in intensity over time, including a striking increase between 2010 and 2013. We shall therefore now zoom into different episodes throughout the sample, in order to shed light on the political-economic context of the ECB's engagement with fiscal policy issues.

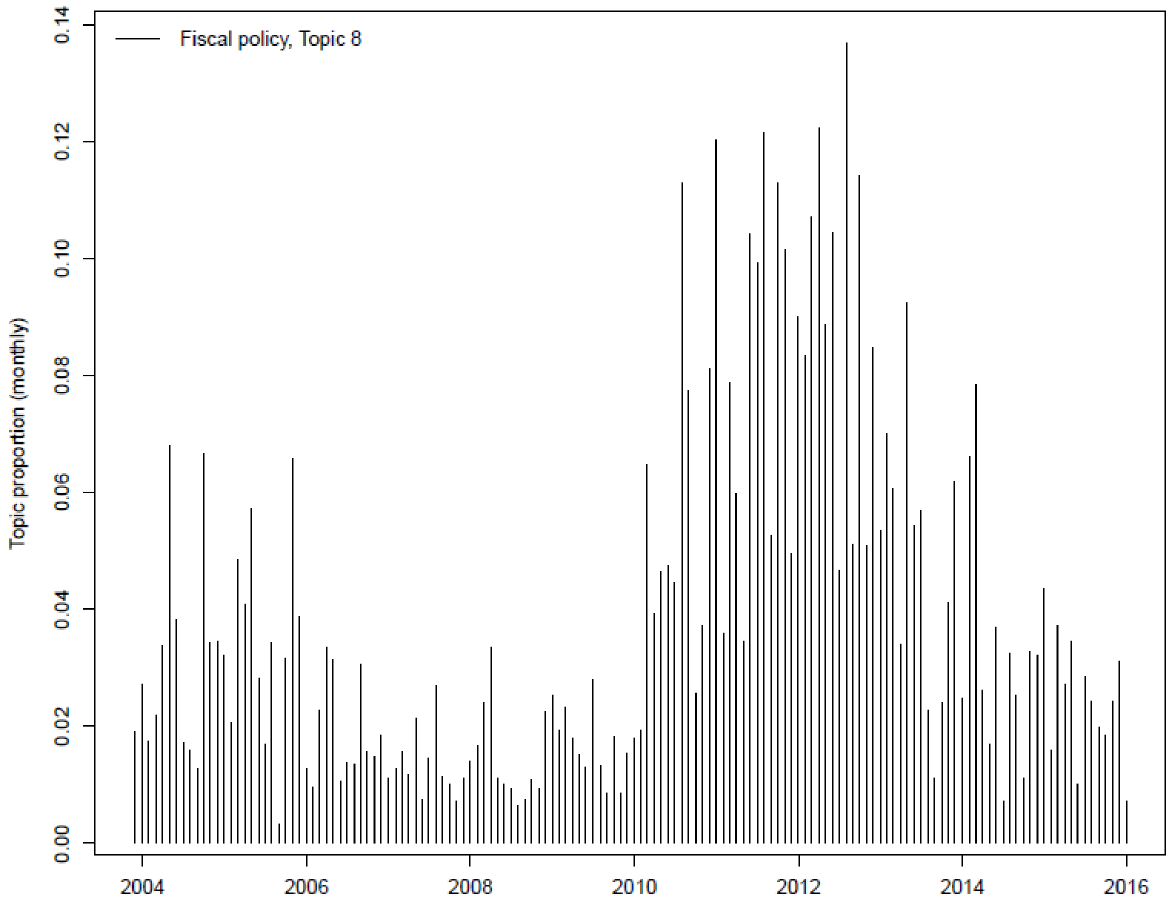

Figure 4: Intensity of ECB communication on fiscal policy, 2004-2015

(LDA monthly topic proportions for fiscal policy topic)

2.6 – Fiscal orthodoxy meets fears of financial dominance

Our LDA analysis suggests that we can broadly differentiate between three distinct periods of ECB communication on fiscal policy. First, an extended phase of low fiscal communication until about 2010, with fiscal policy accounting for an average of around 2.2% of official communication only (despite notable spikes in intensity in 2004 and 2005). Second, a period of considerably more intense fiscal communication from early-2010 until early-2014, during which the overall topic proportion averaged around 6.5% and exceeded 10% in more than ten separate months, thus ranging well above the 3.8% average registered for the full sample. And third, an episode of again lower intensity from 2014 until 2016, which saw communication on fiscal issues ebb down to around 2.5% on average.

The first period confirms earlier research indicating that the ECB's pre-crisis involvement in fiscal policy peaked around 2004 (Allard et al. 2013: 5-7). This can presumably be attributed to the central bank engaging publicly in controversial discussions about the suspension and reform of the fiscal rules stipulated in the Stability and Growth Pact (SGP), as is well-documented in the literature (Howarth 2004; Matthijs & Blyth 2018). The period that stands out the most according to our LDA analysis, however, is the second, during which the ECB's engagement with fiscal policy reached unprecedented heights. How can we account for this? We argue that the ECB's varying fiscal concerns were not merely linked to the commonly held perception that it propagated the orthodoxy of fiscal consolidation, but also had their roots in pertinent and discernible financial dominance concerns.

2.6.1 – Orthodox business as usual?

The earlier increases in fiscal communication from 2010 onwards are conventionally attributed to the central bank promoting fiscal austerity in light of rising public deficits, thereby mirroring traditional fears of fiscal dominance. Indeed, the ECB under former president Trichet soon came to be seen as one of the principal spokespeople for austerity in the Eurozone (Blyth 2013: 60-61; Ban 2016: 196-197), as reflected not least in a much-debated op-ed in the *Financial Times* in June 2010 (Trichet 2010a) as well as repeated addresses to the European Parliament urging to 'accelerate fiscal consolidation' and to introduce 'quasi-automatic' sanctions against fiscal indiscipline (Trichet 2010b). During this time, the central bank also developed and launched its first bond-buying scheme, the Securities Markets Programme (SMP), which was accompanied by a peculiar form of non-public fiscal communication: the now-notorious 'secret' letters addressed to different Eurozone heads of government.

In November 2010 and August 2011, respectively, Trichet signed off letters first to Ireland's finance minster Brian Lenihan and then to Italian and Spanish heads of government Silvio Berlusconi and Luis Zapatero, calling for the adoption of reforms as well as 'bold measures to ensuring the sustainability of public finances' (ECB 2014a; ECB 2014b). This has fuelled speculation about whether the bank purposefully employed its bond-purchasing powers as a mechanism through which to discipline distressed Eurozone governments, withholding purchases when it considered reform and consolidation efforts to be unsatisfactory (Whelan 2011). While there are difficulties with substantiating this view – given that data on ECB bond purchases are not available on a country-by-country basis and have only been published as weekly totals –, changes in these totals throughout 2011 have nonetheless been interpreted as lending support to the claim (Woodruff 2016: 100-101). More substantively, the episode underlines how the ECB's communication towards Eurozone fiscal policy-makers is not merely 'cheap talk', but can rather be linked to strategic monetary policy concerns and actions (Henning 2016).

President Trichet's successor Mario Draghi did not break with this line either, launching several calls for a strengthening of EMU's institutions of fiscal surveillance. For instance, in what were some of his first public appearances at the helm of the ECB, the new president consistently promoted the introduction of a 'new Fiscal Compact' in the EU (Schelkle 2014: 112). Such pleas were made to European Parliamentarians and the German policy establishment alike, and also featured prominently in Draghi's second press conference statement after the December 2011 governing council meeting (Draghi 2011a; 2011b; 2011c). In March 2012, EU governments did come around to creating a new fiscal compact, as part of the Treaty on Stability, Coordination and Governance (TSCG). Importantly, the agreement on the TSCG enabled the ECB to very publicly attach fiscal conditionality to its unconventional monetary policy measures (by making interventions conditional on signing up for a macroeconomic assistance programme, which in turn was conditional on signing and implementing the TSCG) (Henning 2016). This was precisely the case for the ECB's famed outright monetary transactions (OMT) in September 2012, for which the central bank made sure to stress that these came with 'strict and effective conditionality' as a quid pro quo for any future interventions (ECB 2012; Diessner 2017).

2.6.2 – The role of financial dominance concerns

At the same time, however, an often de-emphasised aspect of the ECB's story throughout the Eurozone crisis was its desire to protect itself from credit risks which came with increasingly unconventional monetary policies. This found its expression in repeated urges to Eurozone governments to employ fiscal resources – such as the newly-created bailout funds of the EFSF and later the ESM –, to limit banks' reliance on ECB liquidity (Trichet 2011; Draghi 2012a). That reliance primarily stemmed from the ECB's large-scale lending through its two long-term refinancing operations (LTROs) of December 2011 and February 2012. The

LTROs offered 3-year financing to Eurozone banks at a mere 1.0% of interest, together with a significant easing of collateral requirements, thereby fuelling a hitherto unprecedented increase in the size of the Eurosystem's balance sheet by EUR1 trillion.[22] The operations were widely perceived to be an indirect government bond-buying programme, as was insinuated even on the level of Eurozone heads of state (Krishnamurthy et al. 2017: 11). Incidentally, however, the LTROs also allowed for an implicit or 'stealth' recapitalisation of distressed financial institutions through the ECB's balance sheet, after national governments persistently refused or found themselves unable to recapitalise ailing banking systems (Schelkle 2014: 112-113).

In a series of communication acts in short succession during the first half of 2012, the ECB called upon governments to put an end to this situation of financial dominance, urging for the use of collective fiscal resources instead of the central bank's unconventional policies to shore up financial stability – thus 'publicly request[ing] radical change' in the EU's institutional framework (De Rynck 2016: 129). Interventions by executive board member Benoit Coeuré, for instance, were among the very first to endorse '[p]ooling resources in a single pan-EU resolution fund' (2012a) and to plead that the intergovernmental European Stability Mechanism 'inject capital directly into banks' (2012b). Chief economist Peter Praet, in turn, was particularly vocal in stressing that 'the problems of public finances and financial stability are closely intertwined' and that the central bank shall therefore be 'especially vigilant to shield monetary policy from attempts to engross it into inappropriate financial stability tasks' (2012a), instead pleading to 'intensify ongoing work on the establishment of a mechanism for the resolution of bank failures at the European level' (2012b). These calls were accompanied by president Draghi's (2012a) first endorsement of a pan-European bank supervision and

[22] ECB balance sheet data can be found at ecb.europa.eu/pub/annual/balance/html/index.en.html.

resolution scheme in front of the European Parliament, on the grounds that 'all non-standard measures are temporary in nature' and that the central bank's 'liquidity support cannot substitute for capital or for sound fiscal and structural policies'.

To some observers, it was the inclusion of such a recapitalisation mechanism in the June 2012 European Council announcement to establish a Banking Union that proved to be the 'game changer' for the ECB and ultimately induced the central bank to announce the OMT programme (Véron 2015: 18). In this vein, Europe's Banking Union neatly exemplifies the proposition of financial dominance as a relevant driver behind the ECB's fiscal policy concerns: throughout the crisis, European central bankers publicly, and repeatedly, urged Eurozone governments to pool fiscal resources in order to tackle problems in the banking sector and attenuate financial markets' apparent overreliance on ECB liquidity. Once such a commitment was finally made, and further specified in the December 2012 European Council declaration, the ECB slowly but steadily reduced its calls for action on behalf of fiscal policy-makers. At a February 2014 event marking the 20th anniversary of the establishment of the European Monetary Institute (i.e., the forerunner of the ECB), Draghi singled out the Banking Union's Bank Recovery and Resolution Directive as 'the key innovation' paving the way for a Eurozone-wide approach to banking resolution (Draghi 2014a), complemented shortly afterwards by the adoption of the Single Resolution Mechanism Regulation.

2.6.3 – A stark decrease in fiscal communication

The ECB's communication on fiscal policy ebbed down noticeably from early-2014 onwards. What many perceived as a watershed moment in the central bank's fiscal discourse came in the summer of 2014, when president Draghi delivered a speech at the annual gathering of central bankers in Jackson Hole. While commentators hastily interpreted the speech as a call for the end of austerity in the Eurozone (Critchlow 2014), Draghi's (2014b) actual message to 'achieve a more growth-friendly composition of fiscal policies (...) in a budget-neutral way' was arguably more cryptic. What can nonetheless be observed is that the ECB did become less outspoken about the asymmetric need for fiscal consolidation over time, and ultimately moved its stance towards suggesting that 'countries that have fiscal space should use it' (Mersch 2016; Draghi 2016).

Given our previous considerations about the central bank's aversion towards bearing risks on its balance sheet in the context of unconventional monetary policy, it is remarkable that its subsequent major policy interventions, most notably the Public Sector Purchase Programme launched in January 2015 (i.e. the Eurozone's variant of quantitative easing), have not entailed anything close to the levels of fiscal communication we have observed before. In other words, at a time when the central bank did start to hold unprecedented quantities of sovereign bonds (which quadrupled over the course of 2015 and thus dwarfed its previous holdings),[23] implying an unprecedented exposure to Eurozone sovereign debt, its fiscal communication remained, in fact, conspicuously muted. We would find this hard to reconcile with the traditional proposition of fiscal dominance and its emphasis on central bankers' perennial preoccupation with backstopping unsustainable government debt developments.

Instead, we consider the notion of financial dominance to be more plausible here, as suggested not least by pertinent changes in the composition of the Eurosystem's balance

[23] Note that although the majority of asset purchases under the PSPP is undertaken by national central banks (in accordance with the ECB's capital key, at least in principle), the ECB conducts significant amounts of purchases itself as well – the value of which, at the time of writing, was more than ten times that of the securities bought under the SMP until the end of 2011 (see ECB website at http://www.ecb.europa.eu/pub/annual/annual-accounts/html/index.en.html).

sheet: while holdings of sovereign bonds and other securities indeed almost doubled between 2013 and 2015 (from around €586bn to around €1.16tn), lending to euro area credit institutions all but halved over the same period (from €1.126tn to €559bn). Accordingly – and once the ECB gained the impression that Eurozone governments had finally agreed to engage in the kind of institution-building that would effectively share the burden of financial stabilization (most notably through the development of the banking union and its single resolution mechanism) – the central bank increasingly toned down its calls upon fiscal policy-makers to limit the financial sector's apparent overreliance on its balance sheet.

One objection which may be raised against this line of argument is the problem whether a clear demarcation between issues of fiscal and financial dominance is possible in a situation that is characterised by substantial entanglements between governments and financial institutions. Such interdependencies have come to be labelled as an omnipresent bank-sovereign nexus in the Eurozone (or, in more emphatic terms, as a vicious circle, 'doom loop' or 'deadly embrace' between governments and banks), and were the ostentatious reason for setting up the EU banking union in the first place (Schäfer 2016). This has led to suggestions of financial dominance being not more than 'hidden fiscal dominance' and rendering a distinction between the two 'moot' (Hellwig 2014: 26-27). However, while both forms of dominance can indeed be congruent and might at times overlap, we deem it pertinent to stress the notion of financial dominance in its own right, for three main reasons.

First, and in line with Gabor (2016), while financial dominance 'can easily be mistaken for' its fiscal counterpart, it 'does not mark a full return' to it, for it finds its expression not only in outright support for particular 'banking *institutions*', which may or may not be intertwined with the sovereign of the jurisdiction they operate in, but also in 'supporting liquidity in (...)

markets in times of stress' more broadly (2016: 971, 991, emphasis in original; Dietsch et al. 2018). Second, and related, empirical research – including by the ECB itself – does suggest that banking and financial crises are, in fact, the indicators that lead to sovereign debt crises more often than the other way round (Babecky et al. 2012). And third, even if we submitted that the existence of a bank-sovereign nexus meant that it should not matter *economically* whether the 'original sin' of triggering a crisis is committed in the financial sector and then spills over into sovereign debt markets, or vice versa, it might well make a difference politically. The prolonged political quarrels over organizing so-called rescue packages for troubled sovereigns in the Eurozone, as opposed to the relatively less visible or even 'stealth' recapitalisation of national banking sectors, testify to this.

2.7 – Conclusion

We started from the puzzle of why a uniquely independent monetary authority like the ECB would engage intensively with fiscal policy-making and thus jeopardise the monetary-fiscal divorce that was supposed to be all to the benefit of the central bank. To resolve the puzzle, we have highlighted the independent and growing role of financial dominance concerns over traditionally expected fears of fiscal dominance. This yields several implications. A key suggestion that emerges from our distinction between different forms of dominance is the desired course of government action that each can be taken to imply. A prevalent understanding of central bank independence suggests that the principal rationale for resorting to fiscal interventions is to make sure that the monetary-fiscal divorce is ultimately reinstated and upheld: the reason why a central bank reaches out to governments is that it does not want fiscal activism to undermine its monetary policy-making. Our analysis, however, implies that in a world of financial instability, additional concerns to such threats of fiscal dominance come to play. In particular, governments' unwillingness or inability to stabilise financial markets can mean that the central bank will ultimately be forced to step in and expose itself to new levels of risk, best characterised as a situation of *financial* dominance. Viewed in this light, a central bank's interference with fiscal policy-making is not so much an indication of governments' fiscal activism, but rather of their harmful *in*action.

To take our argument further, future research may contend that this insight holds up even during the subsequent, non-crisis times of monetary policy 'normalization': not only when it comes to providing financial stability, but also when trying to fulfil their core policy mandates of achieving stable low inflation, do central bankers increasingly seem to be out of their depth and in need of some form of outside support. This effectively turns orthodox theories underpinning central bank independence, fuelled by fears of fiscal dominance, on their head: what if it were not merely the case that policy activism undermines price stability, but also that some policy action is necessary to achieve it in the first place? To this end, we are starting to hear monetary policy-makers communicate to their audiences around the globe that there are a number of policy problems that they are not able to fully grasp on their own. These range from suggestions that the 'framework for understanding inflation dynamics could be misspecified in some fundamental way' (Yellen 2017) or even of having to conduct 'monetary policy without a working theory of inflation' (Tarullo 2017), to hopes for higher wage demands as these are 'the primary driver of inflation' (Draghi, quoted in Jones 2017), to warnings of 'a host of issues [which] have been laid at the door of the Bank of England' and which 'confuse independence with omnipotence' (Carney 2017).

In the eyes of some, such 'admissions of impotence' are essential if central banks are to nudge fiscal policy-makers to play a bigger part eventually (see, e.g., Summers & Stansbury 2019). To others, however, they are an indefensible abdication of responsibility (Lonergan 2019).

One way or the other, central bankers, in their newly-found roles as 'masters of the universe', seem poised to remain at the centre of attention – either by doing more themselves, or by spurring others into action. In this respect, and for all its alleged uniqueness, the ECB finds itself in a similar situation compared to its major counterparts in the developed world. The lessons we draw from the Eurozone can thus be instructive beyond Europe's monetary union, not least since we would expect questions of monetary-fiscal separation and cooperation to persist and even intensify as central banks around the globe begin to unwind unconventional policies in an attempt to confine themselves to more conventional interest rate-setting once again.

For policy-makers keen on (re-)creating painstaking divisions between policy spheres, we would predict that this will only be achievable if central banks are not burdened with tasks and expectations they ultimately find themselves unable to fulfil on their own. For scholars of the political economy of central banking post-crisis, conversely, we suggest paying closer attention to central banks' entanglement with financial markets and how financial stability concerns condition an otherwise unnecessarily rigid understanding of independence as chiefly a matter of government-central bank relations. This challenges us to question the prevalent notion that central banks, although 'discursively deeply enmeshed with', are still taken to be 'autonomous from markets' (Nelson & Katzenstein 2014: 383) – and to explore ways in which such autonomy can be theorised and ultimately achieved. An appreciation of financial dominance is a useful point of departure for this endeavour.

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3 – Second essay: Limiting the Unlimited?

The Spectre of 'Central Bankruptcy' in Europe and Japan

Abstract

Why do major central banks across the globe – from the ECB, to the Bank of England, to the Bank of Japan – care about and protect their balance sheets and capital bases (i.e., protect themselves against losses and 'insolvency'), despite a plethora of historical examples of central banks that have operated with persistent losses and even negative capital without discernible operational problems? And when and why do they care *differently,* i.e. pursue different strategies for protection? While the economics literature on these questions asserts (and for the most part concludes) that central bank losses and negative capital may not necessarily pose a *technical* problem for central banks' achievement of their assigned policy objectives, they could well become a problem *politically* down the road. However, political science and political economy scholarship has not taken up these calls for an investigation into the alleged politics of central bank losses and insolvency, or what I call the spectre of 'central bankruptcy'. In this paper, I propose a way in which this void can be filled. I put forward a political economy argument that emphasizes monetary policy-makers' desire for self-limitation in times of financial stress. I then test the argument in a cross-case comparison between three major central banks: the ECB, the Bank of England, and the Bank of Japan. The results challenge established accounts of delegation to independent agencies, which have long had a tendency of treating agents as both discretion-seekers and power-maximizers.

3.1 – Introduction

How does one place limits on a seemingly unlimited resource? And under what circumstances would an independent and powerful policy-making institution seek to do so? The case of post-crisis central banking provides a pertinent entry point into these vexing questions. Confronted with systemic financial instability and nearing the zero lower bound on interest rates, central banks across the globe invoked their lending-of-last-resort and bond-buying powers in an attempt to attenuate financial distress and lower not only short-term but also long-term borrowing costs. In the process, they pledged to purchase securities in virtually unlimited quantities if needed – financed by issuing interest-bearing reserves –, leading to substantial increases in central bank balance sheets and heightened exposures to interest, default and exchange-rate risks (Hall & Reis 2015). Besides, being perceived as an economy's balance sheet of last resort entails a more fundamental risk for central bankers, namely that of institutional 'loneliness' (Mabbett & Schelkle 2019): as crisis-fighting efforts become increasingly dependent on unconventional monetary policy, central banks eventually find themselves to be 'the only game in town' (El-Erian 2015). What, then, can monetary authorities possibly do to escape such threats of financial dominance (Diessner & Lisi 2019)?

In this essay, I demonstrate that one understudied way in which central banks seek to limit the seemingly unlimited capacities of their balance sheets is to signal and attach weight to the risk of losses that could erode their capital bases. Indeed, major central banks across the globe have expressed concern for potential losses and negative capital in the recent past. The ECB, for instance, moved to double its capital base at the height of the Eurozone crisis, perplexing market observers with the move (*FT* 2010). In the same vein, the Bank of England obtained an official and explicit indemnity from HM Treasury that assumed the risk of losses and thus protected its balance sheet, while the Federal Reserve sought a similar arrangement but only received it partially and implicitly (Geithner 2014; Mabbett & Schelkle 2019: 16). Similarly, and nearly a decade before the onset of the 2008 financial crisis, the Bank of Japan already publicly warned about the prospect of an erosion of its capital base (Bernanke 1999). What is puzzling about this preoccupation with losses, however, is that a plethora of central banks across the globe have been known to conduct monetary policy with persistent losses or even negative capital at different points in time and, in fact, without discernible operational problems.[24]

How come, then, that major central banks care about and protect their balance sheets and capital bases? And when and why do they seem to care differently, i.e. pursue different strategies for protection? These questions become particularly pressing if we bear in mind that central banks' fear of losses and their apparent desire for protection by fiscal authorities – whether justified or not – have been suspected to be key factors in restraining policy-makers from additional stimulus at times of crisis when policy action was needed ever so badly (Krugman 1998; Cargill 2005; De Grauwe 2013b). Whereas the economics literature asserts (and for the most part concludes) that central bank losses and negative capital may not necessarily pose a *technical* problem for central banks' achievement of their assigned policy objectives, it is often asserted that these could become a problem *politically* down the road. However, political science and political economy scholarship has not taken up these calls for an investigation into the politics of central bank insolvency, or what I call the spectre of 'central bankruptcy'.

[24] These range from Europe (e.g. the Bundesbank and the Czech National Bank), to Asia (e.g. the Bank of Israel and the Bank of Korea), to South America (e.g. the Central Bank of Chile), and beyond (Vaez-Zadeh 1991; Dalton & Dziobek 2005; BIS 2009).

In order to fill this void, this essay engages recent extensions to theories of central bank independence (CBI) so as to argue that central banks' conspicuous aversion towards bearing losses and negative capital on their balance sheets stem from a desire to signal *self-limitation* in a context of increasingly unconventional monetary policy. It further argues that the ways in which this signalling process will play out for different central banks is mediated by differences in the institutional design of *financial independence* arrangements. Moreover, and importantly, policy-makers' *de facto* interpretation of the sources and limits not only of their mandated goals and instruments (see, e.g., Lombardi & Moschella 2015; Schmidt 2016; Orphanides 2018; van 't Klooster 2019), but also of their very independence, is central to shaping their self-limitation efforts. In particular, the extent to which independence is interpreted as being compatible or incompatible with extensive monetary-fiscal coordination is argued to play a critical role.

The paper proceeds in the following steps. First, I dig deeper into the complexities of the curious subject of central bank losses and capital by reviewing prevalent accounts in the literature and highlighting a number of unresolved paradoxes and omissions. Second, I flesh out a political economy argument to explain central banks' strategies towards loss-making, which is situated in recent reappraisals of central bank independence and delegation to autonomous bureaucracies more generally. Third, I set up and conduct a cross-case comparison of three major central banks' self-limitation strategies so as to test the argument, based on extensive document analysis as well as a set of élite interviews obtained through fieldwork at the European Central Bank, the Bank of England, and the Bank of Japan. Finally, the implications for a political economy of central bank independence post-crisis are discussed in the concluding section.

3.2 – Research strategy and case selection

The research questions and empirical focus of this essay are most amenable to a qualitative research strategy, as will become clear from the discussion of the existing literature below. In particular, this is to appreciate the difficulties which large-N studies of central bank losses and capital face with regard to comparability and generalisability across a broad range of institutional and political contexts – which, in fact, have led to calls for a more qualitative understanding of the subject from within that literature itself (see Milton & Sinclair 2011). Such an approach may rely on either of two methodological strategies, in triangulation with a close reading of policy documents and analysis of secondary material: on the one hand, a larger sample of central banks would lend itself to survey-based research (see, e.g., the work by Moser-Boehm at the Bank for International Settlements (2006; 2009)); on the other hand, a smaller set of selected case studies would be particularly amenable to research leveraging expert interviews with current and former officials (an exercise not undertaken in the literature to date).

In this vein, I draw on original fieldwork undertaken at the ECB, the Bank of England (BoE) and the Bank of Japan (BOJ),[25] which has yielded primary data in the form of 32 élite interviews. The majority of these (18) were conducted at executive level, the rest at senior-staff level (see Appendix B). The reasoning behind this case selection is essentially as follows. Among major central banks, the ECB's and the BoE's approaches to protecting their balance sheets could hardly differ more starkly: while the BoE obtained an official and explicit indemnity from the Treasury for its operations, the ECB did not, and instead moved to increase the size of its capital base. More often than not, extant research puts down

[25] I use the acronyms BoE for the Bank of England and BOJ for the Bank of Japan as these are the acronyms most often used by the central banks themselves, while other authors may use BofE or BoJ.

discrepancies of this sort to the difficulty of monetary-fiscal coordination in an institutional setting in which the central bank's fiscal counterpart is not a unified treasury (as in UK), but a collective of 19 finance ministries (as in the Eurozone) (see, e.g., Illing & König 2014; Orphanides 2017; Bruegel 2018).

However, the inclusion of an additional case spells doubts on this interpretation, namely one in which a unified fiscal counterpart does exist, yet coordination – in the form of an indemnity, for example – is still not achieved. While the Federal Reserve (Fed) is the most common point of reference, the Bank of Japan arguably makes for a more fruitful comparison for at least two reasons. First, it has experienced many of the aforementioned challenges much earlier than its major counterparts in the developed world, and it has eventually come to undertake the most far-reaching risk-taking among them (Cecchetti & Schoenholtz 2016a). Second, the Fed's independence is arguably uniquely contingent upon its relations with the US Congress (see, e.g., Conti-Brown 2016; Binder & Spindel 2017; Broz & Clark 2018), while for the ECB, the Bank of England, and the Bank of Japan, the coordination problem is essentially one to be resolved primarily between the central bank and the fiscal authority, which eases comparability.

3.3 – Central bank capital and the spectre of 'central bankruptcy'

3.3.1. – Synopsis of empirical literature

A large part of the existing work on central bank capital, stemming from the wave of global financial liberalisation of the 1980s and 1990s, stresses the losses which central banks may accumulate on their holdings of foreign reserves in the context of exchange rate realignments

(Vaez-Zadeh 1991; BIS 2012).[26] Perhaps owing to this view, the issue of central bank losses and solvency was long thought to be limited to the developing world and countries' mixed experiences with different exchange rate regimes. For instance, Jeanne and Svensson (2004: 18) hold that central banks experiencing periods of negative capital were a phenomenon confined to 'mostly Latin American countries with a history of monetary instability', while Vaez-Zadeh (1991: 70) observes a degree of 'complacency' due to 'the improbability of losses in developed countries' (Cukierman 2011: 44-45; see also Stella 2005; Belke & Polleit 2010). The times of complacency, however, seem long gone. Rather, the question of central bank losses and capital has been propelled into the developed world as well – first at the Bank of Japan, and by now at most other major central banks (Ueda 2003; Buiter 2008a; Reis 2013a).

To safeguard financial stability and combat deflationary threats, central banks' quantitative easing policies have been financed mostly by means of issuing interest-bearing liabilities (namely commercial bank reserves) while simultaneously subjecting the asset side of central bank balance sheets to a host of new risks (Bassetto & Messer 2013; Hall & Reis 2015). Debates about the prospect of losses at major central banks have soon followed. Against this backdrop, various commentators have suggested that governments should provide their monetary authorities with ex ante fiscal support, for example in the form of political indemnities which assume the above risks (Buiter 2006; Del Negro & Sims 2015; Park 2015; Corsetti & Dedola 2016; Van Riet 2017; Pinter 2018). Amongst others, it is argued that this would allow central bankers to not be preoccupied with bearing losses on their balance sheets and that the neat separation between monetary and fiscal policy would thus be restored.

[26] Sims (2004) encapsulates this line of thinking by proposing a major distinction between those central banks that have a high proportion of foreign reserves among their assets – and are thus supposed to be in need of high capital buffers against exchange rate risk – and those central banks that have a low proportion of reserves and therefore purportedly need little capital.

Adam Posen (2017), speaking at the BoE anniversary conference on 20 years of central bank independence, even came to conclude that although the provision of fiscal indemnities was 'not foreseen as an issue in CBI', it ultimately turned out to be 'fundamental' during the crises.

In the eyes of others, however, the idea that central banks require fiscal support is 'ludicrous', since it raises the paradoxical prospect that 'governments that can, and sometimes do, default are needed to provide the capital of an institution that cannot default' (De Grauwe 2013b: 526). Indeed, while most empirical studies imply that holding positive capital should matter a great deal for central banks' monetary policy-making, very few venture to suggest an actual *level* or proportion of capital that central banks should ideally have. In a pre-crisis review of different studies, for instance, the Government Accountability Office of the US Congress emphasized that it 'found no widely accepted, analytically based criteria to show whether a central bank needs capital as a cushion against losses or how the level of such an account should be determined' (GAO 2002: 8). Similarly, having dedicated an entire edited volume to the subject, Milton and Sinclair (2011) conclude that '[t]he main observations are that there is no single, quantifiable formula that central banks could use to calculate capital levels'. Instead, studies frequently imply that there are major political and institutional differences across jurisdictions, which call for a more case study-based approach in order to gain a 'qualitative understanding' of the subject (Cukierman 2011: 40-41; Archer & Moser-Boehm 2013).

If we seek to establish anything close to a general rule on central bank capital, however, then it seems that the limit to a central bank's loss-making is implied in its inflation-fighting mandate. As Fry (1992) puts it, a central bank should be considered 'insolvent' when it can 'service its liabilities only through *accelerating* inflation' (1992: 91, emphasis in original).

Likewise, Reis (2015) suggests that central bank insolvency is, eventually, equivalent to hyperinflation or currency reform.[27] However, the empirical relationship between a central bank's 'financial strength' (i.e. the proportion of capital and other buffers on its balance sheet) and its inflation-fighting record is ambiguous: while Klüh and Stella (2008), Perera et al. (2013), and Adler et al. (2016) find evidence for a negative association between financial strength and inflation, Benecká et al. (2012) and Hampl and Havránek (2019) conclude that the relationship is weak at best. Similarly, Ueda (2003: unpag.) contrasts the experience of the central banks of Venezuela and Jamaica (where a deterioration in capital did go hand in hand with high levels of inflation) with that of Chile, Germany and Indonesia (where it did not), finding that 'the maintenance of a sound balance sheet is, in general, neither a necessary nor a sufficient condition for fulfilling a central bank's responsibility'. In sum, the empirical record is mixed, and the literature appears remarkably inconclusive. This cautions us to dig deeper and to consider alternative theoretical mechanisms that may explain central banks' preoccupation with loss-making and negative capital.

