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The dysfunctional taboo: monetary financing at the Bank of England, the Federal Reserve, and the European Central Bank

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ABSTRACT

Monetary financing – the issuance of public money to support public expenditure – remains a widespread policy taboo. In this article, we analyze the operational practices of the Bank of England, the Federal Reserve and the European Central Bank (ECB) from the 20th onwards to argue that monetary finance should be understood as a conventional and legitimate part of central banks' core functions. We argue that monetary financing serves a crucial macro-financial role in the face of large fluctuations in the demand for and supply of government debt, where the central bank acts to stabilize sovereign debt markets. We show that monetary financing has been a stable and pervasive feature of the Bank of England's and the Federal Reserve's operations. Turning to the ECB, we show that by the mid-2000s the view came to dominate the institution that the central bank should allow markets to punish governments for excessive deficits. This view informed the ECB's catastrophic reluctance to act on the 2008 and 2009 Financial Crisis deficits. By 2020 that attitude had once again largely been abandoned.

KEYWORDS

Monetary policy; monetary finance; Maastricht Treaty; government debt; sovereign debt; quantitative easing

Introduction

A prominent taboo of modern economic policy is the creation of new money by a central bank to fund public expenditure: 'monetary finance' (Turner, 2016, p. 113). Mature, stable and successful economies resolutely abstain from monetary finance, while irresponsible politicians and immature nations allow their central banks to monetize public spending. That is the logic which underpins the prohibitions on monetary financing which appear in IMF conditionality agreements, World Bank and OECD advice, legal prohibitions in European treaties, and developing countries' constitutions. The same logic pervades the public statements of

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central bankers in advanced economies and monetary hegemons: explaining the dangers of monetary finance, and why *their* central banks would never dance with the economic devil (Weidmann, 2012).

The 2020 pandemic put that orthodoxy under heavy pressure. At the pandemic's outset, former European Central Bank (ECB) president Mario Draghi published an op-ed with the ominous title 'we face a war against coronavirus and must mobilise accordingly' (Draghi, 2020). In World War I, Draghi pointed out, between 85% and 100% of war expenditures were paid for by issuing new money; this, he suggested, is what central banks should do now as well. Central banks dutifully launched enormous government bond purchase programmes, meanwhile explicitly renouncing any suggestion that these programmes constituted an act of debt monetization (Bailey, 2020a; Schnabel, 2020; Hauser, 2021). Monetary financing, it seemed, had returned as a prominent tool of economic policy in all but name. What are we to make of these contradictory attitudes—often expressed by the very same individuals?

We draw on existing historical scholarship of the financial relationships between central banks and treasuries in the US, UK and Eurozone to argue that monetary finance should be understood as a conventional and legitimate part of a central bank's core functions.

Part 1 studies and compares existing accounts of monetary financing as an economic policy tool. The predominant monetarist understanding that informs the taboo, its academic justification, and recent defenses of monetary finance, focus on macroeconomic impact: for better or worse, monetary finance is seen to increase public and private expenditure without raising taxes, thereby boosting aggregate demand. Complementing those macroeconomic accounts, we propose a macro-financial account of monetary financing, to which we ascribe an historically (largely) invariant, and under-explored, function: to navigate large fluctuations in the demand for and supply of government debt, thereby acting as a lender of last resort to governments facing 'sovereign-financing-gaps'. Wars, post-war reconstruction, financial crises, and other economic emergencies force the treasury to spend as fiscal receipts disappear, irrespective of private investor demand. The central bank, as the issuer of new public money, typically accommodates those spending programs—either by directly acquiring debt from governments or by bulk purchases in secondary markets from securities dealers—and monetizing deficits until supply and demand dynamics stabilize.

We study the macro-financial function of monetary financing by documenting historically successful practices of monetary financing in the face of sovereign-financing-gaps (Part 2) as well as the failure of a regime with limited monetary financing (Part 3).

Part 2 examines the financial plumbing of central bank support to treasuries in the jurisdictions that have issued the two global currencies of the post-industrial age: the United Kingdom of Great Britain and Northern Ireland and the United States of America. We show that throughout the twentieth century and to the present day, monetized credit was provided through a variety of operations, including unsecured credit lines, direct purchases of newly-issued debt, and secondary market purchases intentionally designed to create scarcity of sovereign debt instruments. The last type of operation, large secondary-market purchases, assumes particular importance given the dominance of quantitative easing programs for the last 15 years of central banking. Building on those institutional accounts, we document the important macro-financial role of monetary finance in stabilizing

conditions in sovereign debt markets at critical moments of fiscal distress during the 20th and 21st centuries.

Part 3 highlights the dangers of abnegating the stabilization function of monetary finance by considering the key role of sovereign-financing-gaps in the Eurozone sovereign debt crisis. The ECB received its mandate during the heights of academic monetarism, but its legal basis explicitly permits secondary market ‘stabilization’ operations that can substantially reduce sovereign debt yields and treasury funding costs. As the supranational central bank matured in the 2000s, a more radical view emerged that reflected the monetary finance taboo: the ECB should allow markets to ‘punish’ governments for excessive deficits. That thinking drove the ECB’s refusal to provide the type of market-stabilizing monetary support that was conventional in the US and UK as member states faced record deficits in 2008 and 2009. Thus, the monetary finance taboo became a major driver of the Eurozone Crisis. By 2020, the ECB had explicitly disavowed its adherence to the monetary finance taboo and was openly acting as the lender of last resort to European governments.

Our approach to analyzing monetary finance differs from institutional accounts that focus on economies in extreme distress, classically Weimar Germany, post-war Hungary, and Zimbabwe (Bresciani-Turroni, 1937; Cagan, 1959; Bomberger & Makinen, 1983; McIndoe-Calder, 2018). This focus paints a distorted picture to scholars and policy makers; propagating the monetary finance taboo as the ‘conventional’ position when it is actually an outlier position in the history of modern central banking. There is a long tradition of critical and classical scholarship that challenges the monetarist view that government deficits and central bank money creation drive inflation (e.g. Kaldor, 1985; Buiter, 2020). Recent positive re-assessments of monetary financing focus on its role in raising aggregate demand and steering the price level (Turner, 2015; Ryan-Collins, 2017, 2018). Our account, in contrast, is macro-financial in that it focuses on the pivotal role of monetary finance in the central bank-treasury nexus. Instead of studying monetary financing as a part of macroeconomic demand management, alike Monnet (2018, 2021), we emphasize its role in reallocating accounting liabilities across the government’s consolidated balance sheet, swapping money for debt. Accommodating large issuance of debt in this way serves the role of market making of last resort (Gabor, 2021; Gabor & Vestergaard, 2018; Mehrling, 2011) but also, typically first and foremost, lending of last resort to governments.

Part 1: economic and financial functions of monetary financing

Monetary finance is most clearly defined as the issuance of public money to support public expenditure (Hemming, 2013; Ryan-Collins & van Lerven, 2018). Direct monetary financing does not involve a private sector intermediary: the central bank simply issues new money directly to the government’s account. Such transactions may be structured as (non-marketable) loans or direct purchases of (marketable) securities (Gabor and Ban, 2016; Bateman, 2021). Because both transactions involve public sector counterparties, these legal distinctions are insignificant. It is this form of monetary financing that the EU treaties, IMF conditionalities, and developing nation constitutions explicitly prohibit.¹

Indirect monetary finance works *via* financial market intermediaries. Central banks can create primary-market demand for government bonds (reducing funding

Table 1. Monetarist and macro-financial accounts of monetary financing.