3.3.2. – Theoretical considerations and the spectre of 'central bankruptcy'

The main theoretical (economic) argument for why central bank capital may be considered irrelevant is that, in a fiat currency regime, a central bank's legal monopoly to issue money should enable it to always create the necessary resources to service its obligations. Thus, unlike private corporations or households,[28] central banks can avoid default and insolvency.

[27] Reis (2015) conceptualizes insolvency as the central bank running a Ponzi scheme on reserves, to the effect that reserves grow explosively and eventually become worthless. In this tradition – going back to the seminal work of Cagan (1956) as well as that of Fry (1992) –, Buiter and Rahbari (2012) propose a so-called 'noninflationary loss absorption capacity' or NILAC, based on the present value of future monetary income (i.e., seigniorage revenue). See also Buiter (2008a).

[28] The fallacious equation of *central* banking with *commercial* banking is explored further in the final essay of this thesis.

In contrast, the theoretical argument for why holding positive capital may not be irrelevant for central banks is rooted in the political economy of central bank independence. As Kachur et al. (2016: 8) note, 'some consensus' appears to exist that posting repeated losses and being perceived as insolvent will ultimately lead to a 'political' problem for central banks (cf. De Grauwe 2013b) – a problem which independent central bankers presumably fear. I shall term this fear the spectre of 'central bankruptcy'.

An often-referenced speech across the literature in this regard is that of former Bank of Japan governor Toshihiko Fukui (2003: 8) who noted that 'concern with the soundness of their capital base might not be grounded purely in economic theory but may be motivated rather by the political economic instincts of central bankers' (Pringle 2003; Jeanne & Svennson 2004: 20; Stella 2005: 335; Cukierman 2011: 35).[29] However, the nature of this supposedly fundamental political matter is rarely specified – as if to merely suggest that 'it's *politics*, stupid'. Instead, a number of catch-all concepts are frequently alluded to, such as capital losses leading to serious damage to a central bank's 'authority', 'reputation', or 'prestige' (Vaez-Zadeh 1991; Ernhagen et al. 2002; Jeanne & Svennson 2004; Archer & Moser-Boehm 2013; Cecchetti & Schoenholtz 2015), not rarely without much further discussion or clarification. Despite the allegedly political character of the problem, however, political science and political economy scholars have been slow to take up these calls for an investigation into the politics of central bank capital and solvency.

[29] Or, as Cecchetti and Schoenholtz (2015) aptly note: 'If you ask monetary economists whether we should care if a central bank's capital level falls below zero (even for an extended period of time), most will say no. Pose the same question to central bank governors, and the answer in nearly every case will be yes'.

At its core, the often-assumed reason for why central banks fear 'insufficient' capital is that a depletion of said capital might ultimately undermine central bank independence. Amongst other things, it is argued that if a central bank were to have negative equity, it would eventually have to be 'recapitalized' by its owners (i.e., in most cases, by its government). This purported injection of 'taxpayer's money' into the central bank could, in turn, be refused by the government, or it could be granted only under particular conditions. This would render the central bank's room for policy manoeuvre dependent on government approval, which clearly violates the principle of political independence (see, e.g., Vaez-Zadeh 1991: 75-76; Ernhagen et al. 2002; Pringle 2003; Jeanne & Svennson 2004: 20; Benigno & Nisticò 2015).

A more general formulation of this argument holds that a central bank will not want to have negative capital 'forever', and will thus either be in need of recapitalisation, or will undertake operations that are profit-generating and might deviate from optimal (tight or lose) policies (Cukierman 2011). However, from the aforementioned theoretical vantage point that central bank capital should be considered irrelevant for the operation of monetary policy, this proposition would instead appear 'completely circular' (Whelan 2012: 35): in essence, the argument posits that a central bank needs capital for the plain reason that if it lost that capital, it would need it (back).

Apart from hypothetical *political* repercussions for CBI, central bankers might be fearful of other spectres. For instance, they might fear fear itself – namely financial markets' fears of precisely this 'risk of change' in the institution of independence (Posen 1995: 255). As Bindseil et al. (2004) put it: 'Financial markets may also *perceive* a reduction of central bank capital as increasing the probability that the relationship (of independence) between the State and central bank will be reviewed and possibly changed' (2004: 30, emphasis in original).

What emerges from these discussions is that the spectre of central bankruptcy may matter to central banks for the seemingly obvious reasons that these are both *central* (i.e., public institutions whose loss-making and supposed waste of public resources are subject to close scrutiny by different audiences) and *banks* (i.e., financial institutions which make loans and purchases, and whose assets and liabilities are recorded on balance sheets which are closely monitored by these and other audiences) (Braun 2018: 4). Yet, conversely, strong arguments can be mounted that losses and capital should not be of concern to central banks precisely because these are, seemingly paradoxically, *neither* central *nor* banks in any strict sense.

Taken together, and somewhat akin to Pandora's box, the spectre of central bankruptcy suggests that once balance sheet losses surpass some unspecified threshold or once central bank capital turns negative, a range of adverse consequences might ensue – from the erosion of financial trust, to the loss of independence, to hyperinflation and currency reform –, be these triggered by political or financial markets-related backlashes, or a combination thereof. It has been argued that these potential risks are particularly pertinent in a number of jurisdictions which do not legally specify what ought to happen in case a central bank posts capital losses (see Vaez-Zadeh 1991; Stella 2005). Some attention in the literature has therefore been paid to the institutional design of the accounting frameworks and especially the dividend rules of different central banks (i.e., how a central bank's profits should be allocated to its owners) as well as the (non-)existence of symmetrical rules in case of losses (Milton & Sinclair 2011; Archer & Moser-Boehm 2013; Schwarz et al. 2014; Reis 2015; Bholat & Darbyshire 2016). These arrangements are sometimes referred to as safeguarding a central bank's *financial independence*. Indeed, major central banks have come to insist on financial independence as a formal requirement for CBI – such as the ECB, both for itself and for the national central banks in the European System of Central Banks (ECB 2010).

Yet, as Tucker (2016: 43) points out, even though 'the financial-accounting conventions that apply to a central bank are important in political economy terms', '[t]he variety of accounting schemes around the world suggests that either local political conditions vary enormously or that this is a neglected area'.[30] In this context, Reis (2015) has formalized several of these considerations in order to distinguish three types of central bank 'solvency', depending on the dividend rules and sources of net income of a central bank (which he terms 'period' or 'rule' solvency) as well as the present value of future seigniorage (termed 'intertemporal' solvency). Conspicuously, however, the analysis concedes early on that 'none of these definitions is more economic or better grounded in economic theory or principles than the others. They each correspond to different situations in terms of the political economy between the central bank and the Treasury' (Reis 2015: 8).

3.4 – The political economy of financial independence: signalling self-limitation

The above synopsis of the extant literature entails two chief implications. First, the empirical literature suggests that a qualitative, case study-based approach is best-placed to shed light on the conundrum of central bank losses and capital across different institutional contexts. Second, economic studies typically conclude that the problem is more 'political' in nature than technical analyses are able to grasp. To make progress on both fronts, this section first advances a political economy argument for why and how central banks care about their balance sheets and capital bases, grounded in a theory of CBI which emphasizes monetary policy-makers' quest for self-limitation. I then put forward a case study-based examination of central bank capital which reflects on the strategies of self-limitation pursued by three major central banks in the context of the global financial crisis: the ECB, the BoE, and the BOJ.

[30] I would submit that it is quite probably both. For a recent study, see Ademuyiwa et al. (2018).

3.4.1. – Limiting the unlimited: balance-sheet central banking and post-crisis CBI

Successive generations of political economy scholarship on central banking have situated central banks and central bank independence in broader questions of delegation, focussing on the conditions under which the provision of policy autonomy to independent agents can be achieved and will ultimately be successful. While first-generation scholars of delegation to central banks have focused squarely on the institutional design of independence itself (see, e.g., Grilli et al. 1991; Cukierman et al. 1992; Alesina & Summers 1993), second-generation studies have made strides towards locating the sources and limits of independence within the political system, i.e. with the agent's political principals and wider institutional environment (Posen 1993; Blinder 1998; Franzese 1999; Padoa-Schioppa 2000; Bernhard et al. 2002; Broz 2002; Lohmann 2003; Keefer & Stasavage 2003; Goodhart 2015; Mabbett & Schelkle 2019). At any rate, the delegation of policy autonomy rests on a delicate balancing act. On the one hand, scholars of central bank independence have been prone to conceptualize CBI as a protection from outside interference with monetary policy operations: the more effectively a central bank is shielded from activism (or even outright dominance) on behalf of its political *principals*, the more independent it is.[31] This line of thought can be traced through both of the above generations in the central banking literature, which merely disagree on *how* CBI is constituted and upheld (the first stressing the legal mandate and institutional design of central banks; the second focussing on the political environment which central banks are situated in).

On the other hand, political science scholarship on delegation has tended to concern itself with the reverse problem, namely that of agency costs and the predicament of *control loss* (see, e.g., Pollack 1997; Majone 2001; Abbott et al. 2019; Högenauer & Howarth 2019).

[31] A similar tendency can be observed in eminent international relations scholarship emphasizing problems of encroachment and the re-assertion of authority by principals over their respective agents (e.g., Barnett & Finnemore 2004; Hawkins et al. 2006; Stone 2011; see Braun & Düsterhöft 2019).

When autonomy is granted to an agent, which *ex ante* and *ex post* controls should be put into place to ensure that its actions do not deviate from the preferences of its political principal(s)? These concerns also feature prominently in the ample literature on bureaucratic autonomy, which habitually scrutinizes problems of *drift* (McCubbins et al. 1989; Epstein & O'Halloran 1999; Huber & Shipan 2002) as well as the protection and maximisation of bureaucratic *turf* (Dunleavy 1991; Carpenter 2001; Busuioc 2016), both of which have been argued to be applicable in the context of independent central banking as well (see Acheson & Chant 1973; Toma 1982; Shughart & Tollison 1983; Skaggs 1984; Boyes et al. 1988; Forder 2002). Balancing these two imperatives, i.e. granting both sufficient autonomy (by limiting outside interference) while avoiding excessive autonomy (by limiting agency drift and control loss), is what has fuelled fertile scholarly debates throughout successive generations.[32]

The financial and economic crises of the past two decades, however, have arguably turned both of these perspectives on their head. On the one hand, the challenge of systemic financial instability, and the concomitant threat of 'financial dominance' on top of commonly expected fears of fiscal dominance (Brunnermeier & Sannikov 2012; Hannoun 2012; Gabor 2016), have led central banks to not merely concern themselves with the traditional problem of government *activism*, but much rather with the conundrum of government *in*action throughout the crisis (Diessner & Lisi 2019). On the other hand, the crisis does not square neatly with the core problem of *control* loss emphasized in the political science literature on delegation either. To the contrary, it would rather seem that *principal* loss describes the predicament of post-crisis central banking much more succinctly (see Tesche & Genschel, unpublished), with monetary policy increasingly becoming 'the only game in town' (El-Erian 2015), and independence eventually turning into 'loneliness' (Padoa-Schioppa 2000; 2004).

[32] For partial attempts at bridging this stylized divide, see Alesina and Tabellini (2007; 2008) and, more recently, Tucker (2018: chapters 5 & 18).

As Mabbett and Schelkle (2019) demonstrate, monetary policy-makers have reacted to these challenges in puzzling fashion: against central expectations in the delegation literature stressing that autonomous bureaucracies seek to *maximize* their powers as well as their discretion, independent central bankers appear to have aimed at *limiting* both in the crisis, so as to obtain much-needed cooperation from their political counterparts (e.g., Henning 2016; Schoeller 2018; cf. Gabor 2018; Fontan 2018: 163).

Departing from these observations, I argue that central banks' aversion towards bearing losses and negative capital on their balance sheets stems from a desire to signal self-limitation in a context of increasingly unconventional monetary policies which central banks do not want to be perceived as unlimited and for which they thus seek to obtain some form of fiscal and/or political backing. The ways in which this signalling process will play out for different central banks is likely to be mediated by differences in the institutional design of financial independence arrangements – and in particular the rules for profit retention and distribution as well as the (non-)existence of symmetrical rules in the case of losses. At the same time, however, these *de iure* institutional characteristics are unlikely to fully determine the ultimate success of central banks' efforts at self-limitation. Instead, monetary policy-makers' *de facto* interpretation of the sources and limits of their independence (Lombardi & Moschella 2015) – and in particular the extent to which independence is deemed to be compatible with monetary-fiscal coordination arrangements or not – can be expected to have an impact on self-limitation outcomes as well.

Taking these considerations into account, the below case studies are structured as follows. First, I present and discuss the (financial) independence arrangements put into place in each case and demonstrate how financial instability and the launch of unconventional monetary policies have given rise to pressing concerns about central bank losses and negative capital. Second, I then trace selected strategies by all three central banks' towards overcoming these concerns as well as their relative achievements in doing so. Lastly, I conclude with a discussion which ties the case studies together and draws out implications for students of delegation more generally, as well as for a political economy of central bank independence post-crisis in particular.

3.5 – Case studies

3.5.1 – The European Central Bank: implicit and informal coordination

The ECB, created in 1998 through the provisions laid down in the Treaty on European Union (TEU or Maastricht Treaty), is commonly seen as the most independent central bank in the developed world. Its unprecedented independence stems not only from the lack of a unified Eurozone fiscal authority or government that it could be independent 'from' in the first place (Goodhart 1998), but also from the relative vagueness of its mandate, which has conferred a considerable degree of 'goal independence' onto the central bank (De Grauwe 2018: 176-177; see Debelle & Fischer 1994). Equally importantly, the institutional safeguards that protect its independence are taken to be extraordinarily strong. Given the nature of the TEU as an international agreement between all EU member states – changes to which require an inter-governmental conference, unanimous agreement, subsequent ratification, and in some cases referenda –, a revision of the ECB's statutes is considered particularly difficult and unlikely (Posen 1995: 272). With a view to the political economy of central bank capital, the ECB's unprecedented independence could be interpreted as the central bank having least to fear from hypothetical capital losses: if such losses were to occur, legally credible threats to its independence should, theoretically, be largely absent.

At the same time, however, the ECB's *financial* independence (i.e., its financial relations with Eurozone governments) remain largely implicit, being the sphere of independence generally perceived to be the least legally defined and developed after the inception of EMU (see, e.g., de Lhoneux 2005: 169-170). While the Treaties stipulate that profits are to be distributed to national central banks (acting as the ECB's 'shareholders') in accordance with a detailed capital key (TFEU Art. 29), losses are first to be offset against a buffer of retained earnings called 'general reserve fund' (Art. 33(2)). Any losses exceeding the fund (which is limited to the size of the ECB's capital base; Art. 33(1)) can further be matched by drawing on the national central banks' monetary income for the relevant financial year. This happened in 2004, when the ECB made substantial losses on its foreign reserve holdings caused by a prolonged depreciation of the US dollar. The Treaties remain silent, however, on what ought to happen if the ECB were to record a loss large enough to wipe out its capital base. At most, there appears to be an implicit assumption that the 'endowment' (Interview 12) of the central bank with a certain amount of capital – initially set at €5bn (Art. 28(1)) –, entails a legal requirement for it to be recapitalized by member states if capital ever were to fall below zero (Interview 13). It is also assumed that the ECB may carry losses forward on its balance sheet (Bunea et al 2016).

Such assumptions notwithstanding, the ECB repeatedly displayed a wariness towards taking financial risks onto its balance sheet throughout the Eurozone crisis (Diessner & Lisi 2019) and signalled stark concerns about the prospect of capital losses in particular – signals which were deemed 'puzzling' by market participants (e.g., *FT* 2010) and bewildering by academics (De Grauwe 2013b). Among a wider range of measures aimed at the protection of its balance sheet, the ECB provisioned parts of its profits in line with Article 33.1 and further announced that it would double its capital base during the crisis in December 2010 (ECB 2010a+b).[33] One crucial implication of signalling such concern is the latent constraint that it places on the otherwise 'wide discretion over monetary policy' and the 'extensive powers to intervene in financial markets' that its mandate affords (e.g., Art. 18, 20; Mabbett & Schelkle 2019: 12), by effectively suggesting that prolonged losses stemming from these powers would be deemed unacceptable. Against this backdrop, some have interpreted the ECB's move as sending a 'stern reminder' and 'powerful signal to government leaders' that its crisis policies 'aren't without risk' (*Wall Street Journal* 2010).

These measures, however, still did not offer enough in the way of protection in the eyes of several of the central bank's key decision-makers (Interview 2, 13, 31). Addressing the president of the Eurogroup directly, the ECB therefore ventured to write an informal letter to remind finance ministers of their implicit obligation of recapitalization in case the ECB's risk-taking were to result in large-scale losses (Interview 13). The letter was ultimately responded to by the Eurogroup president, and in the affirmative: euro finance ministers acknowledged their hypothetical responsibility, calming the ECB's nerves for the time being (Interview 31). The extent to which such a recapitalization would indeed be carried out smoothly, however – with each member state chipping in through its national central bank's subscription to the ECB's capital base –, remains an open question to date.

Owing to this, when the ECB finally embarked on its quantitative easing programme in January 2015 (the Public Sector Purchase Programme or PSPP), the governing council decided to circumvent its implicit norm of loss-sharing by conducting 80% of government

[33] The third essay looks into the background and motivations behind these decisions in more depth, highlighting the understudied perceptional and cognitive dimensions of balance sheet central banking.

bond purchases in a highly decentralized fashion, namely through the balance sheets of the national central banks of the Eurosystem (see Orphanides 2017; Van Riet 2017: 17-20; Vallée & Cohen-Setton 2018). In so doing, Europe's central bankers once again revealed an overt desire for self-limitation, by placing ostentatious limits on bond purchases to the tune of 33% per issue and issuer (see ECB 2015). The durability of such measures of self-restraint, however, is increasingly being called into question, as discussed further below.

3.5.2 – The Bank of England: explicit and formal coordination

The Bank of England formally gained monetary policy autonomy from Her Majesty's Treasury (HMT) in June 1997, when operational independence was bestowed on the nine-seat monetary policy committee (MPC). Unlike the ECB, it enjoys neither goal nor 'target' independence (Schonhardt-Bailey 2013: 19-20), with its inflation target being formulated by the Chancellor of the Exchequer. In terms of financial independence arrangements, the BoE's balance sheet only recorded a 'small capital base' (Allen 2017: 4-5) of £2.3bn until mid-2018, and the Bank has fewer means at its disposal to tap into seigniorage revenues compared to the ECB: since 1928, the monetary income earned by the Bank's 'Issue Department' is transferred to the Treasury's National Loans Fund immediately after expenses.[34] As for the BoE's 'Banking Department' (the unit conducting all central banking operations apart from issuing notes), in turn, a profit-sharing agreement was decided with HM Treasury in 1984, whereby post-tax profits are evenly shared between the two institutions (Bibow 2018: 28, 32).

Owing not least to the small size of its capital base, key policy-makers in the Bank signalled an acute awareness of the risk of balance sheet losses which could drive the BoE's capital into

[34] Symmetrically, a 'deficit is not taken against income but is settled by a transfer from the National Loans Fund' (Bank of England 2017a: 138).

negative territory after the outbreak of the crisis (Interview 1, 14). According to the minutes of Court of Governors and non-executive directors (NedCo) meetings from the first half of 2009, for instance, the idea of seeking a capital injection from the Treasury was contemplated openly at different points in time. Interestingly, however, while it was generally found to be 'appropriate to discuss the Bank's capital position' and that 'the Treasury had accepted the need to review the Bank's capital' – as reflected also in Plenderleith's review of Emergency Liquidity Assistance in 2008-9 (Bank of England 2012: 15) –, the ultimate outcome was that '[i]t was not felt to be the right time at present' to be doing so (Bank of England 2009: 442).

Instead, BoE decision-makers focussed their attention on a different solution to the conundrum of balance sheet risks. When the Bank launched unconventional policy measures in order to provide credit easing and monetary stimulus throughout the crisis, it did so by effectively setting up separate institutional entities with separate accounts and balance sheets: first for the 'special liquidity scheme' of April 2008, and later for its quantitative easing operations from January 2009 onwards. The latter were conducted through a special purpose company, the Bank of England Asset Purchase Facility Fund Limited. Importantly, the facility came to be 'fully indemnified by HM Treasury: that is any financial losses as a result of the asset purchases are borne by HM Treasury, and any gains are owed to HM Treasury' (Bank of England 2017b: 4). This arrangement manifested itself through a formal exchange of letters between the BoE and the Chancellor of the Exchequer – up to a point where the letters were essentially 'pre-written with spaces left blank' for the amounts of purchases that the Bank sought to conduct – which 'just had to be inserted' and were then signed off swiftly by the Chancellor in order to expedite the process (Interview 1). How did the BoE manage to obtain successive *ex ante* indemnities from the Treasury? And why exactly did it seek those?

Evidence from official speeches and expert interviews suggests that the answer is essentially two-fold. On the one hand, the Bank had already flagged, much ahead of the crisis, that if it ever were to conduct unconventional policy operations which might impact government debt management, these would ultimately require political backing by the executive. Speeches by King (2004) and Tucker (2004), for instance, stressed that if the Bank 'were in a liquidity trap' where 'interest rates are at their zero lower bound', this would essentially create 'a need to co-ordinate with government' up to a point where 'policy relies on successful cooperation between central bank and finance ministry' (King 2004: 16; Tucker 2004: 35). Raising the issue upfront – and later codifying it by means of the indemnity – was thus an attempt at doing away with the element of surprise in case the central bank ever were to incur losses, and roping in the government to accept responsibility for these (Interview 14).

On the other hand, and once the crisis erupted, the Bank credibly signalled its resolve towards unwavering self-limitation in case such political backing were to be withheld: in the words of successive members of the monetary policy committee, the indemnity was generally assumed to be 'necessary for unconventional policy to work' (Interview 4, 14), up to an extent that if it had not been granted, 'we would not have carried out the policy' (Interview 10), even at the height of crisis. Importantly, however, the provision of successive indemnities was not merely perceived as a technical fix to protect the Bank from the spectre of losses – and, as such, as a sheer substitute to increasing its capital base (Interview 4) – but was much rather connected to wider questions of legitimacy and the nature of independent central banking (Interview 1; Tucker 2018: chapter 22). As one interviewee put it: 'higher capital does *not* resolve the fundamental issue of who takes fiscal policy decisions', stressing that the conduct of far-reaching unconventional monetary policy without adequate executive backing essentially amounts to 'asking for too much independence' (Interview 10). In a series of

Memoranda of Understanding (MoU), the BoE and HMT ultimately went on to establish their respective crisis-fighting responsibilities in a detailed and explicit fashion. This culminated in a recent MoU clarifying the 'financial relationship' between the two institutions and endowing the BoE with a capital target of £3.5bn along with a ceiling and floor backed by HMT (2018). Crucially however, the MoU also came to be seen as a hardening of 'self-imposed constraints' on the Bank's balance sheet (*FT* 2018) – as implied by attaching weight to positive capital.

3.5.3 – The Bank of Japan: provisional and limited coordination

The Bank of Japan (BOJ) was officially granted *de iure* (instrument and target) independence in June 1997 by means of a revision of the BOJ Act, which came into effect in April 1998 and enshrined decision-making power in an independent Policy Board (Article 14, 15). The Act leaves ample room for interpretation with regard to the Bank's *de facto* independence: while in general its autonomy 'shall be respected' (Art. 3(1)), the Act also stipulates that the Bank 'shall always maintain close contact with the government and exchange views sufficiently' so as to ensure that monetary and overall economic policy are 'mutually compatible' (Art. 4). In addition, the government 'may request the [BOJ] to conduct the business necessary to maintain stability of the financial system' in times of crisis (Art. 38.1), and it retains powers of approval over several administrative functions and indeed its budget (Art. 7, 11, 51).

With regard to indicators of financial independence, the Bank of Japan is bestowed with a conspicuously small – and thus essentially symbolic – capital base of ¥100 million (circa $1 million) (Art. 8(1)), 55 % of which is held by the government and the other 45% of which is held by private shareholders who may receive a dividend of up to 5% (Art. 8(2) & 53(4)). Moreover, Articles 53(1) and 53(3) stipulate that the Bank shall retain a mere 5% of its surplus 'as a reserve fund' to offset losses and transfer other income to the government. Notably, and 'upon authorization from the Minister of Finance', it may retain more of its income 'when it finds it especially necessary' (Art. 53(2)). In the same vein, the Policy Board has the authority to 'determin[e] important matters concerning accounting' (Art. 15(2)(xii)). What is particularly striking in terms of financial independence arrangements is that the 1997 revision of the BOJ Act essentially *removed* provisions under which the BOJ would be 'explicitly indemnified against losses' by the Ministry of Finance (MOF), thus leaving 'ambiguity' as to what would happen in case such losses did materialize (Interview 17, 29; Muguruma 2018; Park et al. 2018: 95). In response, the Bank has come to specify *for itself* an adequacy rule for the amount of capital and reserves that it intends to hold as a buffer against losses, thus implying an explicit limit on the risk-taking it would be willing to engage in. Computed as the ratio of capital, reserves and provisions divided by banknotes in circulation, it defined a ratio of 10% (with a buffer of +/– 2%) as signalling the 'financial soundness' of its balance sheet (Interview 25; Ueda 2003; Fukui 2003; Bank of Japan 2016a: Art. 18 para 1,2).

Soon after the shift to legal independence and amidst persistent deflationary pressures, the BOJ would become the first major central bank to adopt a zero-interest rate policy in February 1999, followed by a first round of quantitative easing in March 2001 – almost a decade before its counterparts in the developed world. Upon embarking on these measures, the Bank repeatedly voiced concerns for its balance sheet and capital base (Fujiki et al. 2001) – concerns which were met with incredulity by economists at the time. Bernanke (1999: 24), for instance, diagnosing a 'self-induced paralysis' at the central bank, found it 'disturbing' that such 'extraneous' and 'trivial considerations as the distribution of paper gains and losses between the monetary and fiscal authorities might block needed policy actions'.[35]

[35] See also Krugman (1998) and Meltzer (1999). With hindsight, however, even Bernanke seems to

Even though the BOJ's experience with unconventional policy and concomitant fears of balance sheet losses had thus been far from new, the global financial crisis and the ensuing Great Recession nevertheless proved capable of exacerbating both in unparalleled fashion. While the size of the BOJ's balance sheet had increased to around 30% of GDP up until 2013, it has since seen a sharp rise to over 100% of GDP, owing to quantitative and qualitative easing (QQE) measures implemented against the backdrop of 'Abenomics'. Consequently, the spectre of central bank losses and negative capital has continued to haunt Japanese policy debates, with the onset of substantial balance sheet losses often treated as merely a question of time, especially upon exit from QQE (see, e.g., Fujiki & Tomura 2017; Fueda-Samikawa & Takano 2018).

The way the BOJ has dealt with these threats shares some similarities but ultimately bears marked differences vis-à-vis both of its peers in the Eurozone and in the UK. Unlike the BoE, the central bank has not explicitly sought or obtained an outright indemnity from successive governments. Moreover, and unlike the ECB, it also does not appear to rely on an implicit recapitalisation agreement with its respective fiscal counterpart (Interview 17, 18), the Ministry of Finance, even though this has been insinuated with regard to a joint statement of coordination issued by the Bank and the MOF before the start of QQE (Bank of Japan 2013; Orphanides 2018: 16). Instead, and partly in line with the ECB, monetary policy-makers in Japan have settled for retaining ever-increasing parts of central bank profits and limiting payouts to the Treasury (Interview 17; Muguruma 2018).

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have come round to accept that a raid on central bank capital would be 'not good optics or good precedent' (Bernanke 2015). Reflecting on his previous critical assessment of Japanese monetary policy, the former Fed chairman recently quipped that his experience as a practitioner made him 'a little bit more sympathetic to central bankers' than he had been as an academic (Bernanke 2017: 23).

This has involved skilful reinterpretation of the room for manoeuvre afforded by the BOJ's accounting framework (Interview 26). Accounting rules were effectively amended in November 2015, including a supplementary provision specifying that, 'for the time being', profit calculations shall not only take the aforementioned capital adequacy ratio into account, but also pay particular attention to current 'developments in the Bank's income and losses' (Bank of Japan 2016a; Bank of Japan 2016b: 69-70).[36] The impact of successive profit retentions is clearly identifiable in the BOJ's accounts, and can be traced precisely to the second half of the fiscal year 2015. While the Bank's 'provision for possible losses on bonds transactions' had been stagnant at around $20bn (around ¥2.2tn) for much of the previous decade, it started to grow substantially from late-2015 onwards and now stands at over $40bn (around ¥4.4tn at end of fiscal year 2018) – thereby also keeping the Bank's self-defined capital adequacy ratio at around 8% and within the desired range (Bank of Japan 2013; 2015; 2016; 2018; 2019).[37]

At the same time, however, these partial achievements involve a painstaking and recurring procedure through which the BOJ determines increased amounts of retained earnings, which ultimately requires approval from the MOF (e.g., *Nikkei Asian Review* 2015; Interview 26). This is not rendered any easier by the fact that relations between the central bank and its fiscal counterpart have often been seen as adversarial ever since the revision of the BOJ Act – which was perceived as empowering the Bank at the expense of the MOF –, reflective of an

[36] Amendments to accounting practices and their effects are reported in the BOJ Annual Review, 'The Bank's Accounts', section II.4.e., 'Significant changes in the accounting standard'. Transfers to and from provisions are recorded as 'special losses' and 'special profits' in the BOJ's statement of income.

[37] At the time of writing, provisions against losses were on course for a further substantial increase after the Fiscal Year 2018, which could see the capital adequacy ratio jump to around 8.8% and thereby reach levels not seen since March 2001 (or, in other words, since the start of QE by the BOJ). Author's calculations based on BOJ Financial Statements.

environment in which central bank independence has been interpreted as incompatible with extensive monetary-fiscal coordination (Interview 28, 29, 30; Cargill 2005; Takahashi 2017). While continuous increases in risk provisions have been hard-fought and tend to be viewed as 'a step in the right direction', they do not fend off the spectre of central bankruptcy altogether (Interview 17, 30).

In light of the absence of explicit or implicit fiscal backing by the MOF, the BOJ is thus ultimately left in a relatively uncertain position vis-à-vis the BoE and ECB. Given the unparalleled size and composition of its balance sheet, and the comparatively modest outcomes in terms of safeguarding its financial independence, one could be tempted to conclude that attempts at credible self-limitation have thus far not been met with success. Against this backdrop – and just as it had been the first major central bank to embark on unconventional monetary policy at the turn of the century –, the BOJ may once again turn out to provide an insightful test case for other major central banks if it came to face a situation of prolonged loss-making in the future.

3.6 – Discussion and conclusion

The cross-case comparison leveraged in this paper yields several implications. To begin with, meaningful monetary-fiscal coordination does appear to take place in times of stress *despite* the formal institution of central bank independence, for instance in the form of letter-writing (both formal and informal) or through recurring negotiations over profit retentions. Contrary to longstanding predictions in the literature (e.g., Buiter 1999; Bini Smaghi & Casini 2000; Illing & König 2014; Orphanides 2017), this observation holds true even in institutional contexts which are not normally thought to be conducive to such forms of coordination – most notably the Eurozone, where informal mechanisms of coordination operate between monetary and fiscal policy-makers so as to fill the void of a vague and partly silent mandate. This casts novel light on the widespread view of an 'incomplete' monetary union hampered by the a lack of a unified fiscal counterpart. In particular – and when contrasting the case of the Bank of England with that of the Bank of Japan – what matters for successful coordination is not so much the existence of a unified fiscal counterpart *per se*, but rather how relations between monetary and fiscal authorities are perceived and upheld. In this regard, central banks' own interpretation of their independence – and the extent to which independence is deemed to allow for, or even *require*, meaningful exchanges with their political principals – is a key enabling factor for accomplishing relevant coordination outcomes.

More generally, and surprisingly for canonical accounts of delegation to autonomous agents and bureaucracies, the case of monetary policy-making suggests that independent central banks can turn out to be far from discretion-seekers and power-maximizers in times of crisis. To the contrary, the spectre of losses and insolvency implies that central bankers will much rather seek to limit recourse to what can otherwise easily be perceived as a quasi-unlimited provision of liquidity, reflected by an ever-expanding balance sheet. As the case of the Bank of England emphasizes in particular, what matters to monetary authorities in this regard is not merely the achievement of a *technical* fix to protect themselves from balance sheet losses and negative capital, but more so the attainment of some form of *political* backing in order to safeguard their institutional legitimacy while embarking on unconventional monetary policy. This latter aspect shall further be examined in the third and final paper of this thesis.