	Monetarist	Macro-financial
Macroeconomic objective	Demand management and enabling larger role of government in the economy	Financial stability
Financial market objective	None	Ensure smooth functioning of capital markets and enables government debt issuance in the face of sovereign-financing-gap (war, reconstruction, financial crisis)
Macroeconomic effects	Facilitates inflationary money creation to pay for public spending	Facilitates emergency public spending in the absence of private creditors, inflation if sustained
Policy prescription	Taboo: unwise and potentially disastrous	Typically benign but crucial in a crisis

costs of national treasuries) by issuing credit at preferential rates (compared to yields on existing and future issues of government debt) or by increasing their purchases of government debt securities on secondary debt capital markets: providing a liquidity channel for market makers in treasury debt, creating scarcity, raising debt-prices while lowering yields and interest rates in primary markets.

The typical objectives, economic effects and policy implications of monetary financing remain a topic of vigorous dispute. To de-limit our analysis and claims, we distinguish a monetarist and a macro-financial interpretation of the phenomenon (see Table 1).

The *monetarist* account of monetary financing emphasizes a macroeconomic function, which is to boost aggregate demand and facilitate the growth of the government's role in the economy. Associated with inflation, the monetarist's message to politicians, policymakers, and society is often simple: just a scintilla of central bank support for public expenditure may destroy your economy!

Although the desire to limit monetary financing is old (Ricardo, 1888, p. 219), academically, the taboo can be traced to post-war monetarist thought, in particular James Buchanan's public choice theory and Thomas Sargent and Neil Wallace's unpleasant monetary arithmetic. According to Buchanan, public officials respond to electoral and bureaucratic incentives to deliver economic goods at inefficient prices to electoral constituencies and are protected from personal responsibility for inefficient or harmful allocations by collective institutional norms (Buchanan & Wagner, 1977, p. 114). Those irrational motivational pulls create myopia in both fiscal agencies and central banks towards new-money financed deficit spending. On that account, only constitutional limitations on both treasuries and central banks would prevent the 'deficit creation– debt monetization– inflationary sequence': one limiting the treasury from deficit spending; the other preventing the central bank from increasing the money supply (Buchanan & Wagner, 1977, p. 189). Although Friedman was aware of public deficits, his central bank prevents inflation by controlling the total volume of money in the economy. Sargent and Wallace (1981) thought that Friedman had overlooked the monetary financing of government spending. To stabilize the price level, they proposed that discipline should be implemented by 'the creation of an independent central bank that was legally committed to refuse the government's demand for additional unsecured credit' (Sargent, 1982, p. 89).

These monetarist arguments inaugurated a profound shift in economic thinking, creating a taboo in the strict sense that to entertain the view that monetary financing is desirable is to go beyond the domain of acceptable discourse. A recent example appears in a 2012 public address by the president of the Bundesbank, who explained that the central bank's power to issue money created an infernal temptation for governments (Weidmann, 2012). After meditating on the demon of Germanic folklore 'Mephistopheles', President Weidmann explained that 'the state can get rid of its debt to begin with. At the same time, private consumer demand rises sharply, fueling an upswing. In due course, however, all this activity degenerates into inflation, destroying the monetary system because the money rapidly loses its value.' Similar, but less evocative, versions of the taboo can be found in the public writings of senior officials of the US Federal Reserve System, the Bank of England (BoE), the ECB (Andolfatto & Li, 2013), and the attitudes of the IMF and World Bank (Cottarelli, 1993).

Contra the taboo, the past decade saw a modest reappraisal of monetary financing as a tool of macroeconomic management (Turner, 2015; Ryan-Collins, 2017; Ryan-Collins and Lerven 2018; Agur et al., 2022; Buetzer, 2022). In the face of the zero lower bound and persistent deflation, monetary financing appears as an instrument to raise aggregate demand and steer the price level. These authors share the monetarist view of monetary financing as a way to boost public and private expenditure, although do not share the same focus on preventing inflation.

An alternative *macro-financial* account of monetary financing that focuses on the facilitation of public debt issues during moments of crisis has long been suggested by the historical literature, but overlooked by contemporary policy-makers and commentators. Financial historians have observed the sovereign debt market functions of central banks that would, today, be explained as taboo (See Table 1). By reference to the Banque de France during the *trente glorieuses*, Monnet (2018) provides an institutional account of the intimate (and often concealed) financial relationships between central banks and treasuries, emphasizing the dynamic tensions between fiscal support, nation-building, and inflation management in the deployment of post-War national credit policy. As we will see in Part 2, the Federal Reserve and BoE have throughout the 20th and twenty first century sought to facilitate the issuance of exceptionally large volumes of debt. In these circumstances, the central bank's objective was not solely to help market participants, but also, often most prominently, to allow the Treasury to spend money and provide public services (e.g. Allen, 2019, p. 135; Clapham, 1944, p. 11, 424; Garbade, 2012, pp. 134–139, 351; Garbade, 2020a, pp. 226–233, 436–440; Sayers, 1976, vol 1, 81–82, vol 2, ch 17). More recently, the experience of the Eurozone crisis and the 2020 Pandemic has given rise to a re-appreciation of monetary financing's important role in stabilizing financial markets (De Grauwe, 2011; Gabor and Ban, 2016; Constâncio, 2018). The 2010–12 Eurozone crisis, which we discuss in Part 3, showed that refusing to finance large deficits can have disastrous consequences. This contrasted markedly with large British and US government debt purchase programs, which were comparatively unglamorous (although still controversial) and their effects on government finances under-emphasized.

Reflecting on exceptionally large government debt purchases in the context of the 2020 Pandemic, central bankers and academics have warned against perceived continuity between today's interventions in sovereign debt markets and monetary financing:

arguing that the recent quantitative easing (QE) programs should not be properly understood as monetary financing because their objective is not to facilitate government spending (Bailey 2020; Schnabel 2020; Hauser, 2021). Instead their operations served to stabilize large fluctuations in the value of debt, which can wreak havoc on financial sector balance sheets. While pointing out that these interventions fall under the rubric of monetary financing as conventionally understood, Gabor (2021) argues that the 2020 central bank bond purchases are specific to the condition of post-1980 financial liberalization. 'In derisking government bonds for market-based finance, central banks may be simultaneously improving financing conditions for governments, but this is a side-effect, not a policy target as in Keynesian monetary policy.' (Gabor, 2021, p. 5)

Building on the existing historical literature, this article puts forward a macro-financial account of monetary financing that emphasizes its historically invariant role in the broader interactions of states and markets. Depending on historical contexts, central bank purchases of government debt can have a range of purposes, often having non-essential functions within the public financial infrastructure. We give examples of those functions below, including the BoE's financing of government cash requirements *via* an unsecured and unlimited credit facility and the Federal Reserve rolling-over debt in its open market portfolio by direct purchases at US Treasury auctions.

However, we take one function to be essential and evident across historical contexts, which is that of lender of last resort to governments in the face of 'sovereign-financing-gaps,' an expression we coin to capture the financial shortfalls that are unique to constitutional states. Like all economic agents, treasuries face gaps between incoming and outgoing financial resources which can vary widely in quantum, temporal span and rationale. In filling such financing gaps, sovereigns appear deceptively similar to private economic agents. Like private agents, governments turn to credit providers for debt capital; typically large institutional pools of capital in the form of banks. Markets in sovereign debt have been identifiable for centuries and the earliest public financiers were capital-rich private lenders who extended credit to (both) government and private individuals (Desan, 2014, ch 6; Dickson, 2016, pp. 45–47; Stasavage, 2016). Today, an even greater similarity appears in the determinants of the price of private and public credit, particularly: creditor perceptions of default risk, existing supply of, and demand for, debt in secondary markets and regulatory incentives. The most distinctive feature of public credit markets is that sovereigns demand a continuous but irregular supply of funds which is exceptionally large relative to any other borrower, even in normal times.

Sovereign-financing-gaps can easily exceed the willingness to lend of private creditors; at the extreme, no credit is available in markets for even the most solvent sovereign below prices that make the public debt unaffordable. When 'debts are large and precarious creditors shy away' (Dornbusch and Draghi, 6) the volume of debt that treasuries can issue, even at high interest rates, is limited. Monetary finance becomes necessary 'because debt cannot be sold' (Dornbusch and Draghi, 6). Wherever sovereign-financing-gaps arise, governments are faced with economic quandaries that cannot be solved within the private credit system, and must rely on financing vehicles within the consolidated public sector. Table 2 provides a non-exhaustive list of four types of sovereign-financing gaps: war, postwar reconstruction, financial panics and economic recessions.

The macro-financial account of monetary financing that we outline here is not only distinct in its focus on sovereign-financing-gaps, but also its normative evaluation of these practices. Central bank financial support is a benign, but often essential part of a government's crisis response. The function of these interventions can be adequately described as market making of last resort, where monetary finance is meant to ensure the smooth functioning of capital markets (Mehrling, 2011; Gabor, 2021; Hauser, 2021). However, in the face of sovereign-financing-gaps, monetary financing also serves to facilitate government spending. Despite central bank communication strategies to the contrary, enabling large issuances of government debt has often not only been a mere unintended side-effect but a distinct objective of central banks.

Although we think that this revised understanding of monetary financing has important economic, political and legal implications, our aim is to document and systematise the overlooked macro-financial function of central banks. In part 2, we show that monetary financing in the face of large issuances of debt is a stable and pervasive feature of the BoE's and the Federal Reserve's operations during war, post-war reconstruction and financial crisis. In Part 3, we turn to the disastrous consequences of the ECB's reluctance to monetize the financing gaps caused by the Financial Crisis.

Part 2: central bank support for treasury expenditure in the UK and US

From the First World War to the present-day, the BoE and the Federal Reserve System have provided money to their national treasuries to fund public expenditures (See Table 3). By focusing on the historical invariance of central bank credit to treasuries, this section provides a distinctly different account to the orthodoxy that central banks largely ceased monetizing public deficits in the 1950s (e.g. Allen, 2019; Hetzel & Leach, 2001, *contra* Monnet, 2018). Our account also brings out the vital macro-financial role played by central banks as lenders of last resort to governments, contributing to emerging historical literature on that topic (Monnet, 2018, Chapter 5).

Funding her majesty's treasury via the Bank of England

Vast amounts of money for central government expenditure in the United Kingdom were provided by the BoE from the 19th to the latter-twentieth century (see O'Brien and Palma, 2020 for earlier history); notably in response to acute and chronic fluctuation in sovereign debt markets associated with war, post-war reconstruction and financial crises.

From (at least) 1866 to 1968, the UK Parliament annually voted to authorize the BoE to provide the total amount of public expenditure approved through the national budget process: Parliament would vote on estimates of national expenditure and then authorize the BoE to purchase the total amount of debt securities issued by the UK's Treasury to fund that expenditure (Bateman, 2020, pp. 48–49). Thus, the UK's national budget process relied on the stable issue of credit by the central bank to the national Treasury. That credit was provided through various channels, including the unsecured 'Ways and Means Advance' overdraft facility (Keynes, 1923, pp. 143–144; Clapham, 1944, pp. 424–425; Bateman, 2020, ch 2 and 4); primary-market purchases of sovereign debt securities (e.g. Sayers, 1976,

Table 2. Four typical forms of sovereign-financing-gaps.

Gaps	Exceptional Treasury demand for funds	Limits to the supply of funds by private lenders
Wars (Reinhart & Rogoff, 2009)	War creates the need for an exceptional mobilization of population and industrial capacity vastly exceeding potential tax revenues	Shortly-before war is declared, private investors are uncertain of victory, while during the conflict, private investors' capital bases can be destroyed/confiscated
Post-war reconstruction (Allen, 2019, ch 7)	Re-building the capital stock requires massive funding commitments often fulfilled by governments.	The scale of social reconstruction exceeds the diminished capital base of private investors
Financial market panics (Kindleberger & Aliber, 2015, p. 66); (Reinhart & Rogoff, 2009; Minsky (2008a and 2008b)	Historical cycles of booms, panics and busts result in collapse of revenue and remediation costs spike.	Private lenders face loss of liquid funds and a diminished capital base.
Other emergencies (Arslan et al., 2020; Flemming et al 2021)	A pandemic, energy price shock and the like can bring down economic output and fiscal revenues while automatic stabilizers go up	Private creditors are cash constrained and for this reason may liquidate government bond holdings

Table 3. Exceptionally large purchases of government debt.

Time-frame	UK Bank of England	US Federal Reserve
Before 1933	WW1 War Finance	WW1 War Finance Great Depression
1933–1947	WW2 War Finance Post-War Reconstruction	WW2 War Finance Post-War Reconstruction
1947–1980	Stabilisation after currency de-valuation Coal industry nationalisation	Large-scale outright purchases to prevent the failure of treasury re-financing programs
1980–2008	Overnight finance; Ways and Means used until 1998	Fed guaranteed re-financing at primary auctions
After 2008	Finance Crisis Bank rescue Ways and means financing and quantitative easing Pandemic QE	Financial Crisis Large Scale Asset Purchase Programmes Pandemic Market Functioning Purchases

vol 2, 81–2; Allen, 2019, p. 11); and large-scale secondary market purchases. Primary market purchases explicitly soaked-up excess supply: ‘new issues of government stock ... are normally made in large amounts, of which only a small part is usually taken up by the public—the rest is taken up by the [Bank of England], and gradually sold’ (BoE, 1966). The UK severed the explicit legislative connection between the central bank and the annual budget process in 1968 when it repealed the requirement for annual parliamentary approval of central bank credit to the Treasury. Thereby, direct monetary finance occurred under a permanent, rather than annual, legislative authority (e.g. Bateman, 2021, p. 19).