Looking ahead, the question of central bank loss-making can well be expected to gain further prominence in the coming years, with monetary authorities across the globe now attempting to unwind their sizeable balance sheets and re-evaluating their monetary policy frameworks, from the Reserve Bank of New Zealand, to the Swedish Riksbank, to the US Federal Reserve. With recessionary threats in the world economy on the horizon – giving rise to tensions between calls for normalization and needs for continued monetary stimulus – we are likely to see further soul-searching and experimentation on behalf of monetary policy-makers, informed by ongoing (re-)interpretations of central banking in light of political-economic constraints. This study would predict that these processes of 'normalization' will be conditioned less by the formal institutional design of independence itself, and more by the ways in which that independence is interpreted and practiced as allowing for necessary coordination or not. Meanwhile, as self-limitations go, these can well come to face their own limitations. The ECB, for one, currently finds itself confronted with discussions to expand the self-imposed issuance limits it had placed on all sovereign bonds purchases under the PSPP. Asked about whether he thought the central bank had the necessary leeway to lift those constraints itself, acting executive board member Benoît Coeuré's (2019) plain response was: 'The limits are ours'.

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4 – Third essay: The Power of 'Folk Theories' in Economic Policy-Making – The Curious Case of the ECB's Balance Sheet and Capital Base

Abstract

How do policy-makers resolve the dual challenge of achieving both effective *and* legitimate public policy? This challenge is particularly acute for politically independent policy-makers (who, by design, have little 'input' legitimacy to begin with) and even more so in times of stress (in which also their 'output' legitimacy may tend to decline, if not vanish altogether). The North-Atlantic financial and economic crises – and independent central banks' reactions to these – are a case in point: central bankers have emerged as the key actors in the macro-economy to combat the financial turmoil, while simultaneously experiencing a conspicuous loss in trust among their public constituencies. In this fraught context, how have major central banks, such as the ECB, reacted to the perennial challenge of balancing policy effectiveness with concerns for democratic legitimacy? In this paper, I argue that one way in which independent policy-makers safeguard and shore up their legitimacy in times of stress is by asserting and playing along the public's economic sentiments and intuitions. Contrary to the widespread notion that technocratic élites and macroeconomic policy-makers are overly influenced by economic ideas, theories, models, and advice, I argue that they can be equally – if not more – influenced by what we might call economic 'folk theories'. To substantiate this claim, I theorize an audience-cost framework of institutional commitment and draw on a set of expert interviews with current and former decision-makers in the context of what is arguably an unlikely and understudied case in the political economy of crisis central banking: the ECB's capital increase puzzle of 2010.

Die Leute glauben von allem eben noch Bestehenden, daß wohl ein Grund vorhanden sein müsse, daß es noch bestehe, und der Grund ist doch oft nur der, daß sie dies glauben.

– Berthold Brecht (Werke. Große kommentierte Berliner und Frankfurter Ausgabe, 21: 259)

4.1 – Introduction

When making public policy, governors and policy-makers in advanced capitalist democracies are confronted with a perennial dual challenge. Ideally, the policies they devise ought to be both effective and democratically legitimate (Scharpf 1999) (or, in broadly analogous terms, policy-makers should strive to be both 'responsible' and 'responsive' in the eyes of the public). Not rarely, however, are these objectives found to contradict each other, thus raising the prospect of a trade-off between the two (Mair 2011). This conundrum is further complicated when it comes to 'indirect' governance – that is, governance through agents and trustees endowed with varying degrees of independence from their democratically elected principals (see Abbott et al. 2019). How can these agents pursue policies that are effective and efficient, on the one hand, and be perceived as democratically legitimate and accountable, on the other? A common answer to this challenge has been for indirect policy-makers to primarily rely on 'output(-oriented)' legitimacy (Scharpf 1997; Hodson & Maher 2002; Deroose et al. 2007; Enderlein & Verdun 2009; Jones 2009) – that is, substituting for democratic irresponsiveness by means of achieving particularly effective and welfare-enhancing policies – as well as to augment their 'throughput' legitimacy (see Schmidt 2013) – that is, adopting transparent and accountable procedures and thereby 'ensuring that a sufficient proportion of the population understands and accepts [their] objectives and actions' (Goodhart 1992: 31, quoted in Orléan 2008: 19; Collignon & Diessner 2016).[38]

[38] Beckert (2019) recently also makes the case for 'promissory' on top of input and output legitimacy.

At the same time, however, even politically independent public policy-makers can arguably ill-afford to appear democratically unresponsive forever (see Eijffinger & de Haan 1996: 54; Fernandez-Albertos: 224). This rings particularly true in times of stress, during which output legitimacy might decline or even vanish altogether. The North-Atlantic financial and economic crises of the last decade, and independent central banks' reactions to these, are a case in point. Major central banks, having emerged as the key actors in the macroeconomy to combat the fallout from the crisis (see El-Erian 2015), have simultaneously experienced a striking loss in trust among their public constituencies (Wälti 2011; Powell 2019), alongside a marked decline in public trust toward government institutions generally (see, e.g., Pew 2019). In this fraught context, how have independent central banks, such as the ECB, reacted to the rising challenge of balancing policy effectiveness with concerns for democratic legitimacy? This article argues that one strategy through which independent policy-makers safeguard and shore up their legitimacy is to assert and play along the public's economic sentiments and intuitions, up to an extent that may directly contradict the rationalist economic foundations on which the institution of independent central banking was built on in the first place.

To demonstrate this, I draw on a nascent literature on economic 'folk theories' (Braun 2016; Swedberg 2018) and invoke an audience-costs framework of institutional commitment (e.g., Broz 2002; Lohmann 2003) which theorizes the ways in which public policy-makers engage in signalling efforts towards a diverse set of audiences. The article thus aims to make several contributions to the existing literature. First, much of the work on how central banks and other economic policy-makers interact with their respective audiences has narrowly focused on a single audience of economic experts (Blinder et al. 2008; Hayo & Neuenkirch 2015; Ehrmann et al. 2019). Only more recently have scholars stepped outside of this tradition and examined monetary policy-makers' interactions with non-experts, including the general public, as well (Schmidt 2013; Holmes 2014; Velthuis 2015; Braun 2016). Despite producing manifold insights, studies in this mould tend to focus on how central banks *communicate with* non-experts (Kryvtsov & Petersen 2019) as well as on the *narratives* which they generate and disseminate (Abolafia 2010; Beckert & Bronk 2018). In contrast, the ways in which public policy-makers *think about* non-experts, and how this affects their policy-making, is still relatively unknown. This poses a range of problems, as I will argue below. Second, and related, the academic literature that does study economic policy-makers' thinking, i.e. their cognitive and causal beliefs, has for the most part been limited to the realm of *economic* ideas and policy paradigms (Hall 1993; Béland & Cox 2013; Baker 2015; Schäfer 2016; Ban 2016; Schulz 2017; Matthijs & Blyth 2018; Clift 2018). While productive, this tendency has needlessly narrowed the lens of inquiry to certain sets of pre-established ideas originating from economic theory.[39] Instead, I highlight the role of economic policy-makers' beliefs about the public as a set of key agents in the macroeconomy. To do so, I first outline a pertinent yet understudied empirical puzzle from the realm of signalling to different audiences – namely, the ECB's capital increase of 2010 (section 4.2) – and then flesh out a theoretical framework of how public policy-makers engage with their various constituencies (section 3.3). In particular, I develop a political economy argument which posits that policy-makers take into account the 'folk' and assert its economic intuitions in order to prop up their legitimacy. I then apply the argument within a single case study research design, testing it against what is arguably a least likely case: the ECB (sections 4.4 and 4.5). Empirically, I draw on the full range of official sources from the central bank, including legal documents, press remarks, official reports and in-house research. I complement these with a set of expert interviews with current and former decision-makers. The final section concludes (section 4.6).

[39] *Mea culpa*. I am most certainly guilty of this myself as well: see Diessner (2017) for a discussion of Hall's (1993) policy paradigms with an application to the Eurozone crisis.

4.2 – The puzzle

In a land before our time, a wizard stepped onto a stage in London on 26 July 2012 to address an audience of global investors. With a wave of the wand he proceeded to utter a few magic words[40] *which worked their wonders to calm panicking financial markets and which ultimately ended the acute crisis of the Eurozone...*

Such goes the legendary tale of the ECB's 'whatever it takes' moment (e.g., *Bloomberg* 2018). That the tale is an oversimplification surely goes without saying.[41] Nevertheless, it stands as a remarkable example of how consequential central bank announcements can turn out to be (Altavilla et al. 2014; De Grauwe & Ji 2014; Saka et al. 2015), when believed to be credible. At the same time, however, the effects of central banks' signalling can vary considerably. Some acts of communication may indeed work wonders, for example, when it comes to soothing market panic (as in the case of the ECB's 2012 'whatever it takes'); others may spark panics in the first place (as with the Federal Reserve's 2013 'taper tantrum'); quite a few go entirely unnoticed or instigate no reaction whatsoever (be it intentionally or unintentionally); and yet others leave audiences nothing but puzzled.

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[40] 'The euro is irreversible...the ECB is ready to do whatever it takes...believe me, it will be enough' (Draghi 2012b).

[41] After all, Mario Draghi's magic was contingent on a number of factors. The signing of a Fiscal Compact by all but two EU member states in March 2012 and, especially, the pledge to set up a Banking Union during the June 2012 Euro summit arguably were game-changing prerequisites for the ECB president's landmark statement (Schelkle 2014; Véron 2015). What is more, his surprise promise also needed to be formalised later on (by means of the ECB Governing Council officially deciding on and announcing the Outright Monetary Transactions programme) and it required the (at least tacit) support of powerful Eurozone governments (with Angela Merkel and Wolfgang Schäuble ultimately sidelining the fervent dissenters at the Bundesbank, for instance) (see, e.g., *Wall Street Journal* 2012; *Der Spiegel* 2012).

The latter case is particularly striking when even economic experts and market participants, who are still conventionally seen as the main audience of a central bank, have difficulties deciphering its carefully crafted signals. One such case could be witnessed in December 2010, when the ECB communicated a Governing Council decision to double its capital base from around €5 billion to around €10 billion (ECB 2010a). Whatever the precise signal the central bank may have wanted to convey with the move, its announcement turned out to be little but 'surprising to most observers' within financial markets (*FT* 2010). The official motive provided by the ECB (2010b) for its decision stated:

> [t]aking into account the increase of the ECB's balance sheet total over the last years, it is considered necessary to increase the ECB's capital by EUR 5 000 million in order to sustain the adequacy of the capital base needed to support the operations of the ECB.

However, the apparent clarification did little to clear the confusion, with investors at major financial firm Nomura concluding that 'the puzzle remains' (*FT* 2010). This puzzle harks back to a bigger question – one which touches upon the very nature of central banking. In theory, central banks, unlike commercial banks, do not require capital on their balance sheets to 'support their operations' in the first place, since they do not need to fear the repercussions of potential losses from those operations – contrary to the ECB's motives professed above. Under a fiat currency regime, central banks' legally guaranteed money-creation powers should enable monetary policy-makers to always honour their commitments and thereby to protect themselves from losses and perceptions of 'insolvency' (see Robinson & Stella 1988). What lends support to this proposition is that a multitude of central banks across the globe have been known to operate with persistent losses and even negative capital at different points in time.

This cautions us to consider alternative motivations than the ones provided by the ECB for its puzzling move. The issue becomes particularly pertinent if we bear in mind that its apparent fear of losses and the concomitant desire for protection – whether justified or not – have been suspected to be key factors in restraining the central bank from further monetary stimulus at a time of stress when policy action was urgently needed (Whelan 2012; De Grauwe 2013b). Why, then, did the ECB let itself be held back by something that many claim to be a non-issue and, even more remarkably, that seems to go against the very nature of central banking?

I argue that, in their decision-making, public policy-makers continuously need to take their variegated audiences into account, including the audience of the general public. In particular, this implies that economic policy-makers do not merely rely on ideas and theories emanating from the economic realm when formulating economic policy, even though this is widely assumed, but also need to make recourse to latent economic 'folk theories'. In the case of the ECB's capital increase puzzle, this suggests that the central bank took on board what it assumes to be the public's intuitions about the nature of central banking – and in particular the intuition that central banks function along similar lines as commercial banks – so as to try and prop up its legitimacy during the crisis.

To clarify the stakes of this argument, the following section discusses three related theoretical questions: First, how can we expect central bankers and other policy-makers to balance their signalling efforts towards different audiences? Second, how can we theorize their thinking and decision-making? And third, building on both of these, how can we make sense of the ways in which economic policy-makers take into account the public's economic intuitions?

Central bank communication (...) is challenging, because we are operating in a changing macroeconomic environment with tools that, while no longer new, remain less familiar to the public. Moreover, our audience has become more varied, more attuned to our actions
– Jerome Powell, Banque de France, Paris, 16 July 2019

4.3. – Towards a theory of folk theories

4.3.1. – Signalling, audiences, costs

A mainstay in the literature on monetary policy-making is that much of what independent central banks do ultimately boils down to sending carefully crafted signals so as to shape the expectations of agents in some way or another (e.g., Goodhart 1989: chapter 13; Blinder et al. 2001). Or, as an eminent article in the comparative political economy of central banking puts it, 'many of the effects of central bank independence operate through a signaling process' (Hall & Franzese 1998: 505-506). Another hallmark in this line of thought is that – as a precondition for being able to successfully shape expectations – central bankers and other independent policy-makers need to establish and painstakingly preserve their credibility and reputation. This confronts policy-makers with a set of key challenges and opportunities – as reflected upon in the literature on audience-cost theory – due to the fact that their respective audiences may exhibit 'different stakes, attention cues, and information sets' (Lohmann 2003: 97; Broz 2002). In the canonical version of the audience-cost argument, this is taken to mean that some audiences will likely be more attentive towards the central bank's policy-making than others. Monetary policy-makers will then have an incentive to cater to and derive their legitimacy from this attentive audience in particular: the fact that it can impose a reputational cost on the central bank – should it ever dare break its promises – is what ultimately renders policy-makers' commitments credible and effective (ibid.).

As a consequence, much of said literature has focused on central banks' credibility and signalling capacities towards a narrow, specialized audience comprised of economic and financial experts and market participants (see Blinder et al. 2008; Broz 2002: 867). In reality, however, central bankers have come to appreciate that they, like other policy-makers, speak to an array of attentive audiences at once most of the time (Asmussen 2012; Haldane 2017a; 2017b; 2018a; 2018b; Powell 2019). This arguably changes the dynamic of the issue at hand. While conventional wisdom holds that central banks have strong incentives to communicate coherently towards their main audiences, I submit that the emergence of another attentive audience – as can be witnessed not least in times of stress – means that policy-makers may be willing to send one type of signal to one audience while sending a different signal to another (Jabko 2006), owing to audiences' differing information sets and expectations.

Among this tangled web of addressees of an independent central bank, another key audience are its political principals (Henning 2016; Moschella & Pinto 2018; Diessner & Lisi 2019), who ultimately determine the central bank's statutes and thereby, in principle, hold one of the few levers through which to inflict an institutional cost on the monetary authority. In the same vein, political actors can also conceivably inflict a reputational cost on central bankers, by engaging in public attacks on monetary policy – which, in turn, is rendered credible through the institutional lever (see Posen 1993). On top of this, one of the traditionally more neglected audiences of a central bank is that of the general public. However, if monetary policy-makers care about the effects that their signalling efforts have on that audience, then they can be expected to try and gain an understanding of the general public as well. While scholars have recently begun to take an interest in how independent central banks speak to 'the masses' (Blinder 2009; 2018; Holmes 2014; Schmidt 2016; Riles 2018; McMahon 2018), such interactions still 'largely remain a blind spot' (Haldane & McMahon 2018: 758).

4.3.2 – The role of ideas and policy-makers' cognition

Despite growing awareness, we still know little about the ways in which the public thinks about and makes sense of key relationships in the economy more generally (Swedberg 2018), and of monetary policy-making in particular (see van der Cruijsen et al. 2015; Braun 2016), apart from narrow measures of public trust in economic institutions or the public's literacy of basic economic principles (e.g., Blendon et al. 1997; Jones 2009; Kaltenthaler et al. 2010; Hayo & Neuenkirch 2014; 2017; Lusardi & Mitchell 2014; Jost 2017; Drakos et al. 2019).[42] Arguably, we know even less about whether and how central bankers and other economic policy-makers, in turn, make sense of the public and its understanding of the economy, as opposed to their purported main audience of economic experts and market participants. This is unfortunate, given that how policy-makers view the anticipated behaviour of the general public can reasonably be assumed to have a discernible impact on policy decisions. For example, the ways in which households, among the key actors in the economy, might be expected to react to a given decision is likely to be taken into account before reaching that decision in the first place (see HFCN 2016).

One way this is commonly accounted for in the literature on central banking – if at all – is through the lens of New Keynesian macroeconomics, by means of surveying households' inflation expectations (see, e.g., Mankiw et al. 2004; Reis 2006; Binder 2017; Duca et al.

[42] In their meta-study of political science articles, Höing & Kunstein (2019: 300) find that a 'popular reading interprets the crisis as a crisis of trust' but equally stress that 'on its own, the trust narrative fails to account for the causes that initially led to the loss of trust in the [E]urozone'. The authors further find that 'political scientists paid comparatively little attention to the democratic ramifications of the [E]urozone crisis', which is deemed 'surprising considering that questions of democratic legitimacy are traditionally part of their core expertise' (2019: 310). What is more, studies of trust tend to rely on a very limited number of items from the popular Eurobarometer survey (Braun 2016: 1071), which has been critized on grounds of framing and bias (Höpner & Jurczyk 2015).

2017; Mellina & Schmidt 2018; Baerg et al. 2018; Coibion et al. 2019; Coeuré 2019b; de Guindos 2019; Christelis et al. forthcoming). However, as Annelise Riles (2018) emphasizes, inflation expectations are by far not the only area of concern for central banks when it comes to harnessing their relations with the general public, especially when the objective is not merely to achieve effective policy but also to ensure institutional legitimacy. In times of a growing divide between experts and the general public (ibid.; Haldane 2016; Goodhart & Lastra 2017), the latter objective can be expected to gain particular pertinence. This requires a more nuanced appreciation of 'the people' than can be achieved through inflation expectation surveys alone. Arguably, a similar tendency can be detected in the burgeoning political economy literature on the role of ideas in public policy-making, which has focused to a large extent on the power of ideas emanating from the *economic* realm or, more broadly, from the realm of social science (see Hall 1989; 1993; Mudge & Vauchez 2012; Béland & Cox 2013).

Useful departures from this convention can be found in Schmidt's (2008) discursive institutionalism, which emphasises not only the role of economic ideas more narrowly but also that of 'public philosophies' more broadly, as well as in Campbell's (1998: 385) account of 'public sentiments' which reflect 'public assumptions that constrain the normative range of legitimate solutions available to policy makers' (see Stanley 2014: 897). More recently, two studies in political economy and economic sociology, by Braun (2016) and Swedberg (2018), respectively, have broken new ground in this regard, drawing our attention to the role of economic 'folk theories' among the general public. While engaging with the contributions of both, my take on the subject is essentially the reverse one: I shall be less interested in ascertaining and testing what the 'folk' might or might not think about economic phenomena, but rather in how economic policy-makers believe the public to view and understand the economy, and to show whether and how this matters for public policy. In other words, my focus shall not be on analysing the properties of an economic folk theory in and as of itself, but rather to try and shed light on economic policy-makers' 'theory of the folk', so to speak. Indeed, the ways in which public policy-makers think about the general public or 'folk' – irrespective of how accurately or not – can well be expected to affect policy outcomes in a hitherto underappreciated manner.

4.3.3. – Economic policy-makers' 'theory of the folk'

A useful starting point to conceptualize the economic actions of the public, and how to make sense of these, can be found in Max Weber's (1978) political economy, as Swedberg (2018) usefully suggests. In essence, Weber puts forward two interrelated modes of economic action – understood as 'householding' and 'profit-making' – which can be associated with different short-term and long-term *goals*, forms of *institutional expression*, and means of *calculation*. On the one hand, householding is typically associated with the goals of *consumption* and *wealth*; it is calculated in the form of *budgets*; and it finds its most direct institutional expression in the individual *household*. Profit-making, on the other hand, is aimed at growing *profits* and *capital*; it is typically calculated through the lens of *capital accounting*; and it is most commonly institutionalized in the form of *enterprises* (see Weber 1978: 86-100; as discussed in Swedberg 2018: 11).

The value of this typology lies not only in providing parsimonious categories to describe the economic actions of individuals, but also in showing how these can be aggregated to the level of the economy and society more broadly. As such, they may equally serve as lenses through which the public can view and make sense of the economy as well as of economic policy. The most striking example of how this conceptualization can be put to use – and especially its aggregation from the individual to the whole – is, perhaps, the so-called household analogy.

In essence, the analogy implies that people's understanding of, and personal experience with, their own household budget can lead them to assume that the state budget broadly functions along much the same lines. Keynes's (1936) *General Theory* prominently exposed this type of reasoning as a fallacy of composition: what might be true of the individual parts of a whole (and indeed even of all individual parts), is not necessarily true of the whole itself. After all, the state budget does operate along markedly different lines from those of the ordinary household, not least due to the government's capacity to levy taxes (which, in turn, affect all households) as well as the fact that it can rely on its own (central) bank endowed with the monopoly to issue legal tender. Nevertheless, numerous cases can be found in the literature in which the public's budgeting intuitions have been leveraged successfully by politicians and public policy-makers so as to garner popular support for orthodox pro-cyclical fiscal policies, including balanced budget rules and fiscal austerity programmes in times of stress (see, e.g., Blyth 2013; Schmidt & Thatcher 2013; Stanley 2014; Montgomerie 2016; Wren-Lewis 2018; Plehwe et al. 2019).

I submit that a similar public intuition can be construed with regard to the second dimension of Weber's typology (namely, profit-making) and in relation to the other substantial sphere of macroeconomic policy-making (namely, monetary policy). That is, a misperception that the *central* bank in fact operates along similar lines as a profit-making *commercial* bank. The accompanying attributes of this, in line with the above, would be an aim to preserve and grow one's profits and capital – or, at the very least, to avoid accumulating losses which may result in negative capital – and to resort to the calculative practices of capital accounting. In other words, I submit that an equivalent of the well-known *state budget/household budget* analogy is a *central bank/commercial bank* analogy. As is evident from the puzzle described above, there is reason to suggest that the ECB has acted in a manner consistent with this analogy.

To the extent that equating the institution of a central bank with that of a commercial bank is fallacious, one approach to tackling the puzzle could lie in focusing on the role of ignorance and its various manifestations (the study of which has been dubbed 'agnotology' by its adherents) (Proctor & Schiebinger 2008; Abbott 2010).[43] This would chime in with a growing discussion and appreciation of cognitive and other biases in public policy-making, which policy-makers can either recognize and exploit to their advantage, or which they may equally be affected by themselves.[44] However, for such an approach to be viable, one would have to make the fairly heroic assumption that monetary policy-makers ultimately share the same fallacious intuitions as the public. (Put more bluntly, this would imply that central bankers do not comprehend the nature of central banking.) While this cannot be excluded *a priori*, it is arguably only likely to apply to a fraction of policy-makers at most (cf. De Grauwe 2013b). Instead, one way to relax the assumption might be to rely on the more nuanced concept of 'strategic ignorance' (McGoey 2012; 2019) or that of 'pluralistic ignorance', which occurs when an actor rejects a norm in private, but nevertheless decides to follow the norm in public, given that she expects other actors to believe in and follow the norm (Katz & Allport 1931). At a more general level, however, the idea of ignorance seems to imply a conceptual vacuum (cf. Davies & McGoey 2012): what is it that takes the place of 'scientific' knowledge in a context of ignorance? I argue that 'folk' ideas and theories constitute a plausible candidate. Table 2 below summarizes the propositions put forward in this sub-section, based on Weber's (1978: 86-100) and Swedberg's (2018: 11) categorizations, complemented with the respective folk-theoretical expressions.

[43] Note that ignorance – typically perceived as something which science should either strive to correct and eradicate, or which scientists should dismiss and ignore altogether – has tended to be one of the main lenses through which economists and other social scientists have dealt with the types of propositions which they deem 'unscientific'. For a critical discussion, see Swedberg (2018).

[44] A discussion of this literature and its application to central banking is provided in the conclusion.

	Householding	Profit-Making
Short-term goal	consumption, satisfaction	seize opportunities for profit
Long-term goal	wealth	capital
Form of calculation	budgeting	capital accounting
Institutional expression (individual unit)	individual household	profit-making enterprise
Folk-theoretical expression	state budget/household budget analogy	central bank/commercial bank analogy

Table 2: Economic action and aggregation from the individual to the 'folk'

Source: Own adaptation based on Weber (1978: 86-100) & Swedberg (2018: 11)

In sum, the stakes of my theoretical argument are as follows. Economic policy-makers face a dual challenge of delivering effective and legitimate policy. In so doing, they cater to a variety of audiences with differing information sets, attention spans, and expectations. When policy-makers expect more than one audience to be attentive towards their signals, they will require an understanding of their differing audiences' information sets and expectations in order to take these into account in the formulation and communication of policy. Specifically, when it comes to understanding the audience of the general public, economic ideas and theory can only guide economic policy-making to a limited extent. This, in turn, will require policy-makers to assert and make recourse to public economic intuitions or 'folk theories' instead – in other words, they will require a 'theory of the folk'. With regard to central banking – and the question of the central bank's balance sheet in particular –, one way in which this manifests itself is that policy-makers assume the audience of the general public to intuitively judge the actions of the central bank against similar criteria as those of a commercial bank: that is, central bankers believe the public to expect them to not record persistent losses and to avoid negative capital. Central bankers may choose to act in line with this fallacious expectation, so as to not undermine their legitimacy in the eyes of the public. The way this argument can be tested empirically is discussed in the following.

4.4 – Empirical strategy

4.4.1 – Single case study research design

I argue that the case study at hand – the ECB's capital increase puzzle – is a least likely case for the theoretical argument to hold: that is, prior knowledge would suggest that there are strong reasons to expect it not to apply. I submit that this is the case in the context of the ECB, for two main reasons: first, because the ECB is a *central bank*; second, because it is the *European* Central Bank.

As regards the first, there appears to be a near-universal consensus in the literature that the connection between economics and central banks could not be more tightly knit. For starters, central banks today are overwhelmingly staffed with economists, be they from an academic, financial markets or government background (see e.g., Adolph 2013; Mishra & Reshef 2019). If anything, scholars tend to debate the *degree* to which central banking and economics affect each other – that is, whether monetary policy-making constitutes a case of the 'scientization' (Marcussen 2009; Leeper 2010) or 'hyper-scientization' (Mudge & Vauchez 2016) of policy – and whether the *direction* of influence runs from economics to central banking (i.e., central bankers having similar backgrounds and career trajectories due to having been trained at the same economics departments) (Adolph 2013; Bennani 2015) or indeed the other way round (i.e., central banks having invested in sizeable research departments and having come to dominate the field of monetary economics themselves) (see Conti-Brown 2016; Baker 2017;

Dietsch et al. 2018: chapter 4; Cross & Greene 2019).[45] This dominance is supposed to be particularly pronounced in the case of the world's major central banks and among these, not least the ECB (ibid.; Freedman et al. 2011; Jones 2019).[46]

It thus seems safe to suggest that few scholars would dispute that economic ideas affect monetary policy-makers in some way or another. At most, we discuss *which* ideas influence their deliberation (Bailey & Schonhardt-Bailey 2008) and decision-making (Schulz 2017),[47] with a common assertion of central bankers 'sharing a conservative macroeconomic outlook' (Iversen & Soskice 2019: 121). From this vantage point, the suggestion that central banks are not guided by the propositions of macroeconomic theory and even actively go against these – by opting to act in line with the allegedly unscientific intuitions of the general public or folk – is an unexpected and unlikely one.

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[45] A related literature in economic sociology and economic history examines issues of 'performativity' in central banking and routinely dissects the role and centrality of models for (macro-)economic policy (see, e.g., Morgan & den Butter 1998; Morgan 2006; Abolafia 2010; Karl 2013; Braun 2014; Morris 2016; 2018; Beckert 2016; Beckert & Bronk 2018; Christophers 2017; Fligstein et al. 2017; Mudge & Vauchez 2018; Wansleben 2018; Walter 2019; Clift 2019).

[46] Not rarely, the argument is taken even further to suggest that central bankers form part of a transnational epistemic community or professional network of economic experts, bound together by their training and socialization as academic and professional economists as well as by their shared institutional practices and professional norms (Kapstein 1992; Helleiner 1994; Verdun 1999; Marcussen 2006; Davies & Green 2010; Broome & Seabrooke 2015; Tsingou 2015; Baker 2017; Johnson 2006; Johnson et al. 2018; Riles 2018; Ban & Patenaude 2018; Thiemann 2019; Jones 2019).

[47] Examples include debates about the degree of conservatism that independent central bankers profess compared to society as a whole (Rogoff 1985; Hugh Hallet & Proske 2018) or the extent to which their decisions are guided by different styles of economic analysis (Acosta & Cherrier 2019). A recent contribution endeavours to 'advance the state of the art by looking beyond academic economics and into other fields of economic expertise ranging from the private sector to think-tanks' (Ban & Patenaude 2018: 2), but equally does not leave room for non-expert economic beliefs.

Second, and in relation to my audience-cost theoretical argument, there is reason to suspect that the ECB – commonly referred to as the most independent central bank in the world – would be particularly shielded from the cost that its audiences can conceivably inflict upon it. Indeed, the creation of the Bank is thought to have brought about an 'unprecedented divorce between the main monetary and fiscal authorities' in any given polity (Goodhart 1998: 410). As is frequently stressed in the literature, the ECB's statutes are codified in the EU Treaties, thus providing it with quasi-constitutional protection from interferences with its policy-making. The notorious difficulty of overhauling the Treaties constitutes a high hurdle for imposing an institutional cost on the ECB, which can be expected to significantly diminish the 'risk of change' (Posen 1993: 255) in the institution of independence. In theory, this would mainly leave the reputational channel through which the central bank could be threatened with incurring a cost. However, as argued above, the credibility of that threat partly rests on the capacity to inflict some institutional cost, if need be (ibid.).

Taken together, the ECB's strong interlinkages with economic research, in combination with its extraordinary institutional independence, suggest that it would be highly unlikely for the central bank to see a need to cater to the general public's 'unscientific' economic intuitions, given that it would face little discernible cost – nor even the threat thereof – if it did not. Against this backdrop, if we found the theoretical argument to apply in the case of the ECB, there is some reason to expect it to hold not only for other independent central banks as well, but quite possibly beyond the realm of monetary policy-making and in other spheres of economic and public policy, which are frequently assumed to be under the near-exclusive influence of economists (see Davies 2011; Hirschman & Berman 2014; Fourcade et al. 2015; De Ville & Berckvens 2015; Mandelkern 2019) or the power of economic ideas more broadly (e.g., Hall 1989; 1993).

4.4.2 – Observable implications and empirical strategy

What would we expect to observe for the above theoretical argument to hold, and how would we be able to observe it? Ascertaining policy-makers' reasoning and beliefs is a challenging task at the best of times, particularly when these policy-makers are endowed with institutional independence and their deliberation and decision-making are non-public. The relatively recent turn towards monetary policy transparency (see Dincer & Eichengreen 2009) – in itself an object of inquiry for those examining central banks' interactions with their stakeholders – eases these concerns, without removing them altogether. Consequently, scholars would be well-advised to draw on the full range of available primary sources on the subject at hand, including legal provisions and decisions (and any records of discussions surrounding these), central banks' in-house research and reports, official communication documents (speeches and press releases), and balance sheet developments. Where necessary and possible, these are to be complemented by supplementary data gathered through interviews and background talks with official and by relevant secondary material (academic literature and media reports). This study aims to invoke all of these, starting from legal provisions and the ECB's own research, which are contrasted with its decision-making and communication, and ultimately triangulated with data gathered from a set of semi-structured élite interviews with current and former officials at the executive and decision-making levels – ranging from advisors, to division heads and director-generals, to executive board members, governors and presidents.