Secondary-market purchase (‘QE’) programs occurred more sporadically, and in response to sovereign-financing-gaps; most prominently during war-time, post-war reconstruction and financial market panics. Allen’s historical analysis of the micro-structure of the BoE’s operations in the gilt market casts new light on those operations which are under-emphasised in some official histories (compare Allen, 2019, pp. 49–51, 72; Fforde, 1992, pp. 141–146, 643–669; Capie, 2010, chs 5 and 6). During World War 2, the Bank ‘continued its routine purchases of stocks approaching maturity...[with the] objectives...to keep yields low and maximise sales’, with some bond lines purchased almost in their entirety (Allen, 2019, pp. 49–51). Post-war market crises precipitated QE programs. Obeying capital account nationalization obligations under the Anglo-American War Loan, the UK’s restoration of currency convertibility in 1947 triggered massive selling of public debt during a period when the government was ‘insolvent’ (Allen, 2019, p. 68). The Bank reacted by ‘buying stock as prices fell’, then ‘informing [market-makers] that they would always purchase [sovereign debt] from the market’ and finishing the convertibility period with large ‘total net gilt purchases’ (Allen, 2019, pp. 66–68). Similar techniques were employed in 1949 following a currency devaluation ‘when demand dried up’ and the ‘Bank made a dramatic intervention...[going] into the market and say[ing] “I will buy any stock you have to sell”’ (Allen, 2019, p. 71). ‘[L]ong gilt prices rose by about 4% over...three days’ in response to the Bank’s purchases across the curve and ‘the operation may be judged a success, in the sense that the government was able to issue more than £1 billion of new long-dated gilts’ at artificially-high prices (Allen, 2019, p. 72). Another major post-War asset purchase program focused on supporting financing of industry nationalization programs, which compensated equity-holders with government debt and were initially executed without central bank support. In the 1950s, ‘The Bank’s attitude

changed': '[i]n 1952 roughly 60% of compensation issues were offset by the Bank's secondary market operations in the week of issue, and in 1953 more than 100% of them were thus offset' (Allen, 2019, pp. 69–70, 180). Those QE programs were necessary to maintain the price of government securities because private investors were 'selling their compensation stock as soon as they received it' (Allen, 2019, p. 70).

The primary and secondary material shows that those QE programs were intended to promote sustainable treasury debt issues, rather than macro-economic demand stimulus. After the World Wars, the UK treasury was functionally insolvent and mismatches in supply and demand for debt had drastic impacts on the government's financing capacity. The private market could not provide the funding necessary for reconstruction and so QE programs were launched to ensure sustainable debt-management. Eventually, those programs encountered a fatal 'conflict with monetary policy' *qua* inflation management (Allen, 2019, Ch 11; Fforde, 1992, pp. 643–669) and ceased, but their use in the post-war decade appears as vital planks in effective sovereign finance.

A return to those techniques appears in the longer-duration QE programs which started in March 2009 and left the BoE with £635 billion in gilts by 2012: amounting to 49% of the total deficits over the five-year period 2008–12. Although not explained publicly as debt-management, those QE programs were executed with extraordinary coordination between the UK Treasury and the BoE. Each round of asset purchases was preceded by a formal request for permission from the central bank's governor to the UK's treasurer (e.g. King, 2009; Bailey, 2020b). Additionally, the potential for fiscal support for the UK's Treasury *via* the injection of artificial demand into primary sovereign debt markets was clearly contemplated by both monetary and fiscal authorities at the program's inception (King, 2009; Darling, 2009). It is, accordingly, questionable whether financial-crisis QE was solely concerned with boosting 'the supply of broad money and credit and increas[ing] the liquidity of private sector portfolios, thereby raising nominal spending' (King, 2009). The BoE's pandemic response programs involved a substantial expansion of its asset-purchase programs and a re-institution of its direct monetary financing *via* the Ways and Means unsecured credit line (BoE, 2020).

FRBNY credit to the US treasury

The US experience of monetary finance is roughly similar to the UK's: the Federal Reserve Bank of New York (FRBNY) provided significant levels of credit directly to the US Treasury throughout the twentieth century, particularly in the form of QE programs focused on filling sovereign-financing-gaps during financial crises, wars and post-war reconstruction.

Direct credit was provided by bilateral credit facilities with the FRBNY, quantitatively limited by statute between 1935–1981 (Garbade (2014)). The first direct loan was \$50 m to the Treasury in 1917 (Garbade, 2012, p. 132; Harding, 1925, pp. 87–88). From 1937 onwards, the Fed bought debt securities directly from the Treasury through re-financing operations which creatively complied with the 'open market' proviso of s 14(b) of the *Federal Reserve Act* (Garbade, 2019, p. 7). These 'roll overs' of the Fed's securities portfolio (Garbade, 2012, p. 312) provided guaranteed financing during moments of fiscal tightness (Board of Governors, 1970, p. 17).

The most significant and sustained type of monetary finance provided by the Federal Reserve to the US Treasury was intermediated through the financial firms which became the ‘primary dealers’ (see, Garbade, 2015). That type of intermediated monetary finance grew from the need to expand and maintain the US primary sovereign debt market during World War One when the Fed provided vast concessional credit to commercial banks at a rate designed to ensure a complete subscriptions of Treasury debt: the ‘Borrow and Buy’ program (Garbade, 2012, p. 136).

The Great Depression caused the Fed to switch its fiscal supports to large-scale secondary market operations (Ryan-Collins & van Lerven, 2018, p. 15). Massive QE programs were launched in 1932 on the basis that the treasury’s major financial-market rescue programs ‘would be aided by a gradual purchase of government securities...and that no single sentimental factor was so important in the minds of the public as the purchase of government securities by the federal Reserve System’ (Federal Open Market Policy Conference, 1932, 10). Debt amounting to ~50% of annual fiscal receipts was purchased. As the ‘Great Contraction’ (Friedman and Schwartz, 1963, Ch 7) deepened, that program expanded:

during the period of the emergency it would be advisable for the Federal reserve banks... to cooperate with the Treasury with a view to facilitating any necessary issues of government securities or to support the market for government securities in order to make such public issues possible.

The 1932–1933 QE program left the Fed holding \$2.43billion in treasury debt: a sizeable proportion of fiscal spending and receipts (Garbade, 2012, p. 237). An analogous long-term QE program was launched during WW2 where the Fed controlled the yield-curve, holding the borrowing cost of the Treasury below 2% at the long end for 5 years (Garbade, 2020b, pp. 6–7; Elmus, 1969). Post-war, tensions grew between the Federal Reserve and the US Treasury regarding the inflationary effects of the Fed’s yield-curve control (Hetzl & Leach, 2001). Famously, those tensions were resolved in the ‘Accord’ where the US monetary and fiscal authorities agreed to ‘*minimize* [not ‘eliminate’] monetization of the public debt’ (Federal Reserve Bank of New York, 1951).

The Accord’s limits were clear in the re-institution of outright purchase programs in 1958 and 1970 to prevent the failure of treasury re-financing programs. In July 1958, the FRBNY made extensive purchases of government securities to support a Treasury issue of debt which was failing to sell due to concerns about US military involvement in Lebanon and Iraq (Garbade, 2020a, Chapter 15). Following extensive negotiations between the Treasury and the Federal Reserve, the FRBNY purchased ~\$1.2billion of US debt securities (roughly 10% of the 1958–1959 fiscal deficit) in 2 days to maintain demand for US government debt during the re-financing period: \$1billion of US certificates of indebtedness, \$100million US bonds, and \$65million US notes (Garbade, 2020a, p. 233; US Treasury, 1959). Opinion within the Federal Reserve was split. The President of the Atlanta Fed remarked that ‘the sophisticated investment public has been shocked by an ill-considered Treasury support operation’ (quoted in Garbade, 2020a, p. 234). The Chairman of the Board was more pragmatic: ‘regardless of theories, when certain things are involved the public will not sit by and let the situation go unheeded’ (Garbade, 2020a, p. 235).

The same pragmatism was displayed in May 1970 with the FRBNY's "massive" purchases of securities in the open market to prevent the Treasury's \$3.5 billion sale of notes ... from failing' following President Nixon's decision announcement of the invasion of Cambodia and the shootings at Kent State University (Garbade, 2020a, pp. 436–437). Those momentous events shortly preceded a large treasury debt issuance, which was set to fail after yields spiked. The FRBNY intervened to support the impending re-financing through purchasing debt representing ~11% of the annual deficit (Garbade, 2019, pp. 16–17; US Treasury, 1971).

The next set of large-scale government debt purchases was launched in November 2008 under the Federal Reserve's QE programme: between 2008 and 2012, over \$1,666trillion in Treasury securities (21% of the deficit); and from 2020, \$2.2trillion of government debt (48% of the pandemic deficit) was purchased. While the Federal Reserve did not publicly announce the motivation behind its QE programs as supporting government debt issues (Andolfatto & Li, 2013), its earlier large-scale asset purchases shed important light on the 2008–2022 programs. During the Financial Crisis, private firm participants in US Treasury auctions experienced actual (e.g. Lehman Brothers and Bear Sterns) or threatened (e.g. Citigroup, Barclays, and RBS) insolvency (see Tooze, 2018, ch 6), and during the Covid-19 Pandemic all global banks experienced sudden stops to most of their ordinary revenue streams (Casanova et al., 2021). Those extraordinary challenges to the US Treasury's capacity to acquire debt finance from the private market far exceed the bond-market worries which underpinned the 1958 and 1970 large-scale asset purchases by the FRBNY to support the US government's debt issues.

In March 2009, before putting its 'toe in the water' (FOMC, 2009b, p. 205, Bernanke) of large-scale purchase of Treasury debt, the Federal Open Market Committee (FOMC) discussed the pros and cons of debt monetization. Before the meeting, the FOMC received a staff memorandum which explained that 'Federal Reserve purchases reduce interest expenses of the government' and 'would yield a substantial positive net return to the government in present discounted value' (FOMC, 2009a, p. 10). Opposing members of the FOMC all emphasized that large sovereign debt purchases would be a form of debt monetization and acknowledged the political risks stemming from the taboo. As one critical member argued:

'If the majority decides to go forward with it, then I do prefer mortgage-backededs (sic) to Treasuries ... because I think it would just open us up to charges of monetizing Treasury debt. (FOMC, 2009b, p. 86)

As another opined:

I do worry about the perception—and it's palpable—that we will be succumbing to political pressure to monetize the exploding borrowing needs of the Treasury...? (FOMC, 2009b, p. 88)

Most significantly, even those who opposed purchases emphasized the risk of non-clearance of auction in primary Treasury markets, echoing (perhaps unknowingly) the conditions that forced large-scale purchases in 1958 and 1970:

'[T]here are serious questions being raised by market participants and market commentators about the government's ability to fund new higher expected levels of Treasury issuance—that is, they may or may not, in the market's view, be able to find buyers at market-clearing prices.' (FOMC, 2009b, p. 80)

FOMC members favouring Treasury debt purchases did not argue with the core point that secondary market purchases would be a form of debt monetization, but contended that such monetization was both desirable and controllable. As one argued:

'I would buy Treasuries also ... I think right now we need to make sure that fiscal policy is as effective as it can be. So monetizing the debt to me is not a negative under the current situation, because it's helping fiscal policy be effective—provided we can do it in the context of not having rising inflation expectations and not having concerns about our independence.' (FOMC, 2009b, pp. 95–96)

Another proponent of Treasury purchases said:

'[I]t's not clear to me whether buying Treasuries might be interpreted as our accommodating fiscal profligacy, although I understand the circumstances of the moment, which are certainly trying.' (FOMC, 2009b, p. 184)

After deliberating, the FOMC authorised the purchase of a (relatively-small volume) of shorter-dated US Treasury debt, and shortly afterwards expanded the US QE program to include \$600billion of long-dated US bonds. The Fed's external communications strategy diverged from its internal candour regarding debt monetization: QE purchases were 'temporary' and, thus, not debt monetization. As one member explained:

'[A]s soon as we see the economy coming back to the point that we think the dual mandate is going to be satisfied, the program is going to end. Monetization of the debt, in contrast, involves increasing the balance sheet and creating inflation that you live with forever.' (FOMC, 2010b, p. 193)

As is now notorious, the expansion of (both) the monetary base and holdings of Treasury debt within the consolidated public sector ceased to be temporary in any meaningful sense as most debt acquired between 2008–2012 remained on balance sheet and was vastly increased during the COVID-19 Pandemic.

Monetary financing as an institutional constant

UK and US history provide robust empirical examples of two economic functions of monetary finance: (non-essential) public financial plumbing and (essential) stabilization of sovereign debt markets. Through many different monetary systems, central banks in the UK and US provided credit to their governments through Sterling's 'decline,' the Dollar's post-War march to the apex of global economic power, and the rise of the City of London as the preeminent finance centre of the OECD. In both jurisdictions, central bank interventions provided critical support for treasuries facing sovereign-financing-gaps. Large-scale asset purchase programs were used to supply artificial demand in primary sovereign debt markets throughout the 1930s–1970s, and 2000s; periods of radically distinct economic and financial conditions. In each period, the financing requirements of the public sector were imperilled by sudden-stops of demand for sovereign debt, just as fiscal expenditure ballooned, in response to financial market collapse, war and post-war reconstruction.

The popularization of central bank 'independence' as a global institutional norm did appear to reduce the visibility of monetary finance, but did not eradicate it. In the US, central bank independence is dated from 1951 (upon the Treasury-Fed Accord) and then again in 1981 (with the Volker shock). In the UK, independence

is clearly dated by the *Bank of England Act 1998*. On both sides of the independence divide, both UK and US central banks continued to provide monetary finance to their treasuries in fiscally-significant volumes; in circumstances where private creditors provided no meaningful solution to sovereign-financing-gaps.

Part 3: the monetary finance taboo in Europe

We now turn to European monetary integration and the dramatic history of the ECB's monetary financing prohibition. As we show, the rejection of the lender of last resort role that led to the Eurozone Crisis is of much more recent origin than typically thought (e.g. De Grauwe, 2011)—taking on its most radical form only in the mid-2000s. Around that time, a dramatic shift of internal rules led the ECB to disavow its role as lender of last resort to governments. When the member states faced a sovereign-financing-gap following the 2007–2008 Financial Crisis, the ECB refused to stabilize sovereign debt markets and a government debt crisis ensued. Rather than a historical exceptional event, the ECB's Pandemic Emergency Purchase Programme saw the central bank return to what had always been a well-understood role of the central bank: to act as a lender of last resort to governments.