For the audience-cost, folk-theoretic argument to hold, we would broadly expect to see the following three observable implications. First, ECB policy-makers exhibit that, in principle, central bank losses and capital should not be much of a concern for their monetary policy-making in and as of themselves – that is, they are aware of the technical nature and institution of central banking in theory. Second, their actions and statements imply that they do care about capital and loss-making in practice, in apparent contradiction to the above. There would thus have to be another driver behind their behaviour. Finally, when probing into these drivers and motivations, the available evidence suggests that these are not explained by a fear of central banks' commonly presumed main audiences of market participants and financial experts, but much rather by the audience of the general public. In particular, the public is believed to disapprove of the central bank if it deviated from its assumed economic intuitions – namely, that loss-making and negative capital would bring about major economic problems, akin to the situation of commercial banks.

4.5 – Case study: the ECB's loss-making and capital

4.5.1 – Background: a short primer on ECB capital

Ahead of the inception of Europe's monetary union, the capital base of the soon-to-be established European Central Bank was set at €5 billion (or, more precisely, at ECU5 billion, before the official naming of the single currency as the euro) (ESCB Statute Article 28.1). This capital base is subscribed by the national central banks acting as the 'shareholders' of the ECB, in accordance with a detailed capital key laid out in the Statute which is adjusted quinquennially (Art. 29). Notably, the precise sum of 5 billion does not appear to have been arrived at by means of any discernible calculation – instead, it was borne out of uncertainty and based on general agreeability among EU legislators. To be sure, the uncertainty surrounding the creation of the ECB and the design of its monetary policy strategy was considerable – or even 'extreme' – in the eyes of those involved at the time (Issing 2006: 3). When signing the Maastricht Treaty in 1992, i.e. some ten years ahead of the circulation of euro coins and banknotes, many of the details of the soon-to-be created ECB were essentially unknown – such as the size of its staff, its geographical location, and even the number of member states that would form part of the monetary union (Ingram 2011: 147). Amid this uncertainty, why was the ECB provided with a 'substantial' (ibid.) amount of capital in the first place?

Like other public authorities, central banks are faced with a variety of fixed costs emanating from their day-to-day operations. These range from staff salaries to expensive and secure premises (including regional and international representative offices) to the aforementioned sizeable investments in economic research and communication. As emphasized by former president Jean-Claude Trichet in a volume on the history, role and functions of the ECB, the central bank 'devotes a significant share of its resources to communication with the world of banking, market participants, academia and the general public' (Scheller 2006: 9). However, many of these activities are not revenue-generating in and as of themselves, and must instead be financed by other means.

Unlike other public authorities, central banks possess the power to issue fiat money – a power they have put to great use not least when battling the global financial crisis and its protracted aftermath. This 'licence to print money', however, is generally not used to fund a central bank's own expenses directly (Darbyshire 2011: 71). Instead, expenses are financed through central bank profits obtained from monetary policy operations, most notably seigniorage revenue, and the returns earned on assets and lending to credit institutions. This flow of revenues can be unstable and unpredictable (as will be seen below). One common way to ensure that an enterprise enjoys a relatively stable and predictable flow of revenues is to endow it with a certain sum of 'own funds' in the form of capital and reserves. In this spirit, several interviewees did compare their central bank's capital to a form of 'endowment' by their respective governments, akin to the capital of a 'foundation' (ECB1; ECB8).

On top of this revenue-generating function, however, a central bank's capital is supposed to fulfil another purpose, namely that of an additional 'buffer' against potential future losses arising from monetary policy operations (Scheller 2006: 115), thus enhancing the central bank's 'financial strength', credibility and independence. This amalgamation of revenue-generation and loss-protection is compounded even further in the case of the Eurozone, given that the Eurosystem consists of both the ECB and the national central banks. According to Ingram (2011: 146), an early insider to the process, 'from an economic point of view the capitalization of the ECB should be considered in the context of the entire Eurosystem', ultimately leading to a situation in which 'perceptions of the ECB's financial strength may have been enhanced by skilful presentation' (2011: 162).

Notably, the motivation behind the ECB's capital endowment thus appears to have been driven not merely by economic considerations (namely to generate revenues in order to cover its own expenses) but also by strong perceptional and presentational concerns (namely to signal financial soundness and credibility). At the same time, however, the notion of a central bank's financial strength and independence remains contested. As de Lhoneux (2005: 169-170) noted in an ECB-commissioned study of legal aspects of the European System of Central Banks, '[t]he institutional, personal and functional aspects of independence have been extensively analysed and explained by the ECB. However, (...) the concept of the financial independence of the Eurosystem still need[s] to be defined concretely'. Indeed, several events after its creation would soon force the ECB to confront and clarify the notion of financial independence as well as that of central bank capital, both of which arguably go to the heart of the question of what is the nature of independent central banking in a fiat currency regime.

4.5.2 – The ECB's loss-making and capital in practice

The ECB was able to rely on a steady stream of profits throughout the first years of its existence. In accordance with Article 33.1 of the Statute, the Governing Council can – and did – decide to retain up to 20% of these profits in order to fill its 'general reserve fund', one of the Eurosystem's buffers against potential future losses.[48] As a consequence, by the end of 2002, the fund had swollen to some €773 million. However, the ECB's fortunes turned in 2003 and especially in 2004, when the US dollar depreciated sharply against the euro and thereby caused sizeable accounting losses on the ECB's dollar-denominated foreign reserve holdings. The accounting losses incurred by the central bank in 2003, a total of €476 million, were offset entirely against its savings in the general reserve fund. However, the losses of 2004, amounting to €1.6 billion, could only partially be covered by the remaining €300 million left in the fund. Instead, the Governing Council decided to invoke Article 33.2 of the Statute, which enabled it to offset the remaining loss against the national central banks' pooled monetary income for the same year (Scheller 2006: 116-118).

The net losses of 2003 and 2004 were accompanied by a series of other notable developments which compelled the ECB to confront the issue of central bank capital and financial independence head-on. First, in October 2003 and January 2004, the central bank provided two legal opinions on a proposal by the Finnish government which aimed at reducing the capital of Suomen Pankki, its national central bank. Arguing that 'the weakening of the financial position of an NCB (...) cannot be seen in isolation from the system as a whole', the ECB stressed that it was 'seriously concerned' with the proposal (CON/2004/01), which was subsequently withdrawn by the government (Ingram 2011: 165). A similar episode would recur later, in 2010, albeit with a less amicable outcome (as we shall see below).

[48] Notably, the maximum size of the fund is limited to the size of the ECB's capital base.

Second, the ECB's capital key became due for one of its compulsory quinquennial adjustments in January 2004, which the central bank carried out accordingly. However, the accession of ten new member states to the EU in May 2004 meant that the key would have to undergo a second adjustment in the very same year.[49] In this context, the Accession Treaty added a new provision to the ESCB and ECB Statute (Article 48.3[ex Article 49.3], also known as the 'ratcheting clause'), which enabled the ECB to surpass the €5 billion limit placed on its capital by simply piling the new member states' notional contributions on top of the existing capital base. The reasoning behind this step is remarkable. Under the previous arrangement, with a fixed limit of €5 billion, the accession of new member states would have implied returning part of the paid-up capital shares to existing member states' national central banks. However, the ECB considered it '*counterintuitive* to reduce [its] paid-up capital' at a time when the EU as a whole was expanding (Ingram 2011: 164; own emphasis). Yet, who exactly might have deemed this step 'counterintuitive' – and why –, remains unanswered.

Later in the same year, and seemingly in contradiction with both developments above, the ECB published a much-cited working paper aiming to 'revisit' the role of central bank capital (Bindseil et al. 2004). While views expressed in ECB working papers are generally those of the authors, said authors came to the unequivocal preliminary conclusion that, theoretically speaking, 'central bank capital still does <u>not</u> seem to matter for monetary policy implementation, in essence because negative levels of capital do not represent any threat to the central bank being able to pay for whatever costs it has', and that 'a central bank is not directly constrained in the amount of credit it can sustain, unlike any other economic agent'

[49] Note that a similar (but essentially reverse) situation may occur again in the context of Brexit, should the UK cease to be a member of the European Union. See Diessner (2018b) for a discussion: https://blogs.lse.ac.uk/europpblog/2018/11/30/the-ecbs-capital-key-needs-rethinking-and-brexit-has-everything-to-do-with-it/

(Bindseil et al. 2004: 23; emphasis in original). In other words, shortly after having insisted on *not* reducing the Finnish national central bank's capital as well as its own capital base, research conducted by ECB staff seemed to suggest that a capital reduction – even below 0 – was of little economic relevance under certain conditions. Later ECB working papers appeared to concur with this view, with Bunea et al. (2016: 17) pointing out, in passing, that '[c]entral banks are protected from insolvency due to their ability to create money and can therefore operate with negative equity'.

However, do senior ECB decision-makers concur with this view as well, at least in theory and principle? My in-depth interviews would seem to suggest so. Table 3 below provides an aggregated overview of 12 different interviewees' responses to questions about the relevance of losses and capital. Interviews were carried out between February 2018 and February 2019 and were drawn from a larger sample of interviews conducted at three major central banks (the ECB, the Bank of England, and the Bank of Japan). Interviews were semi-structured in so far as each of them was conducted with the help of a pre-specified set of questions inquiring about issues of risk-taking, loss-making and balance sheet capital, while leaving adequate room for other relevant aspects to be discussed where need be. An overview of all interviewees, together with the assigned codes, is provided in the Appendix.

Interview (code)	**Does central bank capital matter for monetary policy-making (in principle/theory)?**
(1)	'capital doesn't matter'; 'there are examples of central banks with negative capital (and) no one cared'
(2)	'relatively remote to have a big issue here'

(3)	'capital is irrelevant in a paper standard'; 'The Bundesbank made huge losses in the 1970s, ... no impact on credibility'
(4)	n/a (not discussed in interview)
(5) + (6)	'no accepted research' on the right level of capital
(7)	'not seen a convincing argument yet'; 'in theory, central banks can do whatever'
(8)	'in theory, you can have negative capital'
(9)	n/a (not discussed in interview)
(10)	'negative capital is not really a problem'; 'you can have negative capital and continue to do monetary policy'
(11)	'not objectively in economic or monetary policy terms'
(12)	negative capital does 'not influence the performance of monetary policy (...) at all'

Table 3: Overview of responses about the relevance of central bank capital

In practice, however, the ECB increasingly doubled-down on its insistence on positive capital, both for itself and for certain national central banks. Throughout 2010 – amid the worsening crisis of the Eurozone – this paradoxical situation came to a head. In its Convergence Report of May 2010,[50] assessing the case of the Czech Republic, the ECB (2010c: 239) emphasized that

> Česká národní banka [the Czech National Bank] is faced with accumulated losses beyond the level of its capital and reserves (...) A negative capital situation may adversely affect an NCB's ability to perform its ESCB-related tasks as well as its national tasks. (...) Česká národní banka should be provided with an appropriate amount of capital within a reasonable period of time so as to comply with the principle of financial independence.

The CNB's reply to this assessment came promptly and was nothing short of extraordinary. In a press statement titled 'The Czech National Bank disagrees with the ECB Convergence Report', the then-governor of the Bank dismissed the report as 'unjustified' and 'not based on any legal regulation' (CNB 2010). The statement went on to underline that 'the CNB regards as completely unacceptable' the assertion that negative capital may have an adverse effect on its performance and instead pointed to the fact that the central bank's capital position 'has never undermined its independence or limited its decision-making and operational capacity in any way', ultimately stressing that '[n]egative capital presents no problem for the CNB' (ibid.).

[50] Convergence Reports are prepared by the ECB and adopted by the General Council 'at least once every two years or at the request of a Member State with a derogation' to assess the progress made by non-EMU member states towards achieving the requirements for joining EMU (Article 140 TFEU).

Lastly, at the end of the same year, the ECB proceeded to nearly double its own capital base, puzzling markets and other observers with the move (*FT* 2010). Under Article 28.1. of the Statute, the ECB's capital 'may be increased by such amounts as may be decided by the Governing Council (...) within the limits and under the conditions set by the Council'. Those limits were specified by Council Regulation EC (No) 1009/2000 as 'an additional amount of up to EUR 5,000 million', which the ECB decided to draw on in full (thereby also automatically increasing the maximum permissible limit of its general reserve fund). Strikingly, the mere condition on which this decision can be taken is the 'Governing Council's *perception* of the need to maintain the ECB's capital adequacy' (Ingram 2011: 165; emphasis added). What, then, informs this perception? What concerns are driving the ECB's insistence on 'adequate' capital in practice, despite being seen as irrelevant in theory? Put differently, if the ECB does not see the issue as a technical problem for itself, what actors may *make* it a problem for the central bank – i.e., what audience may impose a cost on it, and which? Table 4 below presents a systematic overview of interview responses to precisely these questions.

Interview (code)	**Who would presumably care about negative central bank capital? / For whom would negative central bank capital be an issue?**		
	Financial markets	***General public***	***Political principals***
(1)	X '**never heard this argument from banks** themselves'; 'banks are more rational than the central bank here'	✓ 'it depends on the source of losses ... whether these are accepted by **public & principals**' ('but ... more the self-interest of the CB')	✓ 'it depends on the source of losses ... whether these are accepted by **public & principals**' ('but ... more the self-interest of the CB')

(2)	X no, '**not so easily**'	✓ 'some **people** will try to make it a topic'; 'if you are a decision-maker in a central bank, you want a clean record, you want to be perfect, you don't want to be told anything. So if you cause capital to become negative, then you get a lot of questions, very practically. The real world of a member of the board or council is a lot of interaction with **policy-makers, media**'	✓ 'some **people** will try to make it a topic'; 'if you are a decision-maker in a central bank, you want a clean record, you want to be perfect, you don't want to be told anything. So if you cause capital to become negative, then you get a lot of questions, very practically. The real world of a member of the board or council is a lot of interaction with **policy makers, media**'
(3)	—	✓ 'a permanent **invitation to journalists**'; it's 'psychologically relevant/important'	—
(4)	✓ 'would be **concerned**' in crisis	✓ '**citizens** think ... "is it still credible with this negative capital base?"'; 'a citizen goes to the court and says "what you're doing now ... should not happen"'	✓ '**governments ... not happy** that they don't get profit out of [their] central bank'

(5) + (6)	—	—	—
(7)	✓ 'could **weaken credibility** towards markets'	—	✓ 'want to **avoid submission** to Treasury'
(8)	X '**frankly don't think so**'; 'not sure markets really concerned'	✓ '**public opinion** of different countries'; 'depends on why ... negative capital'	✓ 'extracting [profits] from seigniorage [instead of capital] may be more **delicate politically**'
(9)	X 'markets ... are **not the problem**'	✓ 'the problem would be **public opinion first**'; '**people ... have common sense**: "losses are not good"'	(✓) '**utilization by the political sphere** ... **of the public opinion** to attack ... the central bank'
(10)	X 'markets are **not so preoccupied** with the capital'; 'they have other variables to look at'	✓ 'a big problem comes from **public perception** ... huge **media** attention'	—
(11)	X 'markets understand these things and they **will not be disturbed**'	✓ '**completely and exclusively** reputation risk with ... **misinformed public opinion**'; '**perception**	—

		about reputation counts'; 'and then the **media** and all sorts of **myths** about money and about the central bank'	
(12)	X agree that 'markets **would not care much**'	✓ yes, 'financially conservative **population** ... very **hard to explain**'; although 'the reasons (for negative equity) are important'	X '**capable of explaining** ... don't need to worry'; but 'monetary populism is a problem'

Table 4: Overview of responses about central bank's audiences in terms of CB capital

These responses bear several important observations. First – and in light of the widespread assumption that central banks' signalling efforts are targeted, above all, at financial markets – most interviewees do not consider market actors to be the main addressees of signals about central bank capital. Despite a couple of respondents suggesting that negative capital 'could weaken' the ECB's credibility towards markets and that the latter 'would be concerned' in a crisis (ECB4; ECB7), most dismiss the notion that persistent losses by the ECB would pose significant problems with market participants. Instead, markets are deemed to 'understand these things' – i.e., the theoretical irrelevance of capital – and to 'not care much' and not be 'so preoccupied' with a potential erosion of the ECB's capital base (see ECB10; ECB11; ECB12). One interviewee even ventured to suggest that 'banks are more rational than the central bank' in this regard (ECB1).

A second notable observation is the consistency with which interviewees invoke the general public – informed through the media (e.g., ECB2; ECB3) – as the main audience of concern with regard to negative ECB capital. Most suggest that it is the 'public', the 'population' or the 'citizens' that would take issue with prolonged losses and negative balance sheet capital (see, e.g., ECB1; ECB4; ECB12) and that 'the problem would be public opinion first' or even 'completely and exclusively a reputation risk with public opinion' (ECB8; ECB9; ECB11). Equally notably, several respondents specify that this is a matter of 'public perception' and that it is the 'perception about reputation [that] counts' (ECB10; ECB11). To the extent that this perception is 'misinformed' and based merely on the public's 'common sense', it is deemed 'very hard to explain' the nature of central bank losses and capital to the 'people' (ECB9; ECB11; ECB12).

Lastly, a third audience of relevance, raised by about half of the interviewees, are the central bank's political principals (i.e., governments) and other political actors. Based on the notion that, as an independent central bank, 'you want a clean record [and not] to be told anything', losses and negative capital are seen to invite 'submission to the Treasury' since governments 'would not be happy that they don't get [a] profit' (see ECB2; ECB4; ECB7). In a number of cases, this political audience is mentioned in close conjunction with the general public (ECB1; ECB4; ECB12), suggesting that public discontent could be mobilized or channelled in order to target the central bank. In the words of one interviewee, 'the problem would be public opinion first, and, depending on public opinion, utilization by the political sphere (...) of the emotion of the public opinion to attack perhaps the central bank and criticize what has been done' (ECB9).

4.6 – Discussion and conclusion

This paper started out from an understudied puzzle in the political economy of the Eurozone: the ECB's insistence on positive central bank capital for itself and for the national central banks in the ESCB, as well as its capital increase of December 2010, both of which touch upon the question of the very nature of central banking and the sources of its legitimacy. Despite the widespread view that independent, technocratic policy-makers derive their claims to legitimacy from their professed (economic) expertise – both individually and as part of the epistemic communities which they form part of – my analysis implies that, paradoxically, monetary policy-makers may at times disavow said expertise and embrace the public's assumed and erroneous intuitions instead, so as to uphold and safeguard that legitimacy.

Moreover, I have suggested that if this holds true in the case of the Eurozone – a least likely case, given the difficulty of incurring a cost on the central bank in case it were to contradict the beliefs of the public – then we can expect it to apply for other independent central banks as well. Indeed, interviews I have conducted at two other major central banks would seem to support this claim, revealing broadly congruent concerns to those professed by the ECB, despite minor nuances. Even more telling, perhaps, is the stance of the Bank for International Settlements on the subject, colloquially also referred to as the 'central bank of central banks' and commonly perceived as a global epistemic hub for the wider central banking community. In his foreword to an authoritative study on central bank finances, former general manager Jaime Caruana recently emphasized that the BIS had 'no doubts about' central banks' financial strength, but that 'our confidence is based on an understanding of the special character of central banks that may not be shared by markets and others' – and that such misconceptions, 'however erroneous', thus ought to be taken seriously by monetary policy decision-makers across the globe (Archer & Moser-Boehm 2013: 1, 3; see also Vaez-Zadeh 1991: 69-70).

As I have aimed to demonstrate, 'others' can be taken to mean the general public, an audience of central bankers that has received relatively scant attention until more recently – but whose beliefs and trust in their currency, as well as the monetary authority that issues that currency, are frequently highlighted as a fundamental resource for central banks, not least by monetary policy-makers themselves. In this vein, my analysis can yield a number of implications for different strands of the political economy literature. First, with regard to the literature on audience-cost theory, the findings imply that technocratic policy-makers may not merely target their signalling efforts at attentive expert audiences, as is commonly assumed, but that supposedly inattentive 'lay' audiences matter a great deal to the formulation of policy, too.

Second, and related, there is now growing interest in the ways in which central banks and other economic policy-makers relate to 'the people'. However, my case study of the ECB suggests that this relationship may be less direct and unmitigated than is commonly assumed. Instead, it is likely to be conditioned by the media (Velthuis 2015; Hayo & Neuenkirch 2017) and by citizens' elected representatives (see Jones & Matthijs 2019), the former of which can bring certain issues to the attention of the public in the first place, and the latter of which can ultimately translate increased public attention into more substantial political (re-)actions.

Lastly, and perhaps most importantly, my findings speak to the ever-expanding literature on the power of ideas in public policy-making. Given that policy-makers' 'theory of the folk' can come to trump economic ideas and theory even in what is arguably a least likely scenario – namely a highly scientized, highly independent central bank knowingly acting against its own theoretical conception of central banking – there might well be reason to suspect that other public policy-makers are less influenced by 'scientific' beliefs, theories, models and advice than we are all too often prone to assume.

On the subject matter of balance sheet capital, however, a final nagging question remains: what if the ECB's 'theory of the folk' proved to be wrong? In other words, what if the central bank's suspected (negative) reaction by the general public towards (negative levels of) central bank capital ultimately turned out to be inaccurate? In essence, this may lend itself to at least two potential interpretations: one more benevolent, the other more sceptical. Through the lens of the latter, the ECB's alleged theory of the folk would appear to be little else than a pretence – for instance, an excuse to retain more profits than a central bank may technically have to, and to be excessively cautious towards accepting the risk of losses on its balance sheet. I have scrutinized such attempts at *strategic self-limitation* more thoroughly in the preceding essay. Beyond this, however, a more benevolent interpretation would suggest that Europe's central bankers have every reason to err on the side of caution when it comes to perceptions of their public legitimacy. A recent pertinent example in this regard is perhaps the seemingly never-ending debate around the Eurozone's growing TARGET2 balances (see Whelan 2017). Despite representing an evidently innocuous phenomenon in economic terms (Krahnen 2018; 2019; German Council of Economic Experts 2018; cf. Fuest & Sinn 2018), fierce criticism of this settlement system for payments between Eurozone banks has persisted and is frequently directed at the ECB, stimulating an environment of suspicion and negative public sentiment. In this delicate context, it would seem reasonable for central banks to tread carefully in order to avoid incurring reputational costs which might ultimately harm their perceived legitimacy. Besides, the example of TARGET2 is also illuminating in another respect, since the debate appears to have been conspicuously concentrated in one Eurozone member state: Germany.[51] While this essay has highlighted central bankers' thinking towards the public, it may be worth further disaggregating the beliefs of that public – or rather, to study *policy-makers'* beliefs about different segments of that public. I leave this task to future research, including my own.

[51] As one commenter on this paper put it: maybe it is less about the *f*olk than it is about the *V*olk.

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5 – Discussion and conclusion

This concluding chapter first provides a critical reflection of the main contributions of the preceding three essays, by means of discussing potential limitations and wider ramifications. It then closes by spelling out relevant implications for future research.

5.1 – Summary of key findings and contributions

With a view to the underlying preconceptions and assumptions in the CBI literature which were identified at the outset of this thesis, my main findings can be summarized as follows. First, as regards the common conceptualization of central bank independence as *protection from outside interference* – and, in particular, protection from interference or even dominance by fiscal policy-makers – the crisis has arguably proved capable of turning these and other concerns of excessive government *activism* on their head. While independent central bankers do continue to insist on their policy autonomy, they also increasingly appreciate the pitfalls of the *only-game-in-town* syndrome, consequently calling on their respective governments to become more active rather than less. In the post-crisis era, central banking has thus become an ever more delicate balancing act, with monetary policy-makers aiming to balance traditional concerns of fiscal profligacy with novel concerns of fiscal inaction and the concomitant lack of (safe) government debt (see Ban & Gabor 2016; Coeuré 2016).

Second, regarding the underlying assumption of CBI as *foreclosing meaningful coordination and cooperation* among monetary and fiscal policy-makers, my essays have aimed to show that the era of unconventional, balance-sheet central banking has raised inevitable questions about monetary-fiscal interactions and the (quasi-)fiscal implications of monetary policy. Faced with having to accept various types of risks on their ever-expanding balance sheets, central banks have far from sat idle nor refused to seek cooperation with their respective fiscal counterparts. By interpreting and re-interpreting their existing institutional constraints, they have sought to obtain different forms of fiscal protection for their balance sheets, albeit with differing degrees of success and at times only implicitly. In so doing, my thesis also sheds novel light on our underdeveloped appreciation and conceptualisation of central banks' *financial independence*, i.e. the financial relationship monetary authorities have with their fiscal principals, which policy-makers indeed increasingly grapple with (see Diessner 2018b).

Third, and beyond the realm of central banking, the thesis has challenged the assumption that central bank independence, and perhaps delegation to independent agents more generally, entails *discretion-seeking* and *power-maximization* on behalf of the central bank (the agent). Rather, agents may seek to place limits on their own powers and discretion if this endows them with strategic benefits, such as the protection from demands which they ultimately find themselves unable to satisfy on their own (Diessner & Lisi 2019; Mabbett & Schelkle 2019). By placing ostentatious constraints on the deployment of their instruments, for example, central bankers can limit the otherwise virtually unlimited promise of balance-sheet monetary policy, thereby aiming to rope other decision-makers into the task of crisis-fighting (ibid.).

Lastly, the thesis has tackled the conception of central banks' core audience and most important constituency as *monetary policy insiders* (market participants and other experts) as well as the accompanying widespread assumption that central banking should thus be guided overwhelmingly by economic expertise, theories, and ideas. By leveraging the case of the ECB's preoccupation with the 'soundness' of its balance sheet and capital base post-crisis, I show that economic policy-makers can also opt to act in line with what they perceive to be the ideas and beliefs of *non*-experts (the general public) – what we might call 'folk theories' – in an attempt to safeguard their legitimacy in the face of extensive unconventional policy.

Taken together, I believe that my three essays can thus make several relevant contributions. The contributions of the first essay are mainly conceptual and methodological in nature, as it develops the concept of 'financial dominance' and demonstrates its applicability in the context of central banks' unconventional crisis-fighting policies. Methodologically, the essay provides one of the first applications of topic modelling in political economy and economic sociology – complemented by a qualitative discussion of the case of the Eurozone crisis – and further discusses some of the advantages and drawbacks of this quantitative text analysis approach (see Appendix A below). The second essay makes a conceptual and an empirical contribution, by engaging the concept of 'financial independence' and by scrutinizing the understudied case of monetary policy-makers' self-limitation with the help of novel primary data collected through a set of élite interviews conducted at three major independent central banks. The key contribution of the third essay is, essentially, theoretical, as it seeks to exploit central bankers' puzzling loss aversion and their concerns for balance sheet capital as an intriguing case highlighting the role of public, non-expert perceptions and beliefs in economic policy-making, as opposed to the predominant role commonly ascribed to economic ideas and theories. Before reflecting on these contributions and their wider implications in more depth, I shall now first turn to addressing the limitations of my findings.

5.2 – Limitations

The first notable limitation of all three essays, perhaps, is the relatively little room that they afford to discussing and dispelling alternative explanations, which is in part due to the delimitations in size placed on the format of the articles. I shall therefore devote more space and attention to plausible alternative arguments in the following. The introductory chapter of this thesis had identified all three of my essays as aiming for a fruitful 'middle ground' between the 'polar opposites' of *structure* and *agency*, thus contributing to a political economy literature which has been dubbed *strategic constructivism* (see, e.g., Saurugger & Thatcher 2019 for a recent discussion). Alternative arguments to the ones I put forward, in turn, would model independent central bankers as either more rational-strategic or more biased-constructivist agents than I do. I shall explore and discuss both propositions below, against the backdrop of one of the key features which my thesis sheds light on, namely central bankers' aversion towards financial risk and especially the risk of persistent balance sheet losses and negative capital. In particular, I will investigate the propositions that central bankers either (a) are 'irrationally' biased against the risk of losses or (b) 'rationally' try and avoid those and other risks to their balance sheets.

Alternative explanation (a): Central bankers' risk aversion as cognitive or ideational bias

Within a behavioural political economy (BPE) framework (Schnellenbach & Schubert 2015) or a more constructivist ideational framework, one could argue that central bankers are cognitively or ideologically biased against losses and negative capital, displaying a strong and somewhat literal case of loss aversion (i.e., implying that losses loom larger than gains). This could build on a long behavioural economics literature on the subject, of which Favaretto and Masciandaro (2016) have provided a recent application to central bank decision-making. Any such attempt at a behavioural explanation starts from the recognition that central banks are staffed and run by central bankers who are individuals and, despite their supposed technocratic expertise, are subject to many of the same human biases as all of us (see, e.g., Kuehnhanss et al. 2015). Some recent work in the politics of central banking has departed from this recognition in order to study how the career trajectories (Adolph 2013) or the ideas (Schulz 2017) of central bankers as individuals bias their monetary policy-making.

Favaretto and Masciandaro's (2016) approach, for one, builds on a strand of scholarship which emphasises central banks' inertia in monetary policy-making and which identifies a significant *status quo bias* among monetary policy committees. This bias presumably leads central banks to err on the side of caution in their decision-making, for example in order to avoid inconsistent stop-and-go policies (see, e.g., Goodhart 1996; Woodford 1999; 2003). The literature typically stresses informational and institutional variables as the source of inertia (i.e., the time it takes to gather reliable information or to reach agreement in different types of committees), to which the authors aim to add 'behavioural inertia', caused by loss aversion, as an independent explanatory factor. Their model, however, studies conventional monetary policy-making (interest rate-setting) only. Additionally, and curiously, it foresees central bankers to become *more* activist in case they fear losses (presumably in order to recuperate these losses by means of generating seigniorage) (see Jeanne & Svensson 2004). However, the evidence of the financial crisis rather suggests that the spectre of losses has made central bankers hesitant towards the use of a wide range of measures, i.e. *less* activist.

Equally plausibly, a behavioural approach towards central bankers' loss aversion may make recourse to prospect theory, i.e. Kahnemann and Tversky's (1979) seminal contribution to theories of decision-making under risk. In simple terms, their framework explains that while the actual losses from an action may turn out to be smaller than the gains (which should prompt rational decision-makers to take that action), the perceived value attached to those losses could be larger than the perceived value of gains, in large part due to the framing of the decision-making problem (thus prompting decision-makers to refrain from taking the action). The issue of central bank losses, it seems, would constitute nothing short of an extreme case for prospect theory: the actual loss a central bank faces from its monetary policy operations, some argue, is irrelevant (i.e. zero), while the value that central bankers attach to that loss is exorbitant or even infinite (akin to Pandora's box, the spectre of losses and central bankruptcy is taken to spell anything from the erosion of trust, to the loss of central bank independence, to hyperinflation and currency reform).

Lastly, another behavioural concept that comes to mind is that of mental accounting (Thaler 1985; 1990), which describes the fallacious tendency to create multiple accounts pertaining to one and the same resource. Given that central banks and their governments could be seen as belonging to the same consolidated public sector account, the suggestion that one should be backed by the other may seem as an example of the mental accounting fallacy *par excellence*. At any rate, however, such approaches imply that there is little or no 'rational' reason for central banks to disfavour and avoid losses. A stylized version of an argument in this mould would thus be: 'The risk of losses and negative capital should not matter to central bankers, but their cognitive and/or ideational biases lead them to believe and act otherwise.'

Alternative explanation (b): Central bankers' risk aversion as rational choice within given (historical-)institutional constraints

The logical counterpoint to the behavioural or ideational explanation would be a more rationalist model within which central bankers 'correctly' anticipate adverse or even detrimental consequences to arise in the event of posting continued losses (the nature of these consequences would then require further specification). This could augment recent studies of central bankers' material preferences (Adolph 2013) to include an institutional interest in central bank independence or even 'survival' (Schoeller 2018) as well as highlighting the strategic action undertaken towards these aims. To the extent that strategic action by purportedly apolitical and bureaucratic central bankers is acknowledged in the rationalist CBI literature at all, it has commonly been grasped through the lens of game theory, with central banks and governments playing games of chicken (Sargent & Wallace 1981; Buiter 2010) or wars of attrition (Alesina & Drazen 1991; Brunnermeier & Reis 2016) and thereby engaging in perpetual attempts at dominance over one another. Moreover, how these games ultimately play out is likely to be mediated by variations in institutional arrangements across different political economies, including different sets of veto players (Mabbett & Schelkle 2019).

If applied to the case of central bankers' aversion towards losses and insolvency, the design of financial independence arrangements comes to mind, and especially the rules and institutions governing the distribution of profits and losses accrued by a central bank. Many of these rules, enshrined in central banks' legal mandates and accounting frameworks, appear to have developed differently across countries due to a range of historical and contextual reasons (Milton & Sinclair 2011). What might then invite a more historical-institutionalist analysis is the observation that while a number of these mandates and frameworks have turned out to be incomplete or inadequate in the face of the critical juncture that was the global financial crisis (Archer & Moser-Boehm 2013; Braun 2015; Hall & Reis 2015), they may have been adhered to nevertheless owing to a logic of path-dependency. Alternatively, we would have observed efforts at adapting or overcoming these constraints, best grasped via the lens of endogenous institutional change (e.g. Streeck & Thelen 2005). In a nutshell, rational choice or historical institutionalist accounts of this kind would imply that central bankers seek to minimize their risk-taking and loss-making for overtly rational reasons and/or given historical constraints.

While both of these explanatory approaches appear plausible and have their merits – and while I recognize that the essays in this thesis may be congruent with certain elements of both – neither of them is ultimately capable of grasping the conundrum of central bankers' risk aversion and self-limitation on its own. I shall first turn to the cognitive or ideational explanation, namely that central bankers are allegedly inherently biased against accumulating losses which may lead to negative capital, due to their cognitive and/or ideological predispositions. Even though there is no denying that the third essay of this thesis taps into and builds on cognitive/ideational scholarship, it aims to do so in a more nuanced fashion which is ultimately more in line with the empirical evidence. Indeed, the available evidence – including central banks' in-house research as well as interviews with current and former decision-makers – does not seem to support the notion that monetary policy-makers misunderstand or are unaware of the theoretical irrelevance of negative central bank capital: they are hardly biased against loss-taking *per se*. Rather, they choose to adhere to the norms of loss avoidance and non-negative capital in practice as a *strategic* means so as to safeguard the *perceived* credibility of their balance sheets and, thereby, their legitimacy in the eyes of the general public.

Turning to a rational choice or historical institutionalist analysis of central bank loss aversion, it shall first be noted that while existing institutional arrangements of financial independence (such as rules governing profit retentions and accounting frameworks) certainly matter – as is reflected upon in my essays – these turn out to be in flux rather than stable, owing not least to their often implicit and underdeveloped nature, which central bankers are increasingly coming to terms with post-crisis. This appears hardly reconcilable with the notion of a hard institutional constraint forged by historical legacies. Furthermore, it is once again revealing that monetary policy-makers *themselves* tend to acknowledge the seemingly 'irrational' nature of their actions when it comes to protecting their balance sheets, as underlined not only by means of my élite interviews but also by the puzzlement of financial market participants and the bewilderment of other expert observers towards the ECB's protection of its capital base.

Lastly, influential theories of endogenous institutional change arguably also face difficulties when it comes to explaining the unprecedented actions undertaken by independent central bankers as well as other Eurozone decision-makers during the crisis (see, e.g., Verdun 2015). Although unconventional monetary policy-making could perhaps be seen as in line with certain elements of *displacement* (i.e., activation of latent institutional resources) or *conversion* (i.e., new purposes attached to old structures) in the terminology of Streeck and Thelen's (2005: 31) seminal introductory chapter, it is notable that their often-referenced framework deliberately only captures '[m]odern, formal, legal-political' changes, while changes occurring informally '*are, however, not the subject of this study*' (2005: 10, emphasis in original). This would seem to sit uneasily with the experience of the global financial and Eurozone crises and the broadly unchanged state in the formal *de iure* institution of central bank independence, which masks far-reaching changes in monetary policy-making. Indeed, even leading legal scholars of central banking have come to suggest that monetary authorities 'inhibit a "world of policy"' (Lastra 2014: 78; as quoted in Mabbett & Schelkle 2019: 8) during periods of stress, with formal legal structures only adapting ex post and with some lag, if at all.

Beyond these alternative explanations, another potential limitation of this thesis may stem from its case selection. While I believe to have selected three highly relevant and insightful central banks, I have not explicitly analysed what is often taken to be the foremost monetary authority in the global political economy, the US Federal Reserve (as has been pointed out to me not least when presenting earlier versions of the articles at workshops and conferences). Even though I have provided reasons for doing so in the second essay of this thesis, and while I have alluded to the applicability of my findings to the Fed at different points throughout, I shall nevertheless briefly discuss the case of the US here as well. To begin with, debates about risk-taking and the spectre of quasi-fiscal implications have certainly not spared the Fed either (e.g., Goodfriend 2011). The way monetary authorities in the US have sought to address these concerns arguably shares several elements with all three central banks analysed in this thesis.

On the one hand, US monetary policy-makers, cognizant of the risks entailed in bailing out the financial system, have sought and obtained a letter of support from the US Treasury, similar to the Bank of England (Geithner 2014). However, the letter did not amount to a formal guarantee – similar to the case of the ECB – and it was ultimately rebelled against by the US Congress (Wessel 2009; Mabbett & Schelke 2019: 16-17). On the other hand – and bearing some similarities to the Bank of Japan – the Federal Reserve opted to rely on a flexible interpretation of its accounting rules. The Fed went further than the BOJ, however, by indicating its readiness to carry a potential loss forward as a so-called 'deferred asset' (Carpenter at al. 2013), thereby gradually offsetting any loss against future profits while guaranteeing the remittance of some nominal profit in the eyes of Congress (Pollock 2018). Importantly, these measures underline the lengths to which the Fed was willing to go in order to avoid a situation of posting a – theoretically irrelevant, but politically supposedly salient – balance sheet loss, as acknowledged not least by some of its former senior decision-makers (see, e.g., Bernanke 2015).

The case of the US leads me to a final limitation that this concluding chapter aims to address. While my thesis as a whole has singled out monetary policy-makers as the key actors to examine, the Federal Reserve illustrates how even a vastly powerful and broadly autonomous monetary authority can ultimately depend on the decisions of outside actors, as emphasized in my first essay. This would seem to ring particularly true when aiming to illuminate issues of monetary-fiscal interactions and coordination, as my first and second essays seek to do. On the one hand, this has been driven by motivations of pragmatism and parsimony. To be sure, independent central banks lend themselves to being focal and entry points into questions of macroeconomic management (a point which has been dramatically underlined by the crises), while the inclusion of their respective fiscal authorities, especially when there are 19 of these as in the case of EMU, would most probably have rendered this doctoral project next to unmanageable.

Yet, on the other hand, there are also more substantial motivations for this specific choice. Above all, the curious spread of central bank independence in combination with the reality of fiat monetary regimes has undoubtedly given rise to a certain kind of technocratic institution whose discretion and powers are next to unparalleled in advanced democratic societies – so much so, that even these institutions themselves may seek to limit their powers and discretion, as this thesis has sought to demonstrate. At the same time, however, the consequences and implications of this remarkable state of affairs remain far from understood, and quite possibly so even by monetary policy-makers themselves, as De Grauwe (e.g., 2013) has suggested. This lack of comprehension has been further exacerbated by the turbulences of the global financial and Eurozone crises, which arguably warrants increased attention and consideration. Having said this, and with the above caveats in mind, I shall move to derive pertinent implications from my three articles in the following – and indeed not only for the future of central banking and central bank independence, but equally for political economy research on policy areas beyond the monetary sphere.

5.3 – Implications for future research

5.3.1 – Central banking in the interregnum: independence and coordination between crisis and 'normalization'

As Balls et al. (2018: 2) have claimed, 'no single country has yet settled the question about how a modern central bank should be structured' – let alone, one may add, a monetary union. The post-crisis era has brought to light that central banking, and central bank independence, are indeed in remarkable flux. While central bankers have been successful in 'buying time' (Streeck 2013; Kotz 2017: 96), a number of nagging questions have remained or re-emerged. In particular, as the dust settles on a decade of financial and economic distress, major central banks across the globe now grapple with the challenge of 'normalization' – that is, unwinding their sizeable balance sheets, which have been bloated by unconventional monetary policies. A debate is gathering pace about whether normalization should mean maintaining the novel status quo (i.e., embracing the 'new normal') or returning to a hitherto unspecified status quo ante (the 'old normal') – or, perhaps, arriving somewhere in-between (Sims 2016; Goodhart 2017; Pfister & Valla 2018). This arguably entails one of the single most important questions for macroeconomic policy today. For if independent monetary authorities are to withdraw their support for sluggish economies, who or what ought to be taking their place?

As one astute long-time observer has remarked, the episode we are currently witnessing bears close resemblance to earlier 'confused interregnum[s]' in monetary policy-making, during which an old consensus is severely challenged, but a new way forward has not yet been found (Goodhart 2011: 136). In this vein, taking a closer look at the (not-so-distant) past should provide a first step towards making sense of the (not-so-distant) future of central banking. Specifically, it should be worth remembering that considerations about potential difficulties of *exiting from* unconventional monetary policies were at the root of disagreements about *entering into* such far-reaching stimulus programmes in the first place. These disagreements manifested themselves in Japan much before reaching the North-Atlantic (see Cargill 2005). An issue which had stood out already back then was the spectre of losses that an exit from unconventional policies would purportedly entail: as official interest rates creep up again, the prices of government bonds on central banks' balance sheets fall. While such concerns were met with ridicule at the time (e.g., Bernanke 1999), they have ultimately persisted and steadily intensified, now that official exit strategies are increasingly being explored by central banks across the advanced capitalist democracies (Muguruma 2018).

This thesis would predict that any orderly exit from crisis policies – to the extent that it is found to be necessary and desirable – will only be feasible if macroeconomic decision-makers embrace the need for more coordination and cooperation. To begin with, fiscal policy-makers could and should start by acknowledging not only the inevitable monetary-fiscal interactions that the use of stimulus programmes at the zero lower bound entails (Sims 2013; Orphanides 2018), but also the interactions brought about by the gradual *termination* of such programmes. For instance, a recognition of the consolidated public sector budget would imply that governments (i.e., the fiscal principals) assume *ex ante* responsibility for the risk-taking of central banks (i.e., their monetary agents). As for monetary policy-makers, on the other side, this will crucially hinge on a more pragmatic, less principled interpretation of independence, which has at times needlessly been understood as ruling out closer coordination and cooperation *per se* – while, at the same time, this should not amount to overthrowing the principle of operational independence in core monetary policy-making functions altogether. In light of this, it can well be expected that central banking will become an ever more delicate balancing act throughout the normalization period, with independent monetary authorities seeking fiscal and political support for the inception and gradual termination of their large-scale balance-sheet operations, all the while defending their policy autonomy with regard to conventional (i.e., interest rate-setting) monetary policy.

As interregnums go, these tend to give rise to a flurry of experimentation and contestation. Indeed, after episodes of financial distress, the economic ideas of 'cranks' and 'brave heretics' seem to become increasingly alike and difficult to tell apart (see Keynes 1936: chapter 23; Dimand 1991; Ingham et al. 2016 and special issue articles therein). Monetary authorities, for their part, have been confronted with a range of reform ideas and proposals, stemming from functional necessities, technological disruptions, political aspirations or combinations thereof. An example from the first category are discussions around 'helicopter money' (i.e., direct cash handouts by central banks without intermediation by the financial sector) as a measure of last resort for monetary authorities to stimulate stagnant economies and reignite trust in the achievement of their inflation targets (Friedman 1969; Buiter 2016; Bernanke 2016; for an overview, see Baldwin 2016; cf. Cecchetti & Schoenholtz 2016b). As regards technological change, the digital revolution has fuelled fascination (if not an outright mania) for so-called crypto-currencies, whose merits and drawbacks are ferociously contested (see Roubini 2018). In the realm of political programmes, we can find calls for a 'Green New Deal' (GND) or a 'Jobs Guarantee', which are underpinned by propositions from 'Modern Monetary Theory' (MMT), such as the belief that a sovereign state with its own central bank need not fear insolvency (Tymoigne & Wray 2013; cf. Höpner 2018; Krugman 2019; Summers 2019).

The essays in this thesis suggest that political economists ought to pay particular attention to questions of *financial independence* and *perceptions of risks to central banks' balance sheets* when entertaining these debates. A noteworthy objection to 'helicopter money', for instance, is that it would increase the liabilities on a monetary authority's balance sheets without a parallel increase on the asset side, thereby depleting its capital and undermining its solvency (see, e.g., Dowd 2018; cf. Hampl & Havránek 2019). With regard to technological change and the emergence of crypto-currencies, moreover, both of these have prompted various monetary authorities to explore their own central bank digital currency (CBDC) schemes (OMFIF 2018) – with the notable suggestion that CBDCs would be more attractive to money users than their crypto counterparts 'because a central bank cannot become insolvent' (Weidmann 2017).[52] Lastly, debates around MMT tap into age-old fears about the 'fiscal abuse of central banks' (Fry 1993; Buiter 2008b), as they revive the temptation of direct finance through central banks' balance sheets (Bofinger 2019) as well as the appropriation of seigniorage revenues, despite such revenues being far from unlimited and relatively small as a percentage of GDP (Reis 2019). The ways in which central bankers across the globe aim to address these mounting challenges will undoubtedly continue to provide political economists with ample material to puzzle over, and will keep the next generation of CBI scholars busy for some time to come. This thesis highlights that what central banks and their stakeholders *believe* are – and what should be – the *limits* of central banking will matter crucially in these contemporary and future debates.

5.3.2 – The future of macroeconomic policy-making in Europe and beyond: 'the experts' versus 'the people'?

A key question reaching far beyond the realm of monetary policy-making is that of the future role and status of technocratic authority. With populist governments and opposition parties

[52] Ironically, however, one could argue that the replacement of cash by digital currencies diminishes central banks' seigniorage revenue (i.e. the income derived from issuing banknotes) to an extent that could be perceived as undermining their balance sheet capital and solvency in the first place. Besides, CBDCs might render helicopter money 'drops' more easy to implement and thus more likely.

ostensibly on the rise across the planet, independent central bankers certainly rank highly among 'the experts' whom 'the people' have purportedly 'had enough of' in Britain and beyond (Gove 2016; Goodhart & Lastra 2018). But will the ire of populism end with central banking? It is of interest to note that the dynamics of delegation, at least until recently, actually seemed to point in the opposite direction, namely towards more independent expertise rather than less. After the supposedly successful de-politicization of monetary policy-making via central bank independence, economists increasingly came to argue for comparable institutional solutions to similar policy problems, most notably those of unpredictable fiscal policy (see Leeper 2010). Indeed, there has been some movement towards independent fiscal councils and congruent institutional arrangements – including balanced-budget laws – so as to provide partial checks on national governments' budgetary policies (see, e.g., Larch & Braendle 2018; Tesche 2019) and the EU has developed a novel governance framework by means of the European Semester (see, e.g., Verdun & Zeitlin 2018 and special issue articles therein).

The post-crisis environment thus creates space for two potential future pathways of macro-economic governance, both of which are reinforced by needs for monetary-fiscal coordination (Fernandez-Albertos 2015: 230-232). On the one hand, we might witness a move towards further delegation and de-politiziation, with ever more 'core state powers' (see Genschel & Jachtenfuchs 2014) being handed to technocratic decision-making bodies. On the other hand, we might see the converse development, i.e. the overt re-politicization of previously delegated policy functions. If recent signals from elected government executives in advanced capitalist democracies including the United States and Italy are anything to go by, then one could be tempted to expect the first pathway to increasingly lose out to the second. Needless to say, however, the jury on these questions is still out, and we may well see signs of both dynamics (Verdun & Zeitlin 2018).

At any rate, 'the experts' already find themselves confronted with growing demands to relate more closely to 'the people' – demands which seem unlikely to fade in the foreseeable future. Against this backdrop, the different ways in which technocratic authorities seek to adapt their engagement with their public constituencies certainly provides a promising avenue for further research. In the realm of central banking, for instance, an increased use of non-traditional communication channels – including social media – as well as the framing of policy decisions in more accessible language have recently been observed (Bloomberg 2019; Thornton 2019). These developments should undoubtedly be scrutinized more closely by political economists. What this thesis draws our attention to, however, is that the increased salience of supposedly apolitical technocratic policy-making not only manifests itself in terms of how technocrats *frame* and *communicate* decisions to their variegated audiences. Rather, it can also be expected to have an effect at the *decision-making* stage already – and should therefore ideally be studied at that stage, even if this can turn out to be more challenging with regard to data availability or other potential restrictions. By bringing out the role of 'folk' ideas and theories, as opposed to predominantly 'scientific' ones, I hope to have made a first step toward this aim. For instance, scholars might wish to examine in more detail the formation and perpetuation of different economic fallacies – as well as their transmission between experts and non-experts – with the help of focus groups (Stanley 2014) or experiments (Kryvtsov & Petersen 2019). I shall leave these and other endeavours to future research, not least my own.

The final paragraph of this thesis should be devoted to the Eurozone, the central case of my doctoral research. After repeated onslaughts of financial market distress and amidst continued political uncertainty (see Zeitlin et al. 2019) – as well as unresolved questions pertaining to its institutional 'incompleteness' and 'fragility' (De Grauwe 2011; 2018) – what is most striking, perhaps, is that the monetary union has ultimately remained resilient for the time being (Schelkle 2017; Sadeh 2018), akin to the institutions of other advanced capitalist democracies (see Iversen & Soskice 2019; cf. Streeck 2018). With the crisis years truly turning into its 'teenage challenge' (Enderlein & Verdun 2009), EMU and its supranational central bank have eventually matured to early adulthood. That we would celebrate the ECB's 20th birthday in 2018 (see, e.g., Diessner 2018c and contributions therein), and that of the euro a year after, was far from certain and had increasingly been called into question only a few years prior. While the future is impossible to predict, this thesis suggests that it is neither fair nor particularly illuminating to judge the Eurozone against the unrealistic yardstick of a fully-fledged monetary-*cum*-fiscal union and thus to arrive at the often-stated conclusion that unless extensive fiscal and political integration are achieved, meaningful coordination between the centralized monetary authority and the decentralized fiscal authorities remains unattainable. This all too frequent predisposition is prone to overlooking much of the existing – though certainly far from perfect – coordination that already is taking place *despite* the lack of a unified fiscal counterpart for the supranational ECB. It also needlessly tends to rule out valuable comparisons with other monetary unions and their independent central banks. In this spirit, I very much hope that the three essays of this doctoral thesis can help us make sense of what is going on, and what to look for, in the topsy-turvy world of post-crisis central banking in Europe and beyond.

Appendix A – Quantitative text analysis (QTA)

Textual data pre-processing steps[53]

As is customary for QTA applications (Quinn et al. 2010; Grimmer & Stewart 2013), our corpus of texts had to be pre-processed before running the topic model algorithm. We first converted documents from the original HTML format into text files and removed encoding characters that resulted from conversion. We then eliminated non-alphabetical characters (such as punctuation, numbers, and currency symbols), stripped texts from a list of so-called 'stopwords' that do not add substantive meaning to a text (typically conjunctions, articles and pronouns), and grouped collocations where necessary (i.e., units of words with a distinctive meaning from their individual meanings) (McInnes 2004). For example, the collocation '*euro*', '*area*' has been grouped into '*euro_area*'. We ranked likely collocations using the G^2 criterion proposed by McInnes (2004), merging the most likely 500 bi-grams. Lastly, we stemmed the obtained vocabulary by reducing terms to their common roots (for instance, the terms *inflation* and *inflationary* have been transformed into *inflat*) and removed terms occurring in fewer than 1% of the documents and more than 99% of the documents (in order to avoid extremely recurring terms to rank highly across all estimated topics, thereby blurring the analysis). For the most part, we have relied on the *quanteda* package developed for the *R* software environment (Benoit et al. 2017), from which we also employed the available list of English stopwords.

The LDA algorithm

The LDA algorithm assumes a generative model in order to estimate both topic content and prevalence, supposing that topics can be modelled as probability distributions over the

[53] This appendix has been published as part of supplementary material for Diessner and Lisi (2019).

vocabulary appearing in a text (Blei et al. 2003; Blei 2012). The method thus assumes that the probability of observing a word in a particular document is given by the prevalence of a particular topic in that document multiplied by the word's probability for a given topic (Griffiths & Steyvers 2004).

In particular, this proceeds by fixing in advance a number of topics K. Further, let us define β_K as the probability distribution of each topic over the vocabulary in ECB communications, θ_d as the probability distribution of documents over topics (the vector of topic proportions), $z_{d,n}$ as the probability of a specific word belonging to a particular document, conditional on the topic proportions for that document, and $w_{d,n}$ as the probability that the same word belongs to a topic starting from initial topic assignment β_K. It follows that the probability of a word for a given topic can be seen as the probability of a given topic within a document $z_{d,n}$ multiplied by the probability of a given term in the overall topic distribution $w_{d,n}$. On the basis of the observed frequency of words for each document, it is possible to estimate the vector of topic proportions θ_d for that document. The algorithmic issue for LDA is to estimate likely values for each of the model parameters. For this, LDA assumes $w_{d,n}$ and $z_{d,n}$ to be drawn from two multinomial distributions and β_K and θ_d to be drawn from Dirichlet priors. We adopt the *R* implementation of the LDA estimation procedure written by Grün and Hornik (2011) to estimate the parameters in the ECB's communication data.

Two important caveats regarding the use of LDA are worth noting for our study. First, since the model derives topics from observed word frequencies only, it assumes that the order in which words appear is irrelevant for the overall meaning of a text (Fligstein et al. 2017: 888). This assumption, also referred to as 'bag-of-words' (Grimmer & Stewart 2013), does not allow distinguishing between positive and negative assessments of one and the same topic, for example (Mohr & Bogdanov 2013). In consequence, some information contained in the original text can be lost when performing LDA. This is unlikely to be of substantial concern, however, if the aim of the analysis is to understand which themes a particular text is referring to (Hansen et al. 2018), as is the case in the first part of our investigation. Nonetheless, we then also perform a qualitative assessment of ECB communication acts over the sample period in order to gain additional clarity on the direction of the central bank's fiscal statements.

Second, the number of topics K is assumed to be fixed and known in advance, i.e. it has to be inserted by the researcher. In practice, the specificity and substantive interpretability of the revealed topics are most often used for model selection (Blei 2012; DiMaggio et al. 2013: 78, 82; Fligstein et al. 2017: 889; Hansen et al. 2018: 820). In our case, after qualitative investigation of the output of models with topics ranging from 20 to 40, we selected a model of $K = 25$ topics on the basis of interpretability. To increase our confidence in this selection, we also performed statistical measures of model fit. We used Asuncion et al.'s (2009) perplexity measure to compare the fit of models with K ranging from 5 to 100 topics. The results indicate highest fit is attained for topic numbers between 20 and 55, suggesting that a choice of 25 is appropriate. Moreover, the topic contents discussed in our analysis remain largely stable when altering the number of topics slightly in either direction. Table 5 below presents the topic contents (i.e., the ten most probable terms per topic) for all 25 topics obtained through our LDA analysis, along with suggested topic labels.

Topic content	Number	Suggested label
regul market clear risk regulatori transpar need trade central will	1	*Regulation*
euro_area competit price econom countri euro_area_countri averag also differ increas	2	*Economic developments (competitiveness)*
econom polici monetari see monetary_polici inflat paper price model central_bank	3	*Monetary developments (inflation)*
statist data inform account euro_area european report financi use avail	4	*Statistics*
countri can economi growth effect invest firm also demand structur	5	*Economic developments (growth)*
bank will resolut european singl ssm fund supervis supervisori nation	6	*Banking union*
euro_area expect remain continu govern support will council medium_term loan	7	*Economic outlook*
fiscal euro_area govern countri debt reform deficit econom fiscal_polici implement	8	*Fiscal policy*
european europ union econom nation institut polit member state govern	9	*European Union*
payment sepa bank will european card servic scheme nation competit	10	*Payment services*
market integr financial_integr european cross border financi euro_area secur develop	11	*Financial integration*
risk financi macro financial_st prudenti financial_system polici framework can capit	12	*Financial risk*

supervisori institut central_bank financi bank european framework committe cooper level	13	*Prudential supervision*
growth product euro_area increas econom european employ economi labour develop	14	*Economic developments (productivity)*
bank risk financi credit market financ asset loan fund capit	15	*Credit developments*
crisi financi will time financial_crisi econom risk first economi dure	16	*Financial crisis*
remain growth price_st develop continu increas euro_area risk strong price	17	*Economic developments (growth and prices)*
euro_area rate monetary_polici interest_r measur inflat effect polici will condit	18	*Monetary policy (interest rate decisions)*
monetary_polici central_bank price_st polici inflat monetari object time decis credibl	19	*Monetary policy (objectives)*
global countri globalis economi world increas import trade intern china	20	*Global trade*
currenc polici intern exchange_r monetari system countri reserv global domest	21	*Foreign reserves*
liquid market bank central_bank money_market oper eurosystem collater rate fund	22	*Money market*
euro countri member new converg state will euro_area adopt process	23	*Euro area*
can onli one even market make way may case problem	24	*General discussion 1*
central europa html media frankfurt will today veri european bank	25	*General discussion 2*

Table 5: ECB communication topics, 2004-2015 (full table of LDA analysis with 25 topics)

Appendix B – List of interviewees

Code (for second essay) – ECB Code (for third essay) – Central Bank, Position, Place, Date

01 – Bank of England, former executive, London, February 2018

02 – ECB1 – European Central Bank, executive, London, February 2018

03 – Bank of England, former executive, Telephone, February 2018

04 – Bank of England, former executive, London, March 2018

05 – ECB2 – European Central Bank, senior staff, Frankfurt, March 2018

06 – ECB3 – European Central Bank, former executive, Frankfurt, March 2018

07 – ECB4 – European Central Bank, senior staff, Frankfurt, March 2018

08 – ECB5 – European Central Bank, senior staff, Frankfurt, March 2018

09 – ECB6 – European Central Bank, senior staff, Frankfurt, March 2018

10 – Bank of England, former executive, London, March 2018

11 – ECB7 – European Central Bank, former senior staff, London, March 2018

12 – ECB8 – European Central Bank, former executive, via telephone, April 2018

13 – ECB9 – European Central Bank, former executive, Paris, April 2018

14 – Bank of England, former executive, London, June 2018

15 – Bank of England, former executive, London, June 2018

16 – ECB10 – European Central Bank, senior staff, skype, June 2018

17 – Bank of Japan, former executive, Tokyo, July 2018

18 – Bank of Japan, former executive, Tokyo, July 2018

19 – Bank of Japan, senior staff, Tokyo, July 2018

20 – Bank of Japan, senior staff, Tokyo, July 2018

21 – Bank of Japan, former senior staff, Tokyo, July 2018

22 – Bank of Japan, senior staff, Tokyo, July 2018

23 – Bank of Japan, senior staff, Tokyo, July 2018

24 – Bank of Japan, former senior staff, Tokyo, July 2018

25 – Bank of Japan, senior staff, Tokyo, July 2018

26 – Bank of Japan, senior staff, Tokyo, July 2018

27 – Bank of Japan, former executive, Tokyo, July 2018

28 – Bank of Japan, former executive, Tokyo, July 2018

29 – Bank of Japan, former executive, Tokyo, July 2018

30 – Bank of Japan, former executive, Tokyo, July 2018

31 – ECB11 – European Central Bank, former executive, London, October 2018

32 – ECB12 – European System of Central Banks, former executive, Phone, February 2019

Bibliography

Abbott, A. (2010). Varieties of Ignorance. *American Sociologist*, 41(2), 174-189.

Abbott, K.W., Genschel, P., Snidal, D., and Zangl, B. (2019). The Governor's Dilemma: Competence versus Control in Indirect Governance. *Regulation & Governance*, Early View.

Abolafia, M. (2010). Narrative Construction as Sensemaking: How a Central Bank Thinks. *Organization Studies*, 31(3), 349-367.

Acheson, K., and Chant, J. F. (1973). Bureaucratic Theory and the Choice of Central Bank Goals: The Case of the Bank of Canada. *Journal of Money, Credit and Banking*, 5(2), 637-655.

Acosta, J., and Cherrier, B. (2019). The Transformation of Economic Analysis at the Federal Reserve During the 1960s. *CHOPE Working Paper*, 2019-04.

Adler, G., Castro, P., and Tovar, C. (2016). Does Central Bank Capital Matter for Monetary Policy?. *Open Economies Review*, 27(1), 183-205.

Ademuyiwa, I., Siklos, P. L., and St. Amand, S. (2018). Central Bank Balance Sheets and the Interaction Between Monetary Policy and Financial Stability. *CIGI Papers*, 193.

Adolph, C. (2013). *Bankers, Bureaucrats, and Central Bank Politics: The Myth of Neutrality*. New York: Cambridge University Press.

Alesina, A., and Summers, L. (1993). Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence, *Journal of Money, Credit and Banking*, 25(2), 151-162.

Alesina, A., and Tabellini, G. (2008). Bureaucrats or Politicians? Part II: Multiple Policy Tasks. *Journal of Public Economics*, 92(3-4), 426-447.

Alesina, A., and Tabellini, G. (2007). Bureaucrats or Politicians? Part I: A Single Policy Task. *American Economic Review*, 97(1), 169-179.

Allard, J., Catenaro, M., Vidal, J.-P., and Wolswijk, G. (2013). Central Bank Communication on Fiscal policy. *European Journal of Political Economy*, 30, 1-14.

Allen, W. A. (2017). Quantitative easing and the independence of the Bank of England. *NIESR Policy Paper*, 1.

Altavilla, C., Giannone, D., and Lenza, M. (2014). The Financial and Macroeconomic Effects of OMT Announcements, *ECB Working Paper*, 1707.

Archer, D., and Moser-Boehm, P. (2013). Central Bank Finances. *BIS Papers*, 71.

Arestis, P., and Mihailov, A. (2009). Flexible Rules cum Constrained Discretion: A New Consensus in Monetary Policy. *Economic Issues*, 14(2), 27-54.

Artis, M., and Winkler, B. (1998). The Stability Pact: Safeguarding the Credibility of the European Central Bank. *National Institute Economic Review*, 163(1), 87-98.

Asmussen, J. (2012). Building Trust in a World of Unknown Unknowns: Central Bank Communication between Markets and Politics in the Crisis. Speech at the European Communication Summit, Brussels, 6 July. Retrieved from: https://www.ecb.europa.eu/press/key/date/2012/html/sp120706.en.html

Asuncion, A., Welling, M., Smyth, P., and Teh, Y. W. (2009). On Smoothing and Inference for Topic Models. *Proceedings of the Conference on Uncertainty in Artificial Intelligence*, Montreal, Canada.

Babecky, J., Havranek, T., Mateju, J., Rusnak, M., Smidkova, K., and Vasicek, B. (2012). Banking, Debt, and Currency Crises: Early Warning Indicators for Developed Countries. *ECB Working Paper*, 1485.

Baerg, N., Duell, D., and Lowe, W. (2018). Central Bank Communication as Public Opinion: Experimental Evidence. Unpublished Working Paper.

Bailey, A., and Schonhardt-Bailey, C. (2008). Does Deliberation Matter in FOMC Monetary Policymaking? The Volcker Revolution of 1979. *Political Analysis*, 16(4), 404-427.

Baker, A. (2017). Esteem as Professional Currency and Consolidation: The Rise of the Macroprudential Cognoscenti. In L. Seabrooke and L. F. Henriksen (eds.), *Professional Networks in Transnational Governance*. Cambridge: Cambridge University Press, 149-164.

Baker, A. (2015). Varieties of Economic Crisis, Varieties of Ideational Change: How and Why Financial Regulation and Macroeconomic Policy Differ. *New Political Economy*, 20(3), 342-366.

Baldwin, R. (2016). Helicopter Money: Views of Leading Economists. *VOX – CEPR's Policy Portal*, accessible online at [last access 18/08/2019]: https://voxeu.org/article/helicopter-money-views-leading-economists

Ban, C. (2016). *Ruling Ideas: How Global Neoliberalism Goes Local*. New York: Oxford University Press.

Ban, C., and Gabor, B. (2016). Banking on Bonds: The New Links Between States and Markets. *Journal of Common Market Studies*, 54(3), 617-635.

Ban, C., and Patenaude, B. (2018). The Professional Politics of the Austerity Debate: A Comparative Field Analysis of the European Central Bank and the International Monetary Fund. *Public Administration*, Early View.

Banaian, K., Burdekin, R.C.K., and Willett, T.D. (1998). Reconsidering the Principal Components of Central Bank Independence: The More the Merrier?. *Public Choice*, 97(1), 1-12.

Banaian, K., Burdekin, R.C.K., and Willett, T.D. (1995). On the Political Economy of Central Bank Independence. In K.D. Hoover, and S.M. Sheffrin (eds.), *Monetarism and the Methodology of Economics: Essays in Honour of Thomas Mayer*. Brookfield, VT: Edward Elgar, 178-197.

Bank for International Settlements (BIS) (2012). Are Central Bank Balance Sheets in Asia Too Large?. *BIS Papers,* 66.

Bank for International Settlements (BIS) (2009). *Issues in the Governance of Central Banks: A report from the Central Bank Governance Group*. Basel: BIS.

Bank for International Settlements (BIS) (2006). *Central banks and the challenge of development*. Basel: BIS.

Bank of England (2017a). Bank of England Annual Report 2017. London: BoE.