Monetary financing before the EMU

Throughout the Postwar era up to EMU, European central banks supported public debt markets through direct credit and open market operations (See [Chart 1](#)). This is even the case for the German Bundesbank. Mimicking section 19(b) of the *Federal Reserve Act* as it stood in 1957, Article 20 of the *Bundesbank Act* permitted direct public sector credit extensions with statutory caps of DM3 billion

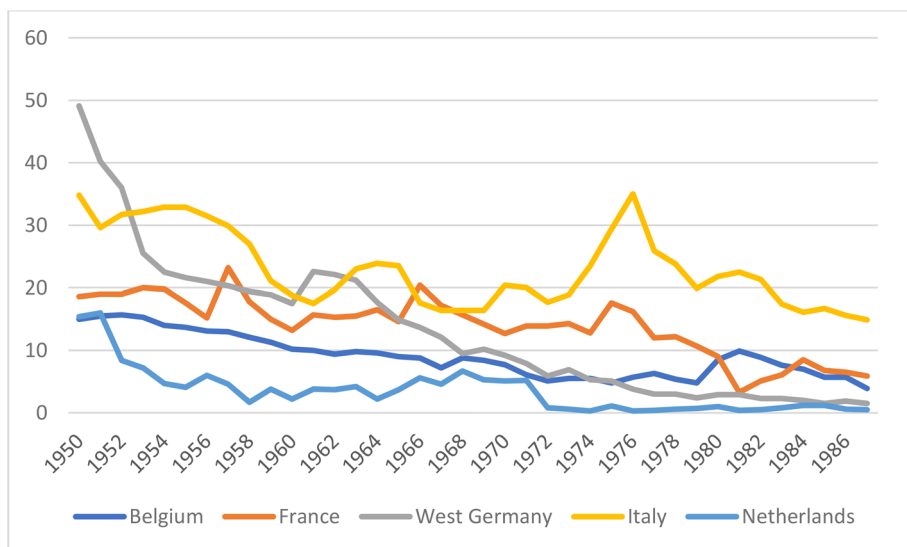


Chart 1. Percentage of the central government's debt held by western European central banks at end of year (Abbas et al., 2014).

for the federal government; ~DM1 billion for the individual Länder; and DM850 million for public agencies. Article 21 permitted the purchase of unlimited volumes of Treasury and agency debt *via* open market operations: enabling the kind of stabilization operations carried out in the UK and US. In the autumn of 1967, the Bundesbank engaged in primary-market purchases of DM 1.3 billion in government debt to fund public spending to respond to a recession, and the German legislature promptly amended the *Bundesbank Act* to raise the volume of direct credit which could be provided to the public sector.

From the 1960s onwards, the Bundesbank's level of support to the treasury diminished, although temporary interventions persisted. First, the Bundesbank Act's quantitative caps on public sector credit were not adjusted for inflation. In 1967, the legal authority authorized public-sector credit representing 18% of its balance sheet (DM 9.5 billion). By 1990, those legal authorities had inflated to <3% of the Bundesbank's assets. Secondly, between 1969 and 1973 the Bundesbank sold large volumes of Treasury claims, received as part of the 1948 monetary reform, into the market, but continued to accommodate 'selling or taking-up of larger amounts' of German Treasury debt (BuBa, 1996, p. 60, 109). For example, in 1975 the Bundesbank accommodated government spending through a purchase of DM7.5 billion in public securities to promote bank lending and 'prevent an undesirable rise in interest rates' (BuBa, 1996, p. 115). Until deep into the 1990s, the Bundesbank bought government securities, conceding that 'the central bank affects the market situation, and the interest rate expectations of market players change, so that the Bundesbank may sometimes unavoidably be forced into the position of an "interest rate leader"' to 'smooth out erratic price movements' and 'ensure that the corresponding securities can trade on the stock exchange at any time, even in larger amounts' (BuBa, 1996). That under-stated account suggests that funding support for government debt was an unintended side-effect of ensuring market functioning. In comparative perspective, we suggest that the Bundesbank's interventions in secondary markets to smooth erratic price movements in German government debt are best understood as macro-financial monetary finance.

The creation of the EMU

Reflecting Bundesbank and other EMU central banks' practice, the 1992 Maastricht Treaty did not prohibit the ECB from acting as a lender of last resort to governments *via* secondary market interventions, but it did include a prohibition of direct transactions between central banks and national treasuries. The distinction is important because, as Part 2 demonstrated, secondary market transactions are a powerful conduit for monetary support to primary debt markets. Despite the European judiciary's discovery of a qualified secondary market prohibition in 2014, no such prohibition was intended during the drafting of the Maastricht Treaty and the accepted conventions of central banking in 1992.²

In the 1988 memo initiating Euro negotiations, Germany's finance minister noted that European central banks must not be legally *obliged* to provide credit to governments (Genscher, 1988). The 1988 Delors Committee took that idea further: EMU should 'exclude access to direct central bank credit and other forms of monetary financing while, however, permitting open market operations in government securities' in addition to providing legally-protected 'independence'

for European central banks (Delors Committee, 1989, p. 24). At the October 1990 European Council meeting, member states then agreed to add a prohibition of monetary financing to the Treaty. However, an internal report specified that government debt purchases would remain permitted 'exclusively on the initiative of the central banks and solely in order to regulate the amount of money in circulation.' (Carli, 1990; cited in Orphal et al., 2023)

While the initiative for government-bond purchases would rest with the ECB, no further restrictions were imposed on the use of such operations. While discussing the historically unprecedented prohibition of direct credit to governments into European law, BoE Governor Leigh-Pemberton worried that 'occasionally it would be useful to undertake such operations to influence the market' (CoG, 1990, p. 11). That worry was dismissed by French governor de Larosière who pointed out that the prohibition would 'enable the System to buy and sell marketable instruments, such as Treasury bills and other securities, in the pursuit of monetary policy and, as such, Mr. Leigh-Pemberton's point was covered.' The ECB would inherit the Bundesbank's approach to government debt, but no prohibition on secondary market interventions to support national treasuries was contemplated. (CoG, 1990, p.11) Leigh-Pemberton's caveat was upheld, but the Maastricht Treaty did prohibit direct transactions between central banks and treasuries (in contrast to the *Bundesbank Act*) by the (now infamous) Art 123 of the Treaty on the Functioning of the European Union.

Operationally, from 1998, the ECB's early operations were stricter to avoid monetary financing than the treaty provisions (van 't Klooster 2022b). The role of government debt in its monetary policy framework was expressly minimized. Outright purchases of government debt would have a negligible role in the implementation of monetary policy, with the ECB's main policy tools consisting of repurchase open market transactions and loans to banks against collateral. Both public and private sector debt were eligible collateral, but private sector debt was given operational preference: a striking contrast with central bank operations in other advanced economies. The ECB's desire for equal treatment of private and public sector debt reached its logical conclusion in 2005 by making the eligibility of government debt as collateral conditional on a sufficiently high credit rating issued by one of the major credit rating agencies (van 't Klooster 2022b). ECB Vice-President Lucas Papademos explained the decision with reference to the strict EMU budget rule stating that 'well-functioning financial markets should reward fiscal prudence and punish unsustainable fiscal policies' (Papademos, 2005). It is only in such statements, and not in the legal documents, that we find the version of the monetary financing taboo with which the ECB approached the Eurozone Crisis.

The Eurozone crisis

Today, the ECB's refusal to act as a 'lender of last resort' in the face of the 2008–2009 record deficits is widely recognized to have brought about the Eurozone Crisis (De Grauwe, 2011; Gabor and Ban, 2016; Constâncio, 2018; Hjertaker & Tranøy, 2022).