Bank of England (2017b). Bank of England Asset Purchase Facility Fund Limited Annual Report and Accounts 2017. London: BoE.

Bank of England (2012). Review of the Bank of England's Provision of Emergency Liquidity Assistance in 2008–09: Report by Ian Plenderleith. London: BoE.

Bank of England (2009). Bank of England Court Minutes – February-May 2009. London: BoE.

Bank of Japan (2019). Financial Statements for the 134th Fiscal Year/Fiscal 2018. Tokyo: BOJ.

Bank of Japan (2018). Annual Review 2018. Tokyo: BOJ.

Bank of Japan (2016a). Accounting Rules of the Bank of Japan. Tokyo: BOJ.

Bank of Japan (2016b). Annual Review 2016. Tokyo: BOJ.

Bank of Japan (2016c). Financial Statements for the 131st Fiscal Year/Fiscal 2015. Tokyo: BOJ.

Bank of Japan (2015). Financial Statements for the First Half of the 131st Fiscal Year/Fiscal 2015. Tokyo: BOJ.

Bank of Japan (2013a). Joint Statement of the Government and the Bank of Japan on Overcoming Deflation and Achieving Sustainable Economic Growth. Tokyo: BOJ.

Bank of Japan (2013b). Annual Review 2013. Tokyo: BOJ.

Barnett, M., and Finnemore, M. (2004). *Rules for the World: International Organizations in Global Politics*. Ithaca, NY: Cornell University Press.

Barro, R. J. (2019). Is Politics Getting to the Fed? *Project Syndicate*, 23 July 2019. Retrieved from: https://www.project-syndicate.org/commentary/trump-powell-politics-fed-by-robert-j-barro-2019-07

Barro, R. J., and Gordon, D. B. (1983). A Positive Theory of Monetary Policy in a Natural-Rate Model. *Journal of Political Economy*, 91(4), 589-610.

Bassetto, M. and Messer, T. (2013). Fiscal Consequences of Paying Interest on Reserves. *Fiscal Studies*, 34(4), 413-436.

Bawn, K. (1995). Political Control Versus Expertise: Congressional Choices about Administrative Procedures. *American Political Science Review*, 89(1), 62-73.

Beckert, J. (2019). The Exhausted Futures of Neoliberalism. From Promissory Legitimacy to Social Anomy. *Journal of Cultural Economy*, Online First.

Beckert, J., and Bronk, R., (2018). *Uncertain Futures: Imaginaries, Narratives, and Calculation in the Economy*. Oxford: Oxford University Press.

Beckert, J. (2016). *Imagined Futures: Fictional Expectations and Capitalist Dynamics*. Cambridge, MA: Harvard University Press.

Béland, D., & Cox, R. H. (2013). Introduction: The Politics of Policy Paradigms. *Governance*, 26(2), 193-195.

Belke, A., and Polleit, T. (2010). How much fiscal backing must the ECB have? The euro area is not (yet) the Philippines. *International Economics*, 124(4), 5-30.

Bell, S., and Hindmoor, A. (2015). Masters of the Universe but Slaves of the Market: Bankers and the Great Financial Meltdown. *British Journal of Politics and International Relations*, 17(1), 1-22.

Benecká, S., Holub, T., Kadlčáková, N. L., and Kubicová, I. (2012). Does Central Bank Financial Strength Matter for Inflation? An Empirical Analysis. *Czech National Bank Working Paper Series*, 3/2012.

Benigno, P., and Nisticò, S. (2015). Non-Neutrality of Open-Market Operations. *CEPR Discussion Papers*, 10594.

Bennani, H. (2015). Dissecting the Brains of Central Bankers: The Case of the ECB's Governing Council Members on Reforms. *International Economics*, 141, 97-114.

Bennani, H., and Neuenkirch, M. (2014). The (Home) Bias of European Central Bankers: New Evidence Based on Speeches. *University of Trier Research Papers in Economics*, 16/14.

Benoit, K., Watanabe, K., Nulty, P., Obeng, A., Wang, H., Lauderdale, B., and Lowe, W. (2017). quanteda: Quantitative Analysis of Textual Data. Accessible at [last access 28.08.2019]: http://quanteda.io on

Bernanke, B. (2017). The Mayekawa Lecture: Some Reflections on Japanese Monetary Policy. *Monetary and Economic Studies*, 35, 23-38.

Bernanke, B. (2016). What Tools Does the Fed Have Left? Part 3: Helicopter Money. *Brookings Institution blog*, accessible online at [last access 18/08/2019]: https://www.brookings.edu/blog/ben-bernanke/2016/04/11/what-tools-does-the-fed-have-left-part-3-helicopter-money/

Bernanke, B. (2015). Budgetary sleight-of-hand. *Brookings blog*, accessible online at [last access 14/04/2018]: http://brookings.edu/blog/ben-bernanke/2015/11/09/budgetary-sleight-of-hand

Bernanke, B. (2010). Central Bank Independence, Transparency, and Accountability. Opening Remarks at the Bank of Japan-Institute for Monetary and Economic Studies International Conference, Tokyo, 26 May.

Bernanke, B. (1999). Japanese Monetary Policy: A Case of Self-Induced Paralysis?. Paper prepared for presentation at the ASSA meetings, Boston, 9 January 2000.

Bernanke, B. S., and Mishkin, F. S. (1997). Inflation Targeting: A New Framework for Monetary Policy?. *Journal of Economic Perspectives*, 11(2), 97-116.

Bernhard, W., Broz, J. L., and Clark, W. R. (2002). The Political Economy of Monetary Institutions. *International Organization*, 56(4), 693-723.

Bholat, D., and Darbyshire, R. (2016). Accounting in central banks. *Bank of England Staff Working Paper*, 604.

Bibow, J. (2018). Unconventional Monetary Policies and Central Bank Profits: Seigniorage as Fiscal Revenue in the Aftermath of the Global Financial Crisis. *Levy Economics Institute Working Paper*, 916.

Binder, C. (2017). Fed Speak on Main Street: Central Bank Communication and Household Expectations. *Journal of Macroeconomics*, 52, 238-251.

Binder, S., and Spindel, M. (2017). *The Myth of Independence: How Congress Governs the Federal Reserve*. Princeton, NJ: Princeton University Press.

Bindseil, U., Manzanares, A., and Weller, B. (2004). The role of central bank capital revisited. *European Central Bank Working Paper Series*, 392.

Bini Smaghi, L. (2007). Central Bank Independence: From Theory to Practice. Speech at the conference 'Good Governance and Effective Partnership', Hungarian National Assembly, Budapest, 19 April. Retrieved from: https://www.ecb.europa.eu/press/key/date/2007/html/sp070419.en.html

Bini Smaghi, L., and Casini, C. (2000). Monetary and Fiscal Policy Co-Operation: Institutions and Procedures in EMU. *Journal of Common Market Studies*, 38(3), 375-391.

Blanchard, O., and Fischer, S. (1989). *Lectures in Macroeconomics*. Cambridge. MA: MIT Press.

Blei, D. M. (2012). Probabilistic Topic Models. *Communications of the Association for Computing Machinery*, 55(4), 77-84.

Blei, D. M., Ng, A. Y., and Jordan, M. I. (2003). Latent Dirichlet Allocation. *Journal of Machine Learning Research*, 3, 993-1022.

Blendon, R. J., Benson, J. M., Brodie, M., Morin, R., Altman, D. E., Gitterman, D., Brossard, M., and James, M. (1997). Bridging the Gap Between the Public's and Economists' Views of the Economy. *Journal of Economic Perspectives*, 11(3), 105-118.

Blinder, A. S. (2018). Through a Crystal Ball Darkly: The Future of Monetary Policy Communication. *AEA Papers and Proceedings*, 108, 567-571.

Blinder, A. S. (2012). Central Bank Independence and Credibility During and After a Crisis. *Griswold Center for Economic Policy Studies Working Paper*, 229.

Blinder, A. S. (1998). *Central Banking in Theory and Practice*. Cambridge, MA, MIT Press.

Blinder, Alan S. (2000). Central Bank Credibility: Why Do We Care? How Do We Build It? *American Economic Review*, 90(5), 1421-1431.

Blinder, A. S., Ehrmann, M., Fratzscher, M., De Haan, J., and Jansen, D. (2008). Central Bank Communication and Monetary Policy: A Survey of Theory and Evidence. *Journal of Economic Literature*, 46(4), 910-945.

Bloomberg (2019). Reggae. Puppies. Whatever It Takes, Central Banks Want Attention. *Bloomberg Economics*, accessible online at [last access 20/08/2019]: https://www.bloomberg.com/news/articles/2019-01-29/reggae-puppies-whatever-it-takes-central-banks-want-attention

Bloomberg (2018). 3 Words and $3 Trillion: The Inside Story of How Mario Draghi Saved the Euro. *Bloomberg*, accessible online at [last access 25/08/2019]: https://www.bloomberg.com/news/features/2018-11-27/3-words-and-3-trillion-the-inside-story-of-how-mario-draghi-saved-the-euro

Blyth, M. (2013). *Austerity: The History of a Dangerous Idea*. Oxford: Oxford University Press.

Blyth, M. (2002). *Great Transformations: Economic Ideas and Institutional Change in the 20th Century*. Cambridge, UK: Cambridge University Press.

Bodea, C. (2013). Independent Central Banks, Regime Type and Fiscal Performance: The Case of Post-Communist Countries. *Public Choice*, 155(1-2), 81-107.

Bodea, C., and Higashijima, M. (2017). Central Bank Independence and Fiscal Policy: Can the Central Bank Restrain Deficit Spending?. *British Journal of Political Science*, 47(1), 47-70.

Bofinger, P. (2019). Modern Monetary Theory: The Dose Makes The Poison. *Social Europe blog*, accessible online at [last access 18/08/2019]: https://www.socialeurope.eu/modern-monetary-theory

Borio, C. (2017). Through the Looking Glass. *OMFIF City Lecture*, Official Monetary and Financial Institutions Forum, London, 22 September. Retrieved from: https://www.bis.org/speeches/sp170922.pdf

Boyes, W. J., Mounts, W. S., and Sowell, C. (1988). The Federal Reserve as a Bureaucracy: An Examination of Expense-Preference Behavior. *Journal of Money, Credit and Banking*, 20(2), 181-190.

Brand, C., Buncic, D., and Turunen, J. (2010). The Impact of ECB Monetary Policy Decisions and Communication on the Yield Curve. *Journal of the European Economic Association*, 8(6), 1266-1298.

Braun, B., and Düsterhöft, M. (2019). Technocratic Politics in Hard Times: A Global Experiment in Central Banking. Paper prepared for CES Annual Conference, Madrid.

Braun, B. (2018). Central Banking and the Infrastructural Power of Finance: The Case of ECB Support for Repo and Securitisation Markets. *Socio-Economic Review*, Early View.

Braun, B. (2017). *Two Sides of the Same Coin? Independence and Accountability of the European Central Bank*. Brussels: Transparency International EU.

Braun, B. (2016). Speaking to the People? Money, Trust, and Central Bank Legitimacy in the Age of Quantitative Easing. *Review of International Political Economy*, 23(6), 1064-1092.

Braun, B. (2015). Preparedness, Crisis Management and Policy Change: The Euro Area at the Critical Juncture of 2008-2013. *British Journal of Politics and International Relations*, 17(3), 419-441.

Braun, B. (2014). Why Models Matter: The Making and Unmaking of Governability in Macroeconomic Discourse. *Journal of Critical Globalisation Studies*, 7, 48-79.

Broome, A ., and Seabrooke, L. (2015). Shaping Policy Curves: Cognitive Authority in Transnational Capacity Building. *Public Administration*, 93(4), 956-972.

Broz, J. L. (2002). Political System Transparency and Monetary Commitment Regimes. *International Organization*, 56(4), 861-887.

Broz, J. L., and Clark, W. R. (2018). 'Voting' to Audit the Fed. SSRN working paper.

Bruegel (2018). Should We Care about Central Bank Profits? *Policy Contribution*, 13, September 2018.

Brumm, H. J. (2002). Inflation and Central Bank Independence Revisited. *Economics Letters*, 77 (2), 205-209.

Brumm, H. J. (2000). Inflation and Central Bank Independence: Conventional Wisdom Redux. *Journal of Money, Credit, and Banking*, 32(4), 807-819.

Brunnermeier, M. K. (2015). Financial Dominance. Speech at the Twelfth Paolo Baffi Lecture, Banca d'Italia, Rome, 1 December. Retrieved from: http://www.bancaditalia.it/pubblicazioni/lezioni-baffi/pblecture-12/index.html https://www.bancaditalia.it/pubblicazioni/lezioni-baffi/pblecture-12/index.html

Brunnermeier, M., and Reis, R. (2015). A Crash Course on the Eurozone Crisis. Unpublished Working Paper/Presentation.

Brunnermeier, M. K., & Sannikov, Y. (2012). Redistributive Monetary Policy. *Federal Reserve Bank of Kansas City Economic Conference Proceedings*, Jackson Hole Symposium, 331-384.

Buiter, W. H. (2016). The Simple Analytics of Helicopter Money: Why It Works – Always. *Economics: The Open-Access, Open-Assessment E-Journal*, 8(28), 1-45 (Version 3).

Buiter, W. H. (2010). Games of Chicken between the Monetary and Fiscal Authority: Who Will Control the Deep Pockets of the Central Bank?. *Citi Global Economics View*, July.

Buiter, W. H. (2009). Fiscal dimensions of central banking: The fiscal vacuum at the heart of the Eurosystem and the fiscal abuse by and of the Fed. *VOX – CEPR's Policy Portal*, accessible online at [last access 28/08/2019]: http://voxeu.org/article/european-fiscal-vacuum-makes-ecb-timid-quantitative-and-credit-easing

Buiter, W. H. (2008a). Can Central Banks Go Broke?. *CEPR Discussion Papers*, 6827.

Buiter, W. H. (2008b). Central Banks and Financial Crises. Federal Reserve Bank of Kansas City's Economic Policy Symposium, Jackson Hole, WY, 23 August.

Buiter, W. H. (2006). How Robust is the New Conventional Wisdom? The Surprising Fragility of the Theoretical Foundations of Inflation Targeting and Central Bank Independence. *CEPR Discussion Papers*, 5772.

Buiter, W. H. (2004). Two Naked Emperors? Concerns about the Stability & Growth Pact and Second Thoughts about Central Bank Independence. *Fiscal Studies*, 25(3), 249-277.

Buiter, W.H. (1999). Alice in Euroland. *Journal of Common Market Studies*, 37(2), 181-209.

Buiter, W. H., and Rahbari, E. (2012). Looking into the deep pockets of the ECB. *Citi Global Economics View*, 27 February 2012.

Bunea, D., Karakitsos, P., Merriman, N., and Studener, W. (2016). Profit Distribution and Loss Coverage Rules for Central Banks. *ECB Occasional Paper Series*, 169.

Busuioc, M. (2016). Friend or Foe? Inter-Agency Cooperation, Organizational Reputation and Turf. *Public Administration*, 94(1), 40-56.

Cagan, P. (1956). The Monetary Dynamics of Hyperinflation. In M. Friedman (ed.). *Studies in the Quantity Theory of Money*, Chicago: University of Chicago Press, 25-117.

Campbell, J.L. (1998). Institutional Analysis and the Role of Ideas in Political Economy. *Theory and Society*, 27(3), 377-409.

Campillo, M., and Miron, J. A. (1997). Why Does Inflation Differ Across Countries? In C. D. Romer and D. H. Romer (eds.), *Reducing Inflation: Motivation and Strategy*, Chicago, IL: University of Chicago Press, 335-357.

Canzoneri, M., Cumby, R. and Diba, B. (2002). Should the European Central Bank and the Federal Reserve Be Concerned about Fiscal Policy?. *Proceedings of the Federal Reserve Bank of Kansas City's Economic Policy Symposium 2002*, 333-389.

Cargill, T. F. (2005). Is the Bank of Japan's Financial Structure an Obstacle to Policy?. *IMF Staff Papers*, 52(2), 311-334.

Carlin, W., and Soskice, D. (2014). *Macroeconomics: Institutions, Instability, and the Financial System*. Oxford: Oxford University Press.

Carney, M. (2017). Opening Remarks: Independence 20 Years on. Retrieved from https://www.bankofengland.co.uk/-/media/boe/files/speech/2017/opening-remarks-at-the-boe-independence-20-years-on-conference.pdf

Carpenter, D. P. (2001). *The Forging of Bureaucratic Autonomy: Reputations, Networks and Policy Innovation in Executive Agencies, 1862-1928*. Princeton: Princeton University Press.

Carpenter, S. B., Ihrig, J. E., Klee, E. C., Quinn, D. W., and Boote, A. H. (2013). The Federal Reserve's Balance Sheet and Earnings: A Primer and Projections. *FEDS Working Paper*, 2013-01.

Carstensen, M. B., and Schmidt, V. A. (2016). Power Through, Over and In Ideas: Conceptualizing Ideational Power in Discursive Institutionalism, *Journal of European Public Policy*, 23(3), 318-337.

Cecchetti, S. G., and Schoenholtz, K. L. (2016a). The Bank of Japan at the Policy Frontier. *VOX – CEPR's Policy Portal*, accessible online at [last access 18/08/2019]: https://voxeu.org/article/bank-japan-policy-frontier

Cecchetti, S. G., and Schoenholtz, K. L. (2016b). A Primer on Helicopter Money. *VOX – CEPR's Policy Portal*, accessible online at [last access 18/08/2019]: https://voxeu.org/article/primer-helicopter-money

Cecchetti, S. G., and Schoenholtz, K. L. (2015). Do central banks need capital?. *Money and banking blog*, accessible online at [last access 03/12/2018]: www.moneyandbanking.com/commentary/2015/5/26/do-central-banks-need-capital

Chang, M. (2016). The (Ever) Incomplete Story of Economic and Monetary Union. *Journal of Contemporary European Research*, 12(1), 486-501.

Chang, M. (2006). Reforming the Stability and Growth Pact: Size and Influence in EMU Policymaking. *Journal of European Integration*, 28(1), 107-120.

Christelis, D., Georgarakos, D., Jappelli, T., and van Rooij, M. (forthcoming). Trust in the Central Bank and Inflation Expectations. *International Journal of Central Banking*.

Christophers, B. (2017). The Performativity of the Yield Curve, *Journal of Cultural Economy*, 10(1), 63-80.

Clift, B. (2019). Contingent Keynesianism: The IMF's Model Answer to the Post-Crash Fiscal Policy Efficacy Question in Advanced Economies. *Review of International Political Economy*, Early View.

Clift, B. (2018). *The IMF and the Politics of Austerity in the Wake of the Global Financial Crisis*. Oxford: Oxford University Press.

Coeuré, B. (2019a). Interview with Frankfurter Allgemeine Zeitung. Accessible online at [last access 28.08.2019]: www.ecb.europa.eu/press/inter/date/2019/html/ecb.in190423~9eec5b2c12.en.html

Coeuré, B. (2019b). Inflation Expectations and the Conduct of Monetary Policy. Speech at SAFE Policy Center, Frankfurt, 11 July. Retrieved from: www.ecb.europa.eu/press/key/date/2019/html/ecb.sp190711~6dcaf97c01.en.html

Coeuré, B. (2016). Sovereign Debt in the Euro Area: Too Safe or Too Risky?. Speech at Harvard University's Minda de Gunzburg Center for European Studies, Cambridge, MA, 3 November. Retrieved from: https://www.ecb.europa.eu/press/key/date/2016/html/sp161103.en.html

Coeuré, B. (2012a). The Reform of Financial Regulation: Priorities from an ECB Perspective. Speech at the Association for Financial Markets in Europe (AFME), Paris, 6 March. Retrieved from: www.ecb.europa.eu/press/key/date/2012/html/sp120306.en.html

Coeuré, B. (2012b) ‘The Importance of Money Markets’, Speech at the Morgan Stanley 16th Annual Global Investment Seminar, Tourrettes, Provence, 16 June. Retrieved from: https://www.ecb.europa.eu/press/key/date/2012/html/sp120616.en.html

Cohen, B. J. (2009). A Grave Case of Myopia. *International Interactions,* 35(4), 436-444.

Cohen-Setton, J., and Vallée, S. (2018). Federalizing a Central Bank: A Comparative Study of the Early Years of the Federal Reserve and the European Central Bank. In J. F. Kirkegaard and A. S. Posen (eds.), *Lessons for EU Integration from US History,* Washington, D.C.: Peterson Institute for International Economics, 108-142.

Coibion, O., Gorodnichenko, Y., and Weber, M. (2019). Monetary Policy Communications and their Effects on Household Inflation Expectations. *NBER Working Paper*, 25482.

Collignon, S. (2002). *Monetary Stability in Europe*. Routledge International Studies in Money and Banking, London: Routledge.

Collignon, S., and Diessner, S. (2016). The ECB's Monetary Dialogue with the European Parliament: Efficiency and Accountability during the Euro Crisis?. *Journal of Common Market Studies,* 54(6), 1296-1312.

Collignon, S., and Schwarzer, D. (2003). *Private Sector Involvement in the Euro: The Power of Ideas*. London: Routledge.

Conceição-Heldt, E. d., and Müller, T. (2017). The Silent Empowerment of the ECB During the Euro Crisis. Paper presented at the 15th EUSA Biennial Conference, Miami, Florida, May 6.

Conti-Brown, P. (2016). *The Power and Independence of the Federal Reserve*. Princeton, NJ: Princeton University Press.

Corsetti, G., and Dedola, L. (2016). The Mystery of the Printing Press: Monetary Policy and Self-Fulfilling Debt Crises. *Journal of the European Economic Association*, 14(6), 1329-1371.

Cour-Thimann, P., and Winkler, B. (2012). The ECB's Non-Standard Monetary Policy Measures: The Role of Institutional Factors and Financial Structure. *Oxford Review of Economic Policy*, 28(4), 765-803.

Cross, J., and Greene, D. (2019). Talk is Not Cheap: Policy Agendas, Information Processing, and the Unusually Proportional Nature of European Central Bank Communications Policy Responses. *Governance,* Early View.

Crowe, C., and Meade, E. E. (2008). Central Bank Independence and Transparency: Evolution and Effectiveness. *European Journal of Political Economy*, 24(4), 763-777.

Crowe, C., and Meade, E. E. (2007). The Evolution of Central Bank Governance Around the World. *Journal of Economic Perspectives*, 21(4), 69-90.

Cukierman, A. (2011). Central Bank Finances and Independence – How Much Capital Should a Central Bank Have?. In S. Milton and P. Sinclair (eds.), *The Capital Needs of Central Banks*, London and New York: Routledge, 33-46.

Cukierman, A. (2008). Central Bank Independence and Monetary Policymaking Institutions: Past, Present and Future. *European Journal of Political Economy*, 24(4), 722-736.

Cukierman, A. (1992). *Central Bank Strategy, Credibility, and Independence: Theory and Evidence*. Cambridge, MA: MIT Press.

Cukierman, A., and Webb, S. B. (1995). Political Influence on the Central Bank: International Evidence. *World Bank Economic Review*, 9(3), 397-423.

Cukierman, A., Webb, S., and Neyapti, B. (1992). Measuring the Independence of Central Banks and Its Effect on Policy Outcomes. *The World Bank Economic Review*, 6(3), 353-398.

Czech National Bank (CNB) (2010). The Czech National Bank disagrees with the ECB Convergence Report. Press Release, accessible at [last access 28.08.2019]:

cnb.cz/en/cnb-news/press-releases/The-Czech-National-Bank-disagrees-with-the-ECB-Convergence-Report-00001

Dalton, J., and Dziobek, C. (2005). Central Bank Losses and Experiences in Selected Countries. *IMF Working Paper*, 05/72.

Darbyshire, R. (2011). Financing the Central Bank: Capital Adequacy and Financial Independence – An Accountant's Perspective. In S. Milton and P. Sinclair (eds.), *The Capital Needs of Central Banks*, London and New York: Routledge, 69-82.

Davies, H. and Green, D. (2010). *Banking on the Future – The Fall and Rise of Central Banking*. Princeton, NJ: Princeton University Press.

Davies, W. (2011). Economic Advice as a Vocation: Symbioses of Scientific and Political Authority. *British Journal of Sociology*, 62(2), 304-323.

Davies, W., and McGoey, L. (2012). Rationalities of Ignorance: On Financial Crisis and the Ambivalence of Neo-Liberal Epistemology. *Economy and Society*, 41(1), 64-83.

Debelle, G., and Fischer, S. (1994). How Independent Should a Central Bank Be?. *Federal Reserve Bank of San Francisco Working Papers in Applied Economic Theory*, 94-05.

De Grauwe, P. (2018). *Economics of Monetary Union*. 12th Edition. Oxford: Oxford University Press.

De Grauwe, P. (2013a). The Political Economy of the Euro. *Annual Review of Political Science*, 16, 153-170.

De Grauwe, P. (2013b). The European Central Bank as Lender of Last Resort in the Government Bond Markets. *CESifo Economic Studies*, 59(3), 520-535.

De Grauwe, P. (2011). The Governance of a Fragile Eurozone. *CEPS Working Document*, 346.

De Grauwe, P. (2006). What Have we Learnt about Monetary Integration since the Maastricht Treaty?. *Journal of Common Market Studies*, 44(4), 711-730.

De Grauwe, P., and Ji, Y. (2015). Correcting for the Eurozone Design Failures: The Role of the ECB. *Journal of European Integration*, 37(7), 739-754.

De Grauwe, P., and Ji, Y. (2014). Disappearing Government Bond Spreads in the Eurozone – Back to Normal?. *CEPS Working Document*, 396.

de Guindos, L. (2019). Communication, Expectations and Monetary Policy. Speech at ECB policy panel of the Annual Congress of the European Economic Association, Manchester, 27 August. Retrieved from: www.ecb.europa.eu/press/key/date/2019/html/ecb.sp190827~0941246e14.en.html

de Haan, J., and Siermann, C. L. J. (1996). Central Bank Independence, Inflation, and Political Instability in Developing Countries. *Journal of Economic Policy Reform*, 1(2), 135-147.

de Haan, J., Masciandaro, D., and Quintyn, M. (2008). Does Central Bank Independence Still Matter?. *European Journal of Political Economy*, 24(4), 717-721.

de Lhoneux, E. (2006). The Eurosystem. In *Legal Aspects of the European System of Central Banks: Liber Amicorium Paolo Zamboni Garavelli*. Frankfurt: ECB, 161-178.

Del Negro, M., and Sims, C. A. (2015). When does a central bank′ s balance sheet require fiscal support?. *Journal of Monetary Economics*, 73, 1-19.

Deroose , S., Hodson, D. and, Kuhlmann, J. (2007). The Legitimation of EMU: Lessons from the Early Years of the Euro. *Review of International Political Economy*, 14(5), 800-819.

Der Spiegel (2012). The World from Berlin: 'The ECB Is Doing Governments' Dirty Work'. *Spiegel Online*, accessible online at [last access 25/08/2019]: https://www.spiegel.de/international/europe/german-press-reactions-to-ecb-bond-purchase-program-of-mario-draghi-a-854566.html

De Rynck, S. (2016). Banking on a Union: The Politics of Changing Eurozone Banking Supervision. *Journal of European Public Policy*, 23(1), 119-135.

De Ville, F., and Berckvens, D. (2015). What do Eurozone Academics Think About EMU Reform? On Broad Support and German Exceptionalism. *Bruges Political Research Papers*, 41/2015.

Diessner, S. (2018a). Does the Monetary Dialogue Further the ECB's Democratic Accountability?. In: *Enhancing Parliamentary Oversight in the EMU: Stocktaking and Ways Forward*. Copenhagen: Think Tank Europa, 25-30.

Diessner, S. (2018b). The ECB's Capital Key Needs Rethinking – And Brexit Has Everything To Do With It. *LSE EUROPP blog*, accessible online at [last access 28/08/2019]: https://blogs.lse.ac.uk/europpblog/2018/11/30/the-ecbs-capital-key-needs-rethinking-and-brexit-has-everything-to-do-with-it/

Diessner, S. (2018c). Happy 20th Birthday, ECB – Here's to Many More?. *LSE EUROPP blog*, accessible online at [last access 20/08/2019]: https://blogs.lse.ac.uk/europpblog/2018/06/01/four-views-what-weve-learned-from-20-years-of-the-european-central-bank/#Three

Diessner, S. (2017). On Paradigms and Public Goods: Has the Eurozone Crisis Changed the Economic Paradigm of EMU?. In S. Collignon (ed.), *The Governance of European Public Goods: Towards a Republican Paradigm of European Integration*. Basingstoke, UK: Palgrave Macmillan, 79-116.

Diessner, S., and Lisi, G. (2019). Masters of the 'Masters of the Universe'? Monetary, Fiscal and Financial Dominance in the Eurozone. *Socio-Economic Review* (Early View).

Dietsch, P., Claveau, F., and Fontan, C. (2018) *Do Central Banks Serve the People?*. Cambridge: Polity Press.

DiMaggio, P., Nag, M., and Blei, D. M. (2013). Exploiting Affinities between Topic Modeling and the Sociological Perspective on Culture: Application to Newspaper Coverage of U.S. Government Arts Funding. *Poetics*, 41(6), 545-569.

Dimand, R. W. (1991). Cranks, Heretics and Macroeconomics in the 1930s. *History of Economics Review*, 16(1), 11-30.

Dincer, N. N., and Eichengreen, B. (2014). Central Bank Transparency and Independence: Updates and New Measures. *International Journal of Central Banking*, 10(1), 189-253.

Dincer, N. N., and Eichengreen, B. (2009). Central Bank Transparency: Causes, Consequences and Updates. *NBER Working Paper*, 14791.

Dowd, K. (2018). Against Helicopter Money. *Cato Journal*, 38(1), 147-169.

Draghi, M. (2016). Introductory Statement to the Press Conference. ECB, Frankfurt, 8 September 2016. Retrieved from: https://www.ecb.europa.eu/press/pressconf/2016/html/is160908.en.html

Draghi, M. (2014a). Financial Integration and Banking Union. Speech at the conference for the 20th anniversary of the establishment of the European Monetary Institute, Brussels, 12 February. Retrieved from: https://www.ecb.europa.eu/press/key/date/2014/html/sp140212.en.html

Draghi, M. (2014b). Unemployment in the Euro Area. Speech at the Federal Reserve Bank of Kansas City 38th Economic Policy Symposium, Jackson Hole, Wyoming, 22 August. Retrieved from: www.ecb.europa.eu/press/key/date/2014/html/sp140822.en.html

Draghi, M. (2012a). Hearing at the Committee on Economic and Monetary Affairs of the European Parliament on 25 April 2012. Retrieved from: https://www.ecb.europa.eu/press/key/date/2012/html/sp120425.en.html.

Draghi, M. (2012b). Verbatim of the Remarks Made by Mario Draghi. Speech at the Global Investment Conference, London, 26 July. Retrieved from: https://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html

Draghi, M. (2011a). Hearing Before the Plenary of the European Parliament on the Occasion of the Adoption of the Resolution on the ECB's 2010 Annual Report on 1 December 2011. Retrieved from: ecb.europa.eu/press/key/date/2011/html/sp111201.en.html

Draghi, M. (2011b). The Euro, Monetary Policy and the Design of a Fiscal Compact. Ludwig Erhard Lecture. Retrieved from: https://www.ecb.europa.eu/press/key/date/2011/html/sp111215.en.html

Draghi, M. (2011c). Introductory Statement to the Press Conference. Frankfurt, 8 December Retrieved from: https://www.ecb.europa.eu/press/pressconf/2011/html/is111208.en.html

Drakos, K., Kallandranis, C., and Karidis, S. (2019). Determinants of Trust in Institutions in Times of Crisis: Survey-Based Evidence from the European Union. *Journal of Common Market Studies*, Early View.

Dreher, A., Sturm, J.-E., and de Haan, J. (2008). Does High Inflation Cause Central Bankers to Lose Their Job? Evidence Based on a New Data Set. *European Journal of Political Economy*, 24(4), 778-787.

Duca, I., Kenny, G., and Reuter, A. (2017). Inflation Expectations, Consumption and the Lower Bound: Micro Evidence from a Large Euro Area Survey. *ECB Working Paper*, 2196.

Dunleavy, P. (1991). *Democracy, Bureaucracy and Public Choice*. Hemel Hempstead: Harvester Wheatsheaf.

Dyson, K. H. F., and Featherstone, K. (1999). *The Road to Maastricht: Negotiating Economic and Monetary Union*. Oxford: Oxford University Press.

Ehrmann, M., Gaballo, G., Hoffmann, P., and Strasser, G. (2019). Can More Public Information Raise Uncertainty? The International Evidence on Forward Guidance. *ECB Working Paper Series*, 2263.