The initial driver of the crisis dynamics were large government deficits caused by the unprecedented circumstances of the Global Financial Crisis. Between 2008 and 2014, European governments acquired bad assets from their domestic banking sector for a value of 5.3% of GDP and made direct fiscal transfers for another 2.1% of GDP (ECB, 2015). Expenditures differed considerably, with Ireland alone

Table 4. Government debt issuance absorbed on central bank balance sheet 2008–2012 crises.

Jurisdiction	Increase in general gross debt between 2008 and 2012 in billions of euros, pounds, and dollars	Central bank government bond purchases in billions of euros, pounds, and dollars ³	Percentage of net increase absorbed
Germany	€557	€0	0%
Greece	€40	€34	84%
Ireland	€130	€14	11%
Italy	€316	€103	33%
Portugal	€82	€22	28%
Spain	€449	€44	10%
Euro area	€2,204	€219	10%
United Kingdom	£635	£308	49%
United States	\$5,664 (<i>Federal Debt</i>)	\$1,666	21%

Table 5. Delayed monetary financing in the Eurozone (General government deficits as % of GDP, year that central bank bond purchases start marked with (*)).⁴

	2008	2009	2010	2011	2012
Germany	-0.12	-3.15	-4.38	-0.88	0.01
Greece	-10.18	-15.15	-11.29 (*)	-10.47	-9.09
Ireland	-7.02	-13.85	-32.06 (*)	-13.01	-8.33
Italy	-2.56	-5.12	-4.24	-3.59 (*)	-2.95
Portugal	-3.7	-9.87	-11.4 (*)	-7.66	-6.18
Spain	-4.57	-11.28	-9.53	-9.74 (*)	-10.74
Euro area	-2.16	-6.24	-6.28	-4.24	-3.72
United Kingdom	-5.13	-10.04 (*)	-9.23	-7.48	-8.13
United States	-7.37 (*)	-13.13	-12.43	-11	-9.22

spending 25% of its GDP on bailouts (ECB, 2015). Compounding these direct costs, the indirect costs of financial market conditions and the economic downturn were much larger. The average Eurozone debt-to-GDP level rose from 65% of GDP in early 2008 to 92% at the end of 2014 (ECB, 2015). In countries such as Ireland and Spain, the public debt doubled in a two-year period.

During the Eurozone Crisis, the ECB's refusal to address these acute sovereign-financing-gaps led to devastating market disruptions (De Grauwe, 2011; Chang & Leblond, 2015; Saka et al., 2015). In the absence of decisive central bank action, the financing gaps set into motion a self-enforcing negative spiral between the debt sustainability of the individual member state and the stability of their domestic banking sector. Crises of public and private finance were causally-linked: banks held large volumes of bonds issued by their sovereign; governments were guarantors for banks; rising sovereign yields (hence, lower value of the bonds) led to losses on bank balance sheets - thus downgrades of banks and sovereigns were mutually-reinforcing.

Although the ECB disavowed its role as lender of last resort, in practice it could not avoid it entirely. By late 2009, the ECB had to announce its Securities Markets Programme (SMP), which would turn out to be comparable in size to the volume of fiscal support provided by the Federal Reserve (see Table 4). The SMP absorbed a total of €220 billion government debt, which amounts to 22% of the total rise of debt levels between 2008 and 2012 for the five member states included in the programme.

The ECB's reluctant and delayed monetary financing would be insufficient to accommodate the Eurozone's post-2008 deficits (see Table 5). Rather than pre-empting a panic, the central bank only acted once bond markets had already been destabilized. The Federal Reserve and BoE commenced their QE

programmes in lock-step with the massive expansion of budget deficits (in November 2008 and March 2009 respectively). The ECB's purchases, in contrast, lagged considerably behind the large spending programs triggered by the Financial Crisis, being launched in response to dysfunctional secondary market spreads: purchases of Greek, Portuguese, and Irish bonds began in May 2010, almost two years after their big 2008 deficits. Spain and Italy followed in August 2011. As credit ratings for sovereign debt began to drop, the operational choices made in 2005 to allow financial markets to 'punish unsustainable fiscal policies' exacerbated the panic (Gabor and Ban, 2016; Orphanides, 2017; van 't Klooster 2022b).

Throughout, the ECB refused to provide the unconditional support for government bond markets that had historically been the norm. When the SMP was extended in 2011, both German ECB Governing Council members resigned in protest.⁵ That, we can see now, is surprising: before EMU the Bundesbank had taken the view that stable bond markets were a precondition for monetary stability.

In the spring of 2012, the ECB replaced its SMP program with a new program called 'Outright Monetary Transactions' (OMT), which was explicitly announced as unlimited in size. As ECB president Mario Draghi at the time famously stated: '[w]ithin our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough' (ECB, 2012). The damage had already been done and the Crisis-struck member states would face a decade of economic stagnation and double digit levels of unemployment (Gräbner et al., 2020).

The 2020 pandemic

During the 2020 Pandemic, the ECB's response would be very similar to that of the US and UK, reverting to its historical role as lender of last resort to governments (see Table 6). A Pandemic Emergency Purchase Programme (PEPP) was announced in March 2020 as a €750 billion asset purchase programme: increasing to €1,850 billion by December 2020.⁷ A week earlier, a repeat of the Eurozone Crisis seemed on the horizon. Acknowledging 'more debt issuance coming down the road depending on the fiscal expansion that will be determined by policy-makers,' ECB President Christine Lagarde continued:

'[W]e are not here to close spreads. This is not the function or the mission of the ECB. There are other tools for that, and there are other actors to actually deal with those issues.' (Lagarde, 2020)

Table 6. Government debt issuance absorbed on central bank balance sheet in 2020 Pandemic.

	Increase in general gross debt in 2020 in billions of euros, pounds, and dollars	Central bank government bond purchases in billions of euros, pounds, and dollars ⁶	Percentage of net increase absorbed
Germany	€268	€227	85%
Greece	€10	€18	177%
Ireland	€14	€16	115%
Italy	€163	€175	107%
Portugal	€21	€21	101%
Spain	€157	€117	75%
Euro area	€1,080	€901	83%
United Kingdom	£315	£306	97%
United States	\$4,909 (<i>Federal Debt</i>)	\$2,359	48%

In announcing the PEPP, in contrast, President Lagarde comes very close to stating that it is a programme of monetary financing (van 't Klooster, 2022a). She explicitly acknowledged that the ECB could not counter most economic effects of the pandemic: '[e]ssentially, for a temporary period, a large part of the economy is being switched off' (Lagarde, 2020). In this context, she singled out providing 'supportive financing conditions [...] for governments' amongst the PEPP's objectives (Lagarde, 2020). The monetary financing objective was clear from the PEPP's targeted nature; the ECB bought only 11% of the benchmark allocation for Estonia but a full 113% for Italy. During these months, ECB board members repeatedly acknowledged that targeted purchases would serve to facilitate spending by specific member states (e.g. Schnabel, 2020). The 2021 Review of the ECB monetary policy strategy incorporated stable financial markets into its analytical framework as a pre-condition for long-term price stability (ECB, 2021). The ECB was back to normal after a historically contingent departure. The taboo had been lifted in practice, even if it continued to persist in the verbal acrobatics of its practitioners.

Conclusion

Against the monetarist taboo on monetary financing, we have put forward a macro-financial account conceptualizing it as a historically largely invariant and legitimate part of a central bank's core functions. Monetary financing serves a range of benign functions within the public financial infrastructure, as well as serving a crucial role in filling sovereign-financing-gaps. We documented its invariant occurrence across very different monetary systems at the BoE and the Federal Reserve. We also documented how the ECB in the face of the 2008 and 2009 deficits caused by the banking crises took up a historically exceptional position in refusing to monetize the debt; with disastrous consequences. By 2020, the ECB had learned from that experience and decisively cast off its dysfunctional taboo.

By taking a long historical perspective, we have sought to reinstate central bank support of government expenditure at the heart of the monetary-fiscal nexus. By emphasizing the macro-financial function of monetary finance over its monetarist effects, we do not deny that central bank credit to treasuries may be economically harmful over the long-run, nor that new-money financed deficits are inflationary. As we have suggested, monetary financing is not an aberration from monetary prudence, but rather an often benign and potentially crucial precondition of effective state capacity. Throughout history, we find recurrent monetisation of emergency spending in the face of military conflict, post-war construction and financial market collapse. The adverse consequences of impairing this nexus clearly emerges from the European sovereign debt crisis, in which policy-makers' adherence to the monetary finance taboo despite financial market collapse triggered recursive economic crises. A better understanding of the functional constraints under which central banks operate will help dissolve the opacity of central bank communication on these topics.

Going forward, monetary financing will likely remain a topic of controversy and central banks will continue to struggle with their role as lender of last resort to government. In 2022 alone, the ECB's Transmission Protection Mechanism and the BoE's interventions in the face of the October mini-budget involved a fine-balancing act between an operational reality of support and rhetorical

assertions of monetary dominance (ECB, 2022). Ultimately, we think deep functional reasons ensure the persistence of government debt purchases. We hope that a richer understanding of the structural function of monetary finance will stimulate further research and expand the universe of policy proposals available beyond the intellectual constraints imposed by the taboo.

Notes

1. See, inter alia, Treaty on the Functioning of the European Union, Art 123, Islamic Republic of Pakistan. (2008, November 20). [Letter of Intent, Memorandum of Economic and Financial Policies, concluded with the International Monetary Fund], Constitution of the Republic of Chile, Art 109.
2. ECJ Case C-62/14. The Court asserts that purchases of debt are permissible only if the ECB built “sufficient safeguards into its intervention to ensure that the latter does not fall foul of the prohibition of monetary financing” to ensure the ECB does not “reduce the impetus which that provision is intended to give the Member States to follow a sound budgetary policy.” (Par 100. cf. Case C-493/17, par 107).
3. Details on securities holdings acquired under the Securities Markets Programme https://www.ecb.europa.eu/press/pr/date/2013/html/pr130221_1.en.html; Federal Reserve ‘Assets: Securities Held Outright: U.S. Treasury Securities’; Office of National Statistics, ‘Public Sector Finances: PSA9’. <https://www.bankofengland.co.uk/-/media/boe/files/asset-purchase-facility/2012/annual-report-2012.pdf>
4. OECD Data - General government deficit Total, % of GDP (2008-2012).
5. Bundesbank president Axel Weber resigned in February 2011 and the German ECB board member Jurgen Stark did in September of the same year.
6. Federal Reserve ‘Assets: Securities Held Outright: U.S. Treasury Securities’; Office of National Statistics, ‘Public Sector Finances: PSA9’.
7. Decision (EU) 2020/440 of the European Central Bank of 24 March 2020 on a temporary pandemic emergency purchase programme (ECB/2020/17).

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References

- Abbas, S. M. A., Blattner, L., De Broeck, M., & El-Ganainy, A. (2014). *Sovereign Debt Composition in Advanced Economies: A Historical Perspective*. Washington, D.C.: International Monetary Fund. IMF Working Paper. <https://doi.org/10.5089/9781498358781.001>
- Agur, I., Capelle, D., Dell'Ariccia, G., & Sandri, D. (2022). (). *Monetary Finance: Do Not Touch, or Handle with Care?* (Departmental Paper DP/2022/001). Washington, D.C.: International Monetary Fund. IMF Departmental Paper. <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2022/01/11/Monetary-Finance-Do-Not-Touch-or-Handle-with-Care-464862>
- Akram, T., & Das, A. (2017). The dynamics of government bond yields in the euro zone. *Annals of Financial Economics*, 12(03), 1750011. <https://doi.org/10.1142/S2010495217500117>
- Allen, W. A. (2019). *The bank of england and the government debt: Operations in the gilt-edged market, 1928-1972*. Cambridge University Press.
- Andolfatto, D., & Li, L. (2013). Is the fed monetising government debt? *Economic Synopses*, 2013(5), 1–2. <https://doi.org/10.20955/es.2013.5>
- Arslan, Y., Drehmann, M., & Hofmann, B. (2020). *Central Bank Bond Purchases in Emerging Market Economies* (BIS Bulletins 20). Bank for International Settlements. <https://www.bis.org/publ/bisbull20.htm>.
- Assistant General Counsel to the Federal Open Market Committee. (1937, January 26). *Minutes of the federal open market committee*.
- Bailey, A. (2020a, April 6). Bank of England is Not Doing 'Monetary Financing.' *Financial Times*.
- Bailey, A. (2020b, November 5). Letter to Rish Sunak, Chancellor of the Exchequer. *Financial Times*.
- BoE, & HM Treasury. (1995). *Report of the Debt Management Review* (Bank of England and Her Majesty's Treasury, July 1995).
- BoE. (1966). *The Functions and Organisations of the Bank of England* (Bank of England Quarterly Bulletin, Q3 September 1966).
- BoE. (2020). HM Treasury and Bank of England announce temporary extension to Ways and Means facility. (Press Release, 9 April 2020).
- BoE. (2022). 'Unwind of Financial Stability Gilt Purchases' (Press release 23 November 2022).
- Bateman, W. (2020). *Public finance and parliamentary constitutionalism*. Cambridge University Press.
- Bateman, W. (2021). The law of monetary finance under unconventional monetary policy. *Oxford Journal of Legal Studies*, 41(4), 929–964. <https://doi.org/10.1093/ojls/gqab008>
- Bezemer, D. (2009). *No one saw this coming. Understanding financial crisis through accounting models* (SOM Research Reports Vol. 09002). University of Groningen, SOM research school.
- Bibow, J. (2009). On the origin and rise of Central Bank independence in West Germany. *The European Journal of the History of Economic Thought*, 16(1), 155–190. <https://doi.org/10.1080/09672560802707498>
- Board of Governors of the Federal Reserve System. (1953). *Annual Report*.
- Board of Governors of the Federal Reserve System. (1970, May 5). *Memorandum of Discussion of the Federal Open Markets Committee*. <https://www.federalreserve.gov/monetarypolicy/files/fomcmod19700505.pdf>
- Board of Governors of the Federal Reserve System. (1972). *Annual Report*.
- Board of Governors of the Federal Reserve System. (1981). *Annual Report*.
- Bomberger, W., & Makinen, G. (1983). The Hungarian hyperinflation and stabilization of 1945-1946. *Journal of Political Economy*, 91(5), 801–824. <https://doi.org/10.1086/261182>
- 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. <https://doi