Eichengreen, B., and Frieden, J. (1998) (eds.), *Forging an Integrated Europe*. Ann Arbor, MI: University of Michigan Press.

Eijffinger, S. C. W., and de Haan, J. (1996). The Political Economy of Central-Bank Independence. *Princeton University Special Papers in International Economics*, 19.

Eijffinger, S. C. W., and Schaling, E. (1993). Central Bank Independence: Theory and Evidence. *CentER Discussion Paper*, 9325.

Eijffinger, S. C. W., and Schaling, E. (1992). Central Bank Independence: Criteria and Indices. *Tilburg University Department of Economics Research Memorandum*, FEW 548.

El-Erian, M. (2016). *The Only Game in Town: Central Banks, Instability, and Avoiding the Next Collapse*, New York: Random House.

Enderlein, E., and Verdun, A. (2009). EMU's Teenage Challenge: What Have We Learned and Can We Predict from Political Science?. *Journal of European Public Policy*, 16(4), 490-507

Ernhagen, T., Vesterlund, M., and Viotti, S. (2002). How Much Equity Does a Central Bank Need?. *Sveriges Riksbank Economic Review*, 2/2002, 5-18.

European Central Bank (ECB) (2014a). Irish Letters. Retrieved from: https://www.ecb.europa.eu/press/html/irish-letters.en.html.

European Central Bank (ECB) (2014b). Letter from Trichet and Fernández Ordoñez to Zapatero. Retrieved from: https://www.ecb.europa.eu/pub/pdf/other/2011-08-05-letter-from-trichet-and-fernandez-ordonez-to-zapateroen.pdf

European Central Bank (ECB) (2012). Technical Features of Outright Monetary Transactions. Retrieved from: https://www.ecb.europa.eu/press/pr/date/2012/html/pr120906_1.en.html

European Central Bank (ECB) (2010a). ECB Increases Its Capital. Press release. Retrieved from: https://www.ecb.europa.eu/press/pr/date/2010/html/pr101216_2.en.html

European Central Bank (ECB) (2010b). Decision of the European Central Bank of 13 December 2010 on the increase of the European Central Bank's capital (ECB/2010/26) (2011/20/EU). Official Journal of the European Union, L 11/53.

European Central Bank (ECB) (2010c). *Convergence Report: May 2010*. Frankfurt: ECB.

European Central Bank (ECB) (2003). *Background Studies for the ECB's Evaluation of its Monetary Policy Strategy*. Frankfurt: ECB.

European Central Bank (ECB) (1999). *ECB Monthly Bulletin*, January 1999.

Favaretto, F., and Masciandaro, D. (2016). Doves, Hawks and Pigeons: Behavioral Monetary Policy and Interest Rate Inertia. *Journal of Financial Stability*, 27, 50-58.

Feld, L.P., Schmidt, C.M., Schnabel, I., and Wieland, V. (2016). Completing Maastricht 2.0 to Safeguard the Future of the Eurozone. In R. Baldwin, and F. Giavazzi (eds.), *How to Fix Europe’s Monetary Union: Views of Leading Economists*, London: CEPR Press, 46-61.

Fernandez-Albertos, J. (2015). The Politics of Central Bank Independence. *Annual Review of Political Science*, 18, 217-237.

Financial Times (FT) (2018). The Bank of England Future-Proofs Itself. *FT Free Lunch*, accessible online at [last access 03/12/2018]: https://www.ft.com/content/32b88a38-7868-11e8-8e67-1e1a0846c475.

Financial Times (FT) (2010). Mystery, Chicken, and the ECB's Capital Increase. *FT Alphaville*, accessible online at [last access 03/12/2017]: ftalphaville.ft.com/2010/12/17/440631/mystery-chicken-and-the-ecbs-capital-increase.

Fligstein, N., Brundage, J. S., and Schultz, M. (2017). Seeing Like the Fed: Culture, Cognition, and Framing in the Failure to Anticipate the Financial Crisis of 2008. *American Sociological Review*, 82(5), 879-909.

Fontan, C. (2018). Frankfurt's Double Standard: The Politics of the European Central Bank During the Eurozone Crisis. *Cambridge Review of International Affairs*, 31(2), 162-182.

Forder, J. (2005). Why Is Central Bank Independence So Widely Approved?. *Journal of Economic Issues*, 39(4), 843-865.

Forder, J. (2002). Interests and 'Independence': The European Central Bank and the Theory of Bureaucracy. *International Review of Applied Economics*, 16(1), 51-69.

Fourcade, M., Ollion, E., and Algan, Y. (2015). The Superiority of Economists. *The Journal of Economic Perspectives*, 29(1), 89-114.

Fraga, A., Goldfajn, I., and Minella, A. (2003). Inflation Targeting in Emerging Market Economies. *Banco Central do Brasil Working Paper Series*, 76.

Franzese, R. J. (1999). Partially Independent Central Banks, Politically Responsive Governments, and Inflation. *American Journal of Political Science*, 43(3), 681-706.

Freedman, C., Lane, P. R., Repullo, R., and Schmidt-Hebbel, K. (2011). *External Evaluation of the Directorate General Research of the European Central Bank*. Frankfurt: ECB.

Frieden, J. A. (1994). Exchange Rate Politics: Contemporary Lessons from American History. *Review of International Political Economy*, 1(1), 81-103.

Friedman, M. (1969). The Optimum Quantity of Money. In M. Friedman, *The Optimum Quantity of Money and Other Essays*, Chicago: Adline Publishing, 1-50.

Friedman, M. (1968). The Role of Monetary Policy. *American Economic Association Papers and Proceedings*, 58(1), 1-17.

Fry, M. J. (1993). The Fiscal Abuse of Central Banks. *IMF Working Paper*, 93/58.

Fry, M. J. (1992). Can a Central Bank Go Bust?. *Manchester School*, 60(S1), 85-98.

Fry, M J., Goodhart, C. A. E., and Almeida, A. (1996). *Central Banking in Developing Countries: Objectives, Activities and Independence*. London: Routledge.

Fueda-Samikawa, I., and Takano, T. (2018). The BOJ's Monetary Policy Dilemma. *Japan Center for Economic Research Report*, 38.

Fuest, C., and Sinn, H.-W. (2018). Target Risks Without Euro Exits. *CESifo Forum*, 19(4), 36-45.

Fujiki, H., and Tomura, H. (2017). Fiscal Cost to Exit Quantitative Easing: the Case of Japan. Japan and the World Economy, 42(C), 1-11.

Fujiki, H., Okina, K., and Shiratsuka, S. (2001). Monetary Policy under Zero Interest Rate: Viewpoints of Central Bank Economists. *Monetary and Economic Studies*, 19(1), 89-130.

Fukui, T. (2003). Challenges for Monetary Policy in Japan. Speech at the Spring Meeting of the Japan Society of Monetary Economics, Tokyo, 1 June.

Gabor, D. (2018). Why Shadow Banking Is Bigger Than Ever. *Jacobin Magazine*, accessible online at [last access 25/08/2019]: https://jacobinmag.com/2018/11/why-shadow-banking-is-bigger-than-ever

Gabor, D. (2016). The (Impossible) Repo Trinity: The Political Economy of Repo Markets. *Review of International Political Economy*, 23(6), 967-1000.

Gabor, D. (2014). Learning from Japan: The European Central Bank and the European Sovereign Debt Crisis. *Review of Political Economy*, 26(2), 190-209.

Gabor, D., and Jessop, B. (2014). Mark my Words: Discursive Central Banking in Crisis. In B. Jessop, B. Young and C. Scherrer (eds.), *Financial Cultures and Crisis Dynamics*. London, UK: Routledge, 294-315.

Garrett, G., and Weingast, B. (1993). Ideas, Interests, and Institutions: Constructing the European Community's Internal Market. In J. Goldstein, and R. O. Keohane (eds.), *Ideas and Foreign Policy*. Ithaca, NY: Cornell University Press, 173-206.

Garriga, A. C. (2016). Central Bank Independence in the World: A New Data Set. *International Interactions*, 42(5), 849-868.

Geithner, T. (2014). *Stress Test: Reflections on the Financial Crisis*. New York: Crown.

General Accounting Office (GAO) (2002). Federal Reserve System: The Surplus Account. Washington, D.C.: GAO.

Genschel, P., and Jachtenfuchs, M. (eds.) (2014). *Beyond the Regulatory Polity? The European Integration of Core State Powers*. Oxford: Oxford University Press.

German Council of Economic Experts (2018). Vor Wichtigen Wirtschaftspolitischen Entscheidungen. *Annual Report*, 18/19.

Giugliano, F. (2015). Central Banks: Peak Independence. *FT*. Accessible at [last access 28.08.2019]: https://www.ft.com/content/f0664634-7cd4-11e5-98fb-5a6d4728f74e

Golub, S., Kaya, A., and Reay, M. (2015). What Were They Thinking? The Federal Reserve in the Run-Up to the 2008 Financial Crisis. *Review of International Political Economy*, 22(2), 657-692.

Goodfriend, M. (2011). Central Banking in the Credit Turmoil: An Assessment of Federal Reserve Practice. *Journal of Monetary Economics*, 58(1), 1-12.

Goodfriend, M., and King, R. G. (1997). The New Neoclassical Synthesis and the Role of Monetary Policy. *NBER Macroeconomics*, 12, 231-296.

Goodhart, C. A. E. (2017). A Central Bank's Optimal Balance Sheet Size?. *CEPR Discussion Papers*, DP12272.

Goodhart, C. A. E. (2011). The Past Mirror: Notes, Surveys, Debates – The Changing Role of Central Banks, *Financial History Review*, 18(2), 135-154.

Goodhart, C.A.E. (1998). The Two Concepts of Money: Implications for the Analysis of Optimal Currency Areas. *European Journal of Political Economy*, 14(3), 407-432.

Goodhart, C.A.E. (1996). Why Do the Monetary Authorities Smooth Interest Rates?. *LSE Financial Market Group Special Papers*, 81.

Goodhart, C. A. E. (1992). Entretien. *Révue d'Économie Financière*, 22, 31-35.

Goodhart, C.A.E. (1989). *Money, Information and Uncertainty*. London: Palgrave Macmillan.

Goodhart, C. A. E., and Lastra, R. (2018). Populism and Central Bank Independence. *Open Economies Review*, 29(1), 49-68.

Goodhart, L. (2015). Brave New World? Macroprudential Policy and the New Political Economy of the Federal Reserve. *Review of International Political Economy*, 22(2), 280-310.

Gove, M. (2016). Interview with Faisal Islam. *Sky News*, accessible online at [last access 20/08/2019]: https://www.youtube.com/watch?v=GGgiGtJk7MA

Grabel, I. (2003). Ideology, Power, and the Rise of Independent Monetary Institutions in Emerging Economies. In Kirshner, J. (ed.), *Monetary Orders: Ambiguous Economics, Ubiquitous Politics*. Ithaca, NY, Cornell University Press, 25-52.

Greenspan, A. (1997). Rules vs. Discretionary Monetary Policy. Remarks at the 15th Anniversary Conference of the Center for Economic Policy Research at Stanford University, Stanford, California, September 5.

Gretschmann, K. (1991). European Monetary Union: Alice in Wonderland or Malice in Blunderland?. *Futures*, 23(7), 695-708.

Griffiths, T. L., and Steyvers, M. (2004). Finding Scientific Topics. *Proceedings of the National Academy of Sciences*, 101, 5228-5235.

Grimmer, J., and Stewart, B. (2013). Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts. *Political Analysis*, 21(3), 267-297.

Grilli, V., Masciandaro, D., Tabellini, G., Malinvaud, E., and Pagano, M. (1991). Political and Monetary Institutions and Public Financial Policies in the Industrial Countries. *Economic Policy*, 6(13), 342-392.

Gros, D. (2012). The Big Easing. *CEPS Commentary*. Retrieved from: http://aei.pitt.edu/34518/1/DG_The_Big_Easing.pdf

Grün, B., and Hornik, K. (2011). Topicmodels: An R Package for Fitting Topic Models. *Journal of Statistical Software*, 40, 1-30.

Haldane, A. (2018a). Folk Wisdom. Speech given at the 100th Anniversary of the Bank of Estonia, Tallinn, 19 September.

Haldane, A. (2018b). Climbing the Public Engagement Ladder. Speech given at the Royal Society for the Encouragement of Arts, Manufactures and Commerce (RSA), London, 6 March.

Haldane, A. (2017a). Everyday Economics. Speech given at Nishkam High School, Birmingham, 27 November.

Haldane, A. (2017b). A Little More Conversation, A Little Less Action. Speech given at the Federal Reserve Bank of San Francisco Macroeconomics and Monetary Policy Conference, San Francisco, 31 March.

Haldane, A. (2016). The Great Divide. Speech given at the New City Agenda Annual dinner, London, 18 May.

Haldane, A., and McMahon, M. (2018). Central Bank Communications and the General Public. *AEA Papers and Proceedings*, 108, 578-583.

Hall, P. A. (1993). Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain. Comparative Politics, 25(3), 275-296.

Hall, P. A. (ed.) (1989). The Political Power of Economic Ideas: Keynesianism Across Nations. Princeton, N.J. : Princeton University Press.

Hall, P. A., and Franzese, R. J. (1998). Mixed Signals: Central Bank Independence, Coordinated Wage Bargaining, and European Monetary Union. *International Organization*, 52(3), 505-535.

Hall, R. B. (2008). *Central Banking as Global Governance: Constructing Financial Credibility* (Cambridge Studies in International Relations, 109). Cambridge, UK: Cambridge University Press.

Hall, R. E., and Reis, R. (2015). Maintaining Central-Bank Financial Stability under New-Style Central Banking. *NBER Working Paper*, 21173.

Hampl, M., and Havranek, T. (2019). Central Bank Equity as an Instrument of Monetary Policy. *Comparative Economic Studies* (Early View).

Hancké, R. (2013). *Unions, Central Banks, and EMU: Labour Market Institutions and Monetary Integration in Europe*. Oxford: Oxford University Press.

Hancké, R., and Soskice, D. (2003). Wage-Setting and Inflation Targets in EMU. *Oxford Review of Economic Policy*, 19(1), 149-160.

Hannoun, H. (2012). Monetary Policy in Crisis: Testing the Limits of Monetary Policy. Speech at the 47th SEACEN governors conference, Seoul, Korea, 13-14 February. Retrieved from: https://www.bis.org/speeches/sp120216.htm

Hansen, S., McMahon, M., and Prat, A. (2018). Transparency and Deliberation within the FOMC: A Computational Linguistics Approach. *Quarterly Journal of Economics*, 133(2), 801-870.

Hawkins, D.G., Lake, D.A., Nielson, D.L., and Tierney, M.J. (Eds.) (2006). *Delegation and Agency in International Organizations*. Cambridge: Cambridge University Press.

Hay, C., and Rosamond, B. (2002). Globalization, European Integration and the Discursive Construction of Economic Imperatives. *Journal of European Public Policy*, 9(2), 147-167.

Hayo, B., and Neuenkirch, E. (2017). The Influence of Media Use on Layperson Monetary Policy Knowledge in Germany. *Scottish Journal of Political Economy*, 65(1), 1-26.

Hayo, B., and Neuenkirch, E. (2014). The German Public and its Trust in the ECB: The Role of Knowledge and Information Search. *Journal of International Money and Finance*, 47, 286-303.

Hayo, B., and Neuenkirch, M. (2015). Central Bank Communication in the Financial Crisis: Evidence from a Survey of Financial Market Participants. *Journal of International Money and Finance*, 59, 166-181.

Heipertz, M., and Verdun, A. (2010). *Ruling Europe: The Politics of the Stability and Growth Pact*. Cambridge: Cambridge University Press.

Helleiner, E. (1994). *States and the Reemergence of Global Finance*. Ithaca, NY: Cornell University Press.

Hellwig, M. (2014). Financial Stability, Monetary Policy, Banking Supervision, and Central Banking. *Preprints of the Max Planck Institute for Research on Collective Goods*, July 2014.

Henning, C. R. (2016). The ECB as a Strategic Actor: Central Banking in a Politically Fragmented Monetary Union. In J. A. Caporaso and M. Rhodes (eds.), *The Political and Economic Dynamics of the Eurozone Crisis*. Oxford: Oxford University Press, 167-199.

Hirschman, D., and Berman, E. P. (2014). Do Economists Make Policies? On the Political Effects of Economics. *Socio-Economic Review*, 12(4), 779-811.

HM Treasury (2018). Financial Relationship Between HM Treasury and the Bank of England: Memorandum of Understanding. London: HM Treasury.

Hodson, D., and Maher, I. (2002). Economic and Monetary Union: Balancing Credibility and Legitimacy in an Asymmetric Policy-Mix. *Journal of European Public Policy*, 9(3), 391-407.

Högenauer, A.-L., and Howarth, D. (2019). The Parliamentary Scrutiny of Euro Area National Central Banks. *Public Administration*, Early View.

Höing, O., and Kunstein, T. (2019). Political Science and the Eurozone Crisis. A Review of Scientific Journal Articles 2004–15. *Journal of Common Market Studies*, 57(2), 298-316.

Höpner, M. (2018). Die Debatte um MMT: Eine Nachlese. *Makroskop*, accessible online at [last access 18/08/2019]: makroskop.eu/2018/04/die-debatte-um-mmt-eine-nachlese/

Höpner, M., and Jurczyk, B. (2015). How the Eurobarometer Blurs the Line between Research and Propaganda. *MPIfG Discussion Paper*, 15/6.

Holmes, D. R. (2014). *Economy of Words. Communicative Imperatives in Central Banks*. Chicago, IL: Chicago University Press.

Household Finance and Consumption Network (HFCN) (2016). The Household Finance and Consumption Survey: Methodological Report for the Second Wave. *ECB Statistics Paper Series*, 17.

Howarth, D. (2004). The ECB and the Stability Pact: Policeman and Judge?. Journal of European Public Policy, 11(5), 832-853.

Huber, J. D., and Shipan, C. R. (2002). *Deliberate Discretion? The Institutional Foundations of Bureaucratic Autonomy*. Cambridge: Cambridge University Press

Hughes Hallett, A., and Lewis, J. (2015). Monetary Policy and Sovereign Debt: Does the ECB Take the Eurozone's Fiscal Risks Into Account?. *Empirica*, 42(3), 499-520.

Illing, G., and König, P. (2014). The European Central Bank as Lender of Last Resort. *DIW Economic Bulletin*, 9.2014.

Ingham, G., Coutts, K., and Konzelmann, S. (2016). Introduction: 'Cranks' and 'Brave Heretics': Rethinking Money and Banking after the Great Financial Crisis. *Cambridge Journal of Economics*, 40(5), 1247-1257.

Ingram, I. (2011). Funding Models for Central Banks: The European Central Bank – A Special Case?. In S. Milton and P. Sinclair (eds.), *The Capital Needs of Central Banks*, London and New York: Routledge, 145-168.

Irwin, N. (2013). *The Alchemists: Three Central Bankers and a World on Fire*. New York, NY: Penguin Press.

Issing, O. (2006). The ECB's Monetary Policy Strategy: Why Did We Choose a Two Pillar Approach?. Contribution to 4th ECB Central Banking Conference 'The role of Money: Money and Monetary Policy in the Twenty-First Century', Frankfurt, 10 November.

Issing, O. (1999). The Eurosystem: Transparent and Accountable or 'Willem in Euroland'. *Journal of Common Market Studies*, 37(2), 503-519.

Issing, O., Gaspar, V., Vestin, D., and Tristani, O. (2005). *Imperfect Knowledge and Monetary Policy*. Cambridge, UK: Cambridge University Press.

Iversen, T., and Soskice, D. (2019). *Democracy and Prosperity: Reinventing Capitalism through a Turbulent Century*. Princeton, NJ: Princeton University Press.

Iversen, T., and Soskice, D. (2013). A Structural-Institutional Explanation of the Eurozone Crisis. Unpublished Manuscript. Retrieved from http://www.people.fas.harvard.edu/~iversen/PDFfiles/Iversen&Soskice_euro2015.pdf

Iversen, T., Soskice, D., and Hope, D. (2016). The Eurozone and Political Economic Institutions. *Annual Review of Political Science*, 19, 163-185.

Jabko, N. (2019). Contested Governance: The New Repertoire of the Eurozone Crisis. *Governance*, 32(3), 493-509.

Jabko, N. (2006). *Playing the Market: A Political Strategy for Uniting Europe, 1985-2005*. Ithaca, NY: Cornell University Press.

Jacome, L., and Vazquez, F. (2008). Is There Any Link Between Legal Central Bank Independence and Inflation? Evidence from Latin America and the Caribbean. *European Journal of Political Economy*, 24(4), 788-801.

James, H. (2012). *Making the European Monetary Union*. Cambridge, MA: Harvard University Press.

Jeanne, O., and Svensson, L. E.O. (2004). Credible Commitment to Optimal Escape from a Liquidity Trap: The Role of the Balance Sheet of an Independent Central Bank. *NBER Working Paper Series*, 10679.

Jones, C. (2017). Why the ECB Wants Unions to Increase Wage Demands. *FT*, accessible at [last access 28.08.2019]: ft.com/content/8f61a3ac-a29c-11e7-9e4f-7f5e6a7c98a2

Jones, E. (2019). Do Central Bankers Dream of Political Union? From Epistemic Community to Common Identity. *Comparative European Politics*, 17(4), 530-547.

Jones, E. (2009). Output Legitimacy and the Global Financial Crisis: Perceptions Matter. *Journal of Common Market Studies*, 47(5), 1085-1105.

Jones, E. (2013). The Collapse of the Brussels-Frankfurt Consensus and the Future of the Euro. In V. A. Schmidt, and M. Thatcher (eds.), *Resilient Liberalism in Europe's Political Economy*. Cambridge: Cambridge University Press, 145-170.

Jones, E., and Matthijs, M. (2019). Rethinking Central-Bank Independence. *Journal of Democracy*, 30(2), 127-141.

Johnson, J., Arel-Bundock, V., and Portniaguine, V. (2018). Adding Rooms onto a House We Love: Central Banking After the Global Financial Crisis. *Public Administration*, Early View.

Johnson, J. (2016). *Priests of Prosperity: How Central Bankers Transformed the Postcommunist World*. Ithaca, NY: Cornell University Press.

Johnson, J. (2006). Two-Track Diffusion and Central Bank Embeddedness: The Politics of Euro Adoption in Hungary and the Czech Republic. *Review of International Political Economy*, 13(3), 361-386.

Jost, A. (2017). Is Monetary Policy Too Complex for the Public? Evidence from the UK. *SNB Working Papers*, 15/2017.

Jourdan, S., and Diessner, S. (2019). *From Dialogue to Scrutiny: Strengthening the Parliamentary Oversight of the European Central Bank*. Brussels: Positive Money Europe.

Kachur, I., Lepushynskyi, V., and Zammit, R. (2016). The NBU's Balance Sheet: Before, During, and After the Crisis. *Visnyk of the National Bank of Ukraine*, 09/2016.

Kahneman, D., and Tversky, A. (1979). Prospect Theory: An Analysis of Decision Under Risk. *Econometrica*, 47(2), 263-291.

Kaltenthaler, K., Anderson, C., and Miller, W. (2010). Accountability and Independent Central Banks: Europeans and Distrust of the European Central Bank. *Journal of Common Market Studies*, 48(5), 1261-1281.

Kapstein, E. (1992). Between Power and Purpose: Central Bankers and the Politics of Regulatory Convergence. *International Organization*, 46(1), 265-287.

Karl, A. G. (2013). 'Bank Talk', Performativity and Financial Markets. *Journal of Cultural Economy*, 6(1), 63-77.

Katz, D., and Allport, F. (1931). *Student Attitudes*. Syracuse: Craftsman.

Katzenstein, P. (1997) (ed.), *Tamed Power: Germany in Europe*. Ithaca, NY: Cornell University Press.

Katzenstein, P. J., and Nelson, S. C. (2013). Reading the Right Signals and Reading the Signals Right: IPE and the Financial Crisis of 2008. *Review of International Political Economy*, 20(5), 1101-1131.

Keefer, P., and Stasavage, D. (2003). The Limits of Delegation: Veto Players, Central Bank Independence, and the Credibility of Monetary Policy. *American Political Science Review*, 97(3), 407-423.

King, M. A. (2004). The Institutions of Monetary Policy. The Ely Lecture. Speech at the American Economic Association Annual Meeting, San Diego, 12 January. Retrieved from: https://www.bankofengland.co.uk/-/media/boe/files/speech/2004/the-institutions-of-monetary-policy.pdf

King, M. A. (1997). Changes in UK Monetary Policy: Rules and Discretion in Practice. *Journal of Monetary Economics*, 39(1), 81-97.

Kirshner, J. (2003). The Inescapable Politics of Money. In Kirshner, J. (ed.), *Monetary Orders: Ambiguous Economics, Ubiquitous Politics*. Ithaca, NY: Cornell University Press, 3-24.

Klüh, U., and Stella, P. (2008). Central Bank Financial Strength and Policy Performance: An Econometric Evaluation. *IMF Working Paper*, 08/176.

Kotz, H.-H. (2017). Panel 3: Conducting Monetary Policy When Fiscal Space is Limited. In B. Jazbec, and B. Banerjee (eds.), *Rethinking Monetary-Fiscal Policy Coordination*, Ljubljana: Bank of Slovenia, 87-97.

Krahnen, J. P. (2019). Target Balances and Financial Crises. *SAFE Policy Letter*, 71.

Krahnen, J. P. (2018). Über Scheinriesen: Was TARGET-Salden Tatsächlich Bedeuten – Eine Finanzökonomische Überprüfung. *SAFE White Paper*, 56.

Krippner, G. (2007). The Making of US Monetary Policy: Central Bank Transparency and the Neoliberal Dilemma. *Theory and Society*, 36(6), 477-513.

Krishnamurthy, A., Nagel, S., and Vissing-Jorgensen, A. (2017). ECB Policies Involving Government Bond Purchases: Impact and Channels. *NBER Working Paper*, 23985.

Krugman, P. (2019). Running on MMT (Wonkish). *New York Times Opinion*, accessible online at [last access 18/08/2019]: https://www.nytimes.com/2019/02/25/opinion/running-on-mmt-wonkish.html

Krugman, P. (1998). It's Baaack! Japan's Slump and the Return of the Liquidity Trap. *Brookings Papers on Economic Activity*, 2, 137-187.

Kryvtsov, O., and Petersen, L. (2019). Central Bank Communication That Works: Lessons from Lab Experiments. *Bank of Canada Staff Working Paper*, 2019-21.

Kuehnhanss, C. R., Heyndels, B., and Hilken, K., (2015). Choice in Politics: Equivalency Framing in Economic Policy Decisions and the Influence of Expertise. *European Journal of Political Economy*, 40, 260-274.

Kydland, F. E., and Prescott, E. C. (1977). Rules Rather Than Discretion: The Inconsistency of Optimal Plans. *Journal of Political Economy*, 85(3), 473-491.

Labonte, M. (2017). Federal Reserve: Oversight and Disclosure Issues. *Congressional Research Service (CRS) Report*, R42079.

Laidler, D. (1991). Price Stabilization in the 1990s: A Summary. In Kumiharu Shigehara (ed.), *Price Stabilization in the 1990s*, London: The MacMillan Press Ltd.

Larch, M., and Braendle, T. (2018). Independent Fiscal Councils: Neglected Siblings of Independent Central Banks? An EU Perspective. *Journal of Common Market Studies*, 56(2), 267-283.

Lastra, R. M. (2014). The Role of Central Banks in Monetary Affairs: A Comparative Perspective. In T. Cottier, R. M. Lastra, C. Tietje, and L. Satragno (eds.), *The Rule of Law in Monetary Affairs*. Cambridge: Cambridge University Press, 78-102.

Leeper, E. M. (2010). Monetary Science, Fiscal Alchemy. *NBER Working Paper*, 16510.

Leeper, E. M., and Nason, J. M. (2015). Bringing Financial Stability into Monetary Policy. *Sveriges Riksbank Research Paper*, 129.

Levy-Yeyati, E., and Sturzenegger, F. (2005). Classifying Exchange Rate Regimes: Deeds Versus Words. *European Economic Review*, 49(6), 1603-1635.

Lo, A. W. (2012). Reading About the Financial Crisis: A Twenty-One-Book Review. *Journal of Economic Literature*, 50(1), 151-178.

Lockwood, E. (2016). The Global Politics of Central Banking: A View From Political Science. *Mario Einaudi Center for International Studies Working Paper*, 5-16.

Lohmann, S. (2003). Why Do Institutions Matter? An Audience-Cost Theory of Institutional Commitment, *Governance*, 16(1), 95-110.

Lohmann, S. (1998). Federalism and Central Bank Independence: The Politics of German Monetary Policy, 1957-92. *World Politics*, 50(3), 401-446.

Lohmann, S. (1992). Optimal Commitment in Monetary Policy: Credibility versus Flexibility. American Economic Review, 82(1), 273-286.

Lokdam, H. (forthcoming). *Banking on Sovereignty – The Political Theory of Central Bank Independence and the European Central Bank*. PhD dissertation. London: LSE.

Lombardi, D., and Moschella, M. (2016). The Government Bond Buying Programmes of the European Central Bank: An Analysis of Their Policy Settings. *Journal of European Public Policy*, 23(6), 851-870.

Lonergan, E. (2019). It's Time for the ECB to Use its Monetary Power. *Philosophy of Money blog*, accessible online at [last access 24/08/2019]: www.philosophyofmoney.net/time-ecb-use-monetary-power/

Ludlow, P. (1982). *The Making of the European Monetary System: A Case Study of the Politics of the European Community*. London: Butterworths.

Lusardi, A., and Mitchell, O. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, 52(1), 5-44.

Lütz, S., Hilgers S., and Schneider, S. (2019). Accountants, Europeanists and Monetary Guardians: Bureaucratic Cultures and Conflicts in IMF-EU Lending Programs, *Review of International Political Economy*, Early View.

Mabbett, D., and Schelkle, W. (2019). Independent or lonely? Central banking in crisis. *Review of International Political Economy*, 26(3), 436-460.

Mair, P. (2011). Bini Smaghi vs. the Parties: Representative Government and Institutional Constraints. *EUI Working Paper*, RSCAS 2011/22.

Majone, G. (2010). Transaction-Cost Efficiency and the Democratic Deficit. *Journal of European Public Policy*, 17(2), 150-175.

Majone, G. (2001). Two Logics of Delegation: Agency and Fiduciary Relations in EU Governance. *European Union Politics*, 2(1), 103-122.

Mandelkern, R. (2019). Neoliberal Ideas of Government and the Political Empowerment of Economists in Advanced Nation-States: The Case of Israel. *Socio-Economic Review*, Early View.

Mankiw, N. G., Reis, R., and Wolfers, J. (2004). Disagreement About Inflation Expectations. *NBER Macroeconomics Annual*, 18, 209-270.

Marcussen, M. (2009). 'Scientization' of Central Banking: The Politics of A-Politicization. In K. Dyson and M. Marcussen (eds.), *Central Banks in the Age of the Euro: Europeanization, Convergence, and Power*. Oxford: Oxford University Press, 373-390.

Marcussen, M. (2006). The Transnational Governance Network of Central Bankers. In M. Djelic and K. Sahlin-Andersson (eds.), *Transnational Governance: Institutional Dynamics of Regulation*. Cambridge: Cambridge University Press, 180-204.

Marsh, D. (2011). *The Euro: The Battle for the New Global Currency*. New Haven, CT: Yale University Press.

Mas, I. (1995). Central Bank Independence: A Critical View from a Developing Country Perspective. *World Development*, 23(10), 1639-1652.

Matthijs, M., and Blyth, M. (2018). When Is It Rational to Learn the Wrong Lessons? Technocratic Authority, Social Learning, and Euro Fragility. *Perspectives on Politics*, 16(1), 110-126.

McCallum, B. T. (1997). Crucial Issues Concerning Central Bank Independence. *Journal of Monetary Economics*, 39(1), 99-112.

McCubbins, M., Noll, R., and Weingast, B. R. (1989). Structure and Process, Politics and Policy: Administrative Arrangements and the Political Control of Agencies. *Virginia Law Review*, 75(2), 431-482.

McGoey, L. (2019). *The Unknowers How Strategic Ignorance Rules the World*. Chicago, IL: Zed Books.

McGoey, L. (2012). The Logic of Strategic Ignorance. *British Journal of Sociology*, 63(3), 553-576.

McInnes, B. (2004). Extending the Log Likelihood Measure to Improve Collocation Identification. Master's Thesis. Accessible at [last access 28.08.2019]: http://www.d.umn.edu/~tpederse/Pubs/bridget-thesis.pdf

McMahon, M. (2018). Speaking to the Masses on Monetary Policy. *Competitive Advantage in the Global Economy (CAGE)*, Spring 2018, 14-17.

McNamara, K. R. (2006). Economic Governance, Ideas and EMU: What Currency Does Policy Consensus Have Today?. *Journal of Common Market Studies*, 44(4), 803-821.

McNamara, K. R. (2002). Rational Fictions: Central Bank Independence and the Social Logic of Delegation. *West European Politics*, 25(1), 47-76.

McNamara, K. R. (1999). Consensus and Constraint: Ideas and Capital Mobility in European Monetary Integration. *Journal of Common Market Studies*, 37(3), 455-476.

McNamara, K. R. (1998). *The Currency of Ideas: Monetary Politics in the European Union*. Ithaca, NY: Cornell University Press.

Mee, S. (2019). *Central Bank Independence and the German Past*. Cambridge, UK: Cambridge University Press.

Mellina, S. & Schmidt, T. (2018). The Role of Central Bank Knowledge and Trust for the Public's Inflation Expectations. *Deutsche Bundesbank Discussion Papers*, 32/2018.

Meltzer, A. H. (2014). Federal Reserve Independence. *Journal of Economic Dynamics and Control*, 49, 160-163.

Meltzer, A. H. (1999). Comments: What More Can the Bank of Japan Do?. *Monetary and Economic Studies*, 17(3), Institute for Monetary and Economic Studies, December.

Mersch, Y. (2016). The ECB and the Federal Reserve – An Ocean Apart?. Speech at the European Economic Policy Forum, Harvard University, Boston, Massachusetts, 12 October. Retrieved from: https://www.ecb.europa.eu/press/key/date/2016/html/sp161012_1.en.html

Milton, S., and Sinclair, P. (eds.) (2011). *The Capital Needs of Central Banks*. London: Routledge.

Mishkin, F. (2012). Central Banking After the Crisis. Speech given at the 16th Annual Conference of the Central Bank of Chile, 15-16 November. Retrieved from: https://www0.gsb.columbia.edu/faculty/fmishkin/papers/12chile.pdf

Mishra, P., and, Reshef, A. (2019). How Do Central Bank Governors Matter? Regulation and the Financial Sector. *Journal of Money, Credit and Banking*, 51(2-3), 369-402.

Mohr, J., and Bogdanov, P. (2013). Introduction – Topic Models: What They Are and Why They Matter. *Poetics*, 41(6), 545-569.

Montgomerie, J. (2016). Austerity and the Household: The Politics of Economic Storytelling. *British Politics*, 11(4), 418-437.

Moravcsik, A. (1998). *The Choice for Europe: Social Purpose and State Power from Messina to Maastricht*. Ithaca, NY: Cornell University Press.

Morgan, M. S. (2006). Economic Man as Model Man: Ideal Types, Idealization and Caricatures. *Journal of the History of Economic Thought*, 28(1), 1-27.

Morgan, M. S., and den Butter, F. (1998). Empirical Models and Policy Making. *Economic Modelling Special Issue*, 15(3).

Morris, J. H. (2018). *Securing Finance, Mobilizing Risk: Money Cultures at the Bank of England*. London: Routledge.

Morris, J. H. (2016). The Performativity, Performance and Lively Practices in Financial Stability Press Conferences. *Journal of Cultural Economy*, 9(3), 245-260.

Morrison, J. A. (2015). This Means (Bank) War! Corruption and Credible Commitments in the Collapse of the Second Bank of the United States. *Journal of the History of Economic Thought*, 37(2), 221-245.

Moschella, M., and Pinto, L. (2018). Central Banks' Communication as Reputation Management: How the Fed Talks under Uncertainty. *Public Administration*, Early View.

Moss, B. H. (2005) (ed.), *Monetary Union in Crisis: The European Union as a Neo-Liberal Construction*. Basingstoke: Palgrave Macmillan.

Mudge, S. L., and Vauchez, A. (2018). Too Embedded to Fail: The ECB and the Necessity of Calculating Europe. *Historische Sozialforschung*, 43(3), 248-273.

Mudge, S. L., and Vauchez, A. (2016). Fielding Supranationalism: The European Central Bank as a Field Effect. *The Sociological Review*, 64(2), 146-169.

Mudge, S. L., and Vauchez, A. (2012). Building Europe on a Weak Field. Law, Economics, Scholarly Avatars and Transnational Fields. *American Journal of Sociology*, 118 (2), 449-492.

Muguruma, N. (2018). Is the Bank of Japan Technically Insolvent? Dangers Involved in Long-Term Deterioration of BoJ Financial Position. *Discuss Japan – Japan Foreign Policy Forum*, 43.

Nelson, S. C., and Katzenstein, P. J. (2014). Uncertainty, Risk, and the Financial Crisis of 2008. *International Organization*, 68(2), 361-392.

Nikkei Asian Review (2015). BOJ Announces Plan to Shield its Balance Sheet. *Nikkei Asian Review Economy*, accessible online at [last access 24/08/2019]: https://asia.nikkei.com/Economy/BOJ-announces-plan-to-shield-its-balance-sheet

Oatley, T. (1999). Central Bank Independence and Inflation: Corporatism, Partisanship, and Alternative Indices of Central Bank Independence. *Public Choice*, 98(3-4), 399-413.

OMFIF (2019). *Banking on Balance: Diversity in Central Banks and Public Investment – Gender Balance Index 2019*. London: Official Monetary and Financial Institutions Forum.

OMFIF (2018). *Central Bank Digital Currencies*. Report with IBM Blockchain World Wire. London: Official Monetary and Financial Institutions Forum.

Orléan, A. (2008). Monetary Beliefs and the Power of Central Banks. In J.-P. Touffut (ed.), *Central Banks as Economic Institutions*. Cheltenham, UK: Edward Elgar, 7-21.

Orphanides, A. (2018). The Boundaries of Central Bank Independence: Lessons from Unconventional Times. *Monetary and Economic Studies*, 36, 35-56.

Orphanides, A. (2017). The Fiscal-Monetary Policy Mix in the Euro Area: Challenges at the Zero Lower Bound. *European Economy Discussion Paper*, 060.

Padoa-Schioppa, T. (2004). *The Euro and its Central Bank: Getting United After the Union*. Cambridge, MA: MIT Press.

Padoa-Schioppa, T. (2000). An Institutional Glossary of the Eurosystem. *Center for European Integration Studies Working Paper*, B-16, University of Bonn, 23-37.

Padoa-Schioppa, T., King, M., Paelinck, J-H. P., Papademos, L. D., Pastor, A., and Scharpf, F. W. (1987). *Efficiency, Stability and Equity: A Strategy for the Evolution of the Economic System of the European Community*. Brussels: European Commission.

Park, G., Katada, S.N., Chiozza, G., and Kojo, Y. (2018). *Taming Japan's Deflation: The Debate over Unconventional Monetary Policy*. Cornell Studies in Money. Ithaca, NY: Cornell University Press

Park, S. G. (2015). Central Banks' Quasi-Fiscal Policies and Inflation. *International Journal of Central Banking*, 11(2), 199-236.

Parsons, C. (2002). Showing Ideas as Causes: The Origins of the European Union. *International Organization*, 55(1), 47-84.

Perera, A., Ralston, D., and Wickramanayake, J. (2013). Central bank financial strength and inflation: Is there a robust link?. *Journal of Financial Stability*, 9(3), 399-414.

Pew Research Center (Pew) (2019). *Public Trust in Government: 1958-2019*. Washington: Pew Research Center.

Pfister, C., and Valla, N. (2018). 'New Normal' or 'New Orthodoxy'? Elements of a Central Banking Framework for the After-Crisis. *Banque de France Working Paper,* 680.

Pinter, J. (2018). Does Central Bank Financial Strength Really Matter for Inflation? The Key Role of the Fiscal Support, *Open Economies Review*, 29(5), 911-952.

Plehwe, D., Neujeffski, M., McBride, S., and Evans, B. (eds.) (2019). *Austerity: 12 Myths Exposed*. Berlin: Social Europe Publishing.

Pollack, M. A. (1997). Delegation, Agency, and Agenda Setting in the European Community. *International Organization*, 51(1), 99-134.

Pollock, A. (2018). Slick Accounting at the Federal Reserve Could Prove Disastrous. *The Hill opinion,* accessible online at [last access 18/08/2019]: https://thehill.com/opinion/finance/382629-slick-accounting-at-the-federal-reserve-could-prove-disastrous

Posen, A. (2017). In the Fray, Not Above It – Observations on the Global History of Central Bank Independence. Presentation given at the Bank of England Conference 'Independence: 20 Years On'. London, 28-29 September 2017.

Posen, A. (1995). Declarations Are Not Enough: Financial Sector Sources of Central Bank Independence. In B. Bernanke and J. Rotemburg (eds.). *NBER Macroeconomics Annual 1995*. Cambridge, MA: MIT Press, 253-274.

Posen, A. S. (1993). Why Central Bank Independence Does Not Cause Low Inflation: There is No Institutional Fix for Politics. In R. O'Brien (ed.), *Finance and the International Economy 7*. Oxford: Oxford University Press, 40-65.

Powell, J. (2019). Monetary Policy in the Post-Crisis Era. Speech given at 'Bretton Woods: 75 Years Later – Thinking about the Next 75', Paris, 16 July.

Praet, P. (2012a). Monetary Policy at Crisis Times. Speech at the International Center for Monetary and Banking Studies, Geneva, 20 February. Retrieved from: https://www.ecb.europa.eu/press/key/date/2012/html/sp120220.en.html

Praet, P. (2012b). The Role of the Central Bank and Euro Area Governments in Times of Crisis. Speech at the German Federal Ministry of Finance, Berlin, 19 April. Retrieved from: https://www.ecb.europa.eu/press/key/date/2012/html/sp120419.en.html

Pringle, R. (2003). Why Central Banks Need Capital. *Central Banking*, XIV(1).

Proctor, R., and Schiebinger, L. (eds.). (2008). *Agnatology: The Making and Unmaking of* Ignorance. Palo Alto: Stanford University Press.

Quinn, K. M., Monroe, B. L., Colaresi, M., Crespin, M. H., and Radev, D. R. (2010). How to Analyze Political Attention with Minimal Assumptions and Costs. *American Journal of Political Science*, 54(1), 209-228.

Reinhart, C., and Rogoff, K. (2004). The Modern History of Exchange Rate Arrangements: A Reinterpretation. *Quarterly Journal of Economics*, 119(1), 1-48.

Reis, R. (2019). Can the Central Bank Alleviate Fiscal Burdens?. In D. G. Mayes, P. L. Siklos, and J.-E. Sturm (eds.), *The Oxford Handbook of the Economics of Central Banking*, Oxford: Oxford University Press, 131-170.

Reis, R. (2015). Different Types of Central Bank Insolvency and the Central Role of Seignorage. *NBER Working Paper Series*, 21226.

Reis, R. (2013a). The mystique surrounding the central bank's balance sheet, applied to the European crisis. *American Economic Review: Papers and Proceedings*, 103(3), 135-140.

Reis, R. (2013b). Central Bank Design. *Journal of Economic Perspectives*, 27(4), 17-44.

Reis, R. (2006). Inattentive Consumers. *Journal of Monetary Economics*, 53(8), 1761-1800.

Ricardo, D. (1871[1824]). Plan for the Establishment of a National Bank. In J. R. McCulloch (ed.), *The Works of David Ricardo – With a Notice of the Life and Writings of the Author*. London: John Murray.

Riles, A. (2018). *Financial Citizenship: Experts, Publics, and the Politics of Central Banking*. Ithaca, NY: Cornell University Press.

Robinson, D. J., and Stella, P. (1988). Amalgamating Central Bank and Fiscal Deficits. In M. I. Blejer and K. Chu (eds.), *Measurement of Fiscal Impacts: Methodological Issues* (Occasional Paper 59). Washington, D.C.: International Monetary Fund, 20-31.

Rogoff, K. (1985). The Optimal Degree of Commitment to an Intermediate Monetary Target. *Quarterly Journal of Economics*, 100(4), 1169-1189.

Romelli, D. (2018). The Political Economy of Reforms in Central Bank Design: Evidence From a New Dataset. *BAFFI CAREFIN Centre Research Paper*, 2018-87.

Roubini, N. (2018). Crypto is the Mother of All Scams and (Now Busted) Bubbles, While Blockchain Is The Most Over-Hyped Technology Ever, No Better than a Spreadsheet/ Database. Testimony for the Hearing of the US Senate Committee on Banking, Housing and Community Affairs On 'Exploring the Cryptocurrency and Blockchain Ecosystem', Washington, D.C.: US Senate, 11 October.

Sadeh, T. (2018). How Did the Euro Area Survive the Crisis?. *West European Politics*, 42(1), 201-226.

Sadeh, T., and Verdun, A. (2009). Explaining Europe's Monetary Union: A Survey of the Literature. *International Studies Review*, 11(2), 277-301.

Saka, O., Fuertes, A. M., and Kalotychou, E. (2015). ECB Policy and Eurozone Fragility: Was De Grauwe Right?. *Journal of International Money and Finance*, 54, 168-185.

Sánchez-Cuenca, I. (2017). From a Deficit of Democracy to a Technocratic Order: The Postcrisis Debate on Europe. *Annual Review of Political Science*, 20, 351-369.

Sargent, T. J., and Wallace, N. (1981). Some Unpleasant Monetarist Arithmetic. *Federal Reserve Bank of Minneapolis Quarterly Review*, Fall 1981, 1-17.

Saurugger, S. (2016). Sociological Approaches to the European Union in Times of Turmoil, *Journal of Common Market Studies*, 54(1), 70-86.

Saurugger, S. (2013). Constructivism and Public Policy Approaches in the EU: From Ideas to Power Games. *Journal of European Public Policy*, 20(6), 888-906.

Saurugger, S., and Thatcher, M. (2019). Constructing the EU's Political Identity in Policy Making. *Comparative European Politics*, 17(4), 461-476.

Schäfer, D. (2016). A Banking Union of Ideas? The Impact of Ordoliberalism and the Vicious Circle on the EU Banking Union. *Journal of Common Market Studies*, 54(4), 961-980.

Scharpf, F. W. (1999). *Governing in Europe: Effective and Democratic?*. Oxford: Oxford University Press.

Scharpf, F.W. (1997). Economic Integration, Democracy and the Welfare State. *Journal of European Public Policy*, 4(1), 18-36.

Schelkle, W. (2017). *The Political Economy of Monetary Solidarity: Understanding the Euro Experiment*. Oxford: Oxford University Press.

Schelkle, W. (2014). Fiscal Integration by Default. In P. Genschel, and M. Jachtenfuchs (eds.), *Beyond the Regulatory Polity? The European Integration of Core State Powers*. Oxford: Oxford University Press, 105-123.

Schelkle, W. (2013). Monetary Integration in Crisis: How Well Do Existing Theories Explain the Predicament of EMU?. *Transfer*, 19(1), 37-48.

Schelkle, W., and Hassel, A. (2012). The Policy Consensus Ruling European Political Economy: The Political Attractions of Discredited Economics. *Global Policy*, 3(1), 16-27.

Scheller, H. K. (2006). *The European Central Bank: History, Role And Functions*. Second Revised Edition. Frankfurt: ECB.

Sims, C. A. (2013). Paper Money. *American Economic Review*, 103(2), 563-584.

Schmidt, V. A. (2016). Reinterpreting the Rules 'by Stealth' in Times of Crisis: A Discursive Institutionalist Analysis of the European Central Bank and the European Commission. *West European Politics*, 39(5), 1032-1052.

Schmidt, V. A. (2014). Speaking to the Markets or to the People? A Discursive Institutionalist Analysis of the EU's Sovereign Debt Crisis. *British Journal of Politics and International Relations*, 16(1), 188-209.

Schmidt, V. A. (2013). Arguing about the Eurozone Crisis: A Discursive Institutionalist Analysis. *Critical Policy Studies*, 7(4), 455-462.

Schmidt, V. A. (2008). Discursive Institutionalism: The Explanatory Power of Ideas and Discourse. *Annual Review of Political Science*, 11, 303-326.

Schmidt, V. A., and Thatcher, M. (eds.) (2013). *Resilient Liberalism in Europe's Political Economy*. Cambridge: Cambridge University Press.

Schnellenbach, J., and Schubert, C. (2015). Behavioral Political Economy: A Survey. *European Journal of Political Economy*, 40, 395-417.

Schoeller, Magnus G. (2019). Tracing Leadership: The ECB's 'Whatever It Takes' and Germany in the Ukraine Crisis. *West European Politics*, Early View.

Schoeller, Magnus G. (2018). Leadership by Default: The ECB and the Announcement of Outright Monetary Transactions. *Credit and Capital Markets*, 51(1), 73-91.

Schonhardt-Bailey, C. (2013). *Deliberating American Monetary Policy: A Textual Analysis.* Cambridge, MA: MIT Press.

Shughart, W. F., and Tollison, R. D. (1983). Preliminary Evidence on the Use of Inputs by the Federal Reserve System. *American Economic Review*, 73(3), 291-304.

Schulz, D. (2019). Researching Technocracy: Actor-Centred Methodologies and Empirical Strategies for Studying EU Economic Governance in Hard Times. *Journal of Contemporary European Research*, 15(2), 228-239.

Schulz, D. F. (2017). *Too Little, Too Late? How Central Bankers' Beliefs Influence What They Do*. Doctoral Thesis. Florence: European University Institute.

Schwarz, C., Karakitsos, P., Merriman, N., and Studener, W. (2014). Why Accounting Matters: A Central Bank Perspective. *European Central Bank Occasional Paper Series*, 153.

Sentance, A. (2015). We Expect Too Much of the New Masters of the Universe. *FT*, accessible at [last access 28.08.2019]: https://www.ft.com/content/a672092a-be73-11e4-8036-00144feab7de

Siklos, P. L. (2008). No Single Definition of Central Bank Independence is Right for All Countries. *European Journal of Political Economy*, 24(4), 802-816.

Simons, H. C. (1936). Rules versus Authorities in Monetary Policy. *Journal of Political Economy*, 44(1), 1-30.

Sims, C. A. (2016). Fiscal Policy, Monetary Policy and Central Bank Independence. Federal Reserve Bank of Kansas City's Economic Policy Symposium, Jackson Hole, WY, August 26.

Sims, C. (2004). Fiscal Aspects of Central Bank Independence. In H. Sinn, M. Widgren and M. Kothenburger (eds.). *European Monetary Integration*, Cambridge, MA: MIT Press, 103-120.

Skaggs, N. T. (1984). A Theory of the Bureaucratic Value of Federal Reserve Operating Procedures. *Public Choice*, 43(1), 65-76.

Stanley, L. (2014). 'We're Reaping What We Sowed': Everyday Crisis Narratives and Acquiescence to the Age of Austerity. *New Political Economy*, 19(6), 895-917.

Stark, J. (2012). The ECB's OMTs (Out-of-Mandate Transactions). *The International Economy*, 26(4), 52-53 & 82-83.

Stéclebout-Orseau, E., and Hallerberg, M. (2006). Strategic Signals and the Effectiveness of Fiscal Surveillance Under EMU. Working Paper. Retrieved from www.lse.ac.uk/government/research/resgroups/PSPE/pdf/SOH\%20Combined.pdf

Stella, P. (2005). Central Bank Financial Strength, Transparency, and Policy Credibility. *IMF Staff Papers*, 52(2), 335-365.

Stella, P., and Lönnberg, Å. (2008). Issues in Central Bank Finance and Independence. *IMF Working Paper*, 08/37.

Stiglitz, J. (1998). Central Banking in a Democratic Society. *De Economist*, 146(2), 199-226.

Stokey, N. L. (2003). 'Rules vs. Discretion' After Twenty-Five Years. *NBER Macroeconomics Annual*, 17, 9-64.

Stone, R. W. (2011). *Controlling Institutions: International Organizations and the Global Economy*. Cambridge: Cambridge University Press.

Streeck, W. (2016). *How Will Capitalism End?*. London and New York: Verso.

Streeck, W. (2014). *Buying Time: The Delayed Crisis of Democratic Capitalism*. New York: Verso.

Streeck, W., and Thelen, K. (2005). Introduction: Institutional Change in Advanced Political Economies. In W. Streeck, and K. Thelen (eds.), *Beyond Continuity: Institutional Change in Advanced Political Economies*. Oxford: Oxford University Press, 1-39.

Sturm, R. (1995). How Independent is the Bundesbank?, *German Politics*, 4(1), 27-41.

Summers, L. H. (2019). The Left's Embrace of Modern Monetary Theory Is a Recipe for Disaster. Washington Post, accessible online at [last access 18/08/2019]: www.washingtonpost.com/opinions/the-lefts-embrace-of-modern-monetary-theory-is-a-recipe-for-disaster/2019/03/04/6ad88eec-3ea4-11e9-9361-301ffb5bd5e6_story.html

Summers, L. H., and Stansbury, A. (2019). Whither Central Banking?. *Project Syndicate*, accessible online at [last access 24/08/2019]: https://www.project-syndicate.org/commentary/central-bankers-in-jackson-hole-should-admit-impotence-by-lawrence-h-summers-and-anna-stansbury-2-2019-08

Swedberg, R. (2018). Folk Economics and its Role in Trump's Presidential Campaign: An Exploratory Study. *Theory and Society*, 47(1), 1-36.

Szász A. (1999). *The Road to European Monetary Union*. London: Macmillan.

Takahashi, W. (2017). Central Bank Independence under Changing Environment. Paper presented at Bruegel-Kobe University Conference on 'Europe and Japan: Monetary Policies in the Age of Uncertainty', 2 October.

Tarullo, D. K. (2017). Monetary Policy Without a Working Theory of Inflation. *Hutchins Center Working Paper*, 33.

Taylor, J. B. (1993). Discretion Versus Policy Rules in Practice. *Carnegie-Rochester Conference Series on Public Policy*, 39, 195-214.

Tesche, T. (2019). 'The Troika is Dead, Long Live the Domestic Troikas?': The Diffusion of National Fiscal Councils in the European Union. *Journal of Common Market Studies*, Online View.

Tesche, T., and Genschel, P. (unpublished). Supranational Agents as De-Commitment Devices: The ECB and the Commission During the Eurozone Crisis. Mimeo.

Thaler, R. H. (1990). Anomalies: Saving, Fungibility, and Mental Accounts. *Journal of Economic Perspectives*, 4(1), 193-205.

Thaler, R. H. (1985). Mental Accounting and Consumer Choice. *Marketing Science*, 4(3), 199-214.

The Economist (1991). Rules v. Discretion. Print edition. March 2, 1991.

Thiemann, M. (2019). Is Resilience Enough? The Macroprudential Reform Agenda and the Lack of Smoothing of the Cycle. *Public Administration*, Early View.

Thornton, P. (2019). Central Banks Learn to Dance to a Different Tune. *ING THINK Outside*, 3 July.

Toma, M. (1982). Inflationary Bias of the Federal Reserve System: A Bureaucratic Perspective. *Journal of Monetary Economics*, 10(2), 163-190.

Trichet, J.-C. (2011). Hearing on the ESRB Before the Committee on Economic and Monetary Affairs of the European Parliament on 11 October 2011. Retrieved from: https://www.esrb.europa.eu/news/speeches/date/2011/html/sp111011.en.html

Trichet, J.-C. (2010a). Stimulate No More: It Is Now Time for All to Tighten. *FT*, accessible at [last access 28.08.2019]: https://www.ft.com/content/1b3ae97e-95c6-11df-b5ad-00144feab49a

Trichet, J.-C. (2010b). Hearing at the Economic and Monetary Affairs Committee of the European Parliament on 21 June 2010. Retrieved from: https://www.bis.org/review/r100624b.pdf

Torres, F. (2013). The EMU's Legitimacy and the ECB as a Strategic Political Player in the Crisis Context. *Journal of European Integration*, 35(3), 287-300.

Torres, F. (2008). The Long Road to EMU: The Economic and Political reasoning behind Maastricht. In S. Baroncelli, C. Spagnolo, and L. S. Talani (eds.), *Back to Maastricht: Obstacles to Constitutional Reform within the EU Treaty (1991-2007)*. Newcastle: Cambridge Scholars Publishers, 196-220.

Tortola, P. D., and Pansardi, P. (2019). The Charismatic Leadership of the ECB Presidency: A Language-Based Analysis. *European Journal of Political Research*, 58(1), 96-116.

Tsingou, E. (2015). Club Governance and the Making of Global Financial Rules. *Review of International Political Economy*, 22(2), 225-256.

Tsoukalis, L. (1977). *The Politics and Economics of European Monetary Integration*. London: George Allen & Unwin.

Tucker, P. (2018). *Unelected Power: The Quest for Legitimacy in Central Banking and the Regulatory State*. Princeton, NJ: Princeton University Press.

Tucker, P. (2016). The Political Economy of Central Bank Balance Sheet Management. Paper presentation at Columbia University, 5 May 2016.

Tucker, P. (2004). Managing The Central Bank's Balance Sheet: Where Monetary Policy Meets Financial Stability. Lecture given at Lombard Street Research, London, 28 July. Retrieved from: https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2004/managing-the-central-banks-balance-sheet-where-monetary-policy-meets-financial-stability

Tymoigne, É., and Wray, L. R. (2013). Modern Money Theory 101: A Reply to Critics. *Levy Economics Institute Working Paper*, 778.

Ueda, K. (2003). The Role of Capital for Central Banks. Remarks Based on a Speech at the Fall Meeting of the Japan Society of Monetary Economics, Tokyo, 25 October.

Vaez-Zadeh, R. (1991). Implications and Remedies of Central Bank Losses. In P. Downes and R. Vaez-Zadeh (eds.). *The Evolving Role of Central Banks*. Washington, D.C.: International Monetary Fund, 69-92.

van der Cruijsen, Jansen, D.-J., and de Haan, J. (2015). How Much Does the Public Know About the ECB's Monetary Policy? Evidence From a Survey of Dutch Households. *International Journal of Central Banking*, 11(4), 169-218.

van der Veer, R. A., and Haverland, M. (2018). Bread and Butter or Bread and Games: Politicisation and the European Commission in the European Semester. *European Union Politics*, 19(3), 524-545.

van Esch, F., and de Jong, E. (2019). National Culture Trumps EU Socialization: The European Central Bankers' Views of the Euro Crisis. *Journal of European Public Policy*, 26(2), 169-187.

Van Riet, A. (2017). Monetary Policy Stretched to the Limit: How Could Governments Support the European Central Bank?. *ADEMU Working Paper Series*, 2017/075.

Van 't Klooster, J. (2019). The Ethics of Delegating Monetary Policy. *Journal of Politics*, Forthcoming.

Velthuis, O. (2015). Making Monetary Markets Transparent: The European Central Bank's Communication Policy and its Interactions with the Media. *Economy & Society*, 44(2), 316-340.

Verdun, A. (2017). Political Leadership of the European Central Bank. *Journal of European Integration*, 39(2), 207-221.

Verdun, A. (2015). A Historical Institutionalist Explanation of the EU's Responses to the Euro Area Financial Crisis. *Journal of European Public Policy*, 22(2), 219-237.

Verdun, A. (2000). *European Responses to Globalization and Financial Market Integration: Perceptions of Economic and Monetary Union in Britain, France and Germany*. London: Macmillan.

Verdun, A. (1999). The Role of the Delors Committee in the Creation of EMU: An Epistemic Community?. *Journal of European Public Policy*, 6(2), 308-328.

Verdun, A. (1998). The Institutional Design of EMU: A Democratic Deficit?. *Journal of Public Policy*, 18(2), 107-132.

Verdun, A. (1996). An “Asymmetrical” Economic and Monetary Union in the EU: Perceptions of Monetary Authorities and Social Partners. *Journal of European Integration*, 20(1), 59-81.

Verdun, A., and Zeitlin, J. (2018). Introduction: The European Semester As a New Architecture of EU Socioeconomic Governance in Theory and Practice. *Journal of European Public Policy*, 25(2), 137-148.

Véron, N. (2015). Europe's Radical Banking Union. *Bruegel Essay and Lecture Series*, May-2015.

Vuletin, G., and Zhu, L. (2011). Replacing a “Disobedient” Central Bank Governor with a “Docile” One: A Novel Measure of Central Bank Independence and Its Effect on Inflation. *Journal of Money, Credit and Banking*, 43(6), 1185-1215.

Wallace, P. (2015). *The Euro Experiment*. Cambridge: Cambridge University Press.

Wall Street Journal (WSJ) (2012). Stocks Surge On ECB's Plan For Europe. *WSJ Online*, accessible online at [last access 25/08/2019]: https://www.wsj.com/articles/SB10000872396390444273704577635122724449562

Wall Street Journal (WSJ) (2010). ECB Seeks Funds for Capital Base. *WSJ Online*, accessible online at [last access 25/08/2019]: https://www.wsj.com/articles/SB10001424052748703395204576023420619887858

Walsh, C. (2011). Central Bank Independence Revisited. *Economic Papers*, 30(1), 18-22.

Walter, T. (2019). Formalizing the Future: How Central Banks Set Out to Govern Expectations But Ended Up (En-)Trapped in Indicators. *Historische Sozialforschung*, 44(2), 103-130.

Wälti, S. (2012). Trust No More? The Impact of the Crisis on Citizens' Trust in Central Banks. *Journal of International Money and Finance*, 31(3), 593-605.

Wansleben, L. (2018). How Expectations Became Governable: Institutional Change and the Performative Power of Central Banks. *Theory and Society*, 47(6), 773-803.

Weber, M. (1978). *Economy and Society: An Outline of Interpretive Sociology*. Berkeley: University of California Press.

Weidmann, J. (2017). Welcome Address: Policy Symposium 'Frontiers in Central Banking – Past, Present and Future'. Deutsche Bundesbank, Frankfurt, June 14.

Weidmann, J. (2015). Heading for Stability and Prosperity – Bringing the Euro Area Back On Track. Speech at the City of London Corporation, London, UK, 12 February. Retrieved from: https://www.bundesbank.de/en/press/speeches/heading-for-stability-and-prosperity-bringing-the-euro-area-back-on-track-666722

Weidmann, J. (2013). Crisis Management and Regulatory Policy. *Central Banking*, 23(4), 29-35.

Wessel, D. (2009). *In Fed We Trust: Ben Bernanke's War on the Great Panic*. New York: Crown.

Whelan, K. (2017). Should We Be Concerned About TARGET Balances?. Paper prepared for European Parliament ECON Committee, IP/A/ECON/2017-04 PE 607.366.

Whelan, K. (2012). TARGET2 and Central Bank Balance Sheets. Unpublished Manuscript. Retrieved from: https://www.karlwhelan.com/Papers/T2Paper.pdf

Whelan, K. (2011). The Secret Tool Draghi Uses to Run Europe. Retrieved from: http://karlwhelan.com/blog/?p=606

Wren-Lewis, S. (2018). *The Lies We Were Told: Politics, Economics, Austerity and Brexit*. Bristol, UK: Bristol University Press.

Wren-Lewis, S. (2013). Macroeconomic Stabilisation in the Eurozone: Lessons from Failure. *Global Policy*, 4(1), 66-73.

Woodford, M. (1999). Optimal Monetary Policy Inertia, *NBER Working Paper Series*, 7261.

Woodford, M. (2003). Optimal interest rate smoothing. *Review of Economic Studies*, 70(4), 861-886.

Woll, C. (2014). *The power of Inaction: Bank Bailouts in Comparison*. Ithaca, NY: Cornell University Press.

Woll, C., and Jacquot, C. (2010). Using Europe: Strategic Action in Multi-Level Politics. *Comparative European Politics*, 8(1), 110-126.

Woodruff, D. M. (2016). Governing by Panic: The Politics of the Eurozone Crisis. *Politics and Society*, 44(1), 81-116.

Yellen, J. (2017). Inflation, Uncertainty, and Monetary Policy. Speech at the 59th Annual Meeting of the National Association for Business Economics, Cleveland, Ohio. Retrieved from: www.federalreserve.gov/newsevents/speech/yellen20170926a.htm

Yiangou, J., O'keeffe, M., and Glöckler, G. (2013). 'Tough Love': How the ECB's Monetary Financing Prohibition Pushes Deeper Euro Area Integration. *Journal of European Integration*, 35(3), 223-237.

Zeitlin, J., Nicoli, F., and Laffan, B. (2019). Introduction: The European Union Beyond the Polycrisis? Integration and Politicization in an Age of Shifting Cleavages. *Journal of European Public Policy*, 26(7), 963-976.

Zeitlin, J., and Vanhercke, B. (2018). Socializing the European Semester: EU Social and Economic Policy Co-ordination in Crisis and Beyond. *Journal of European Public Policy*, 25(2), 149-174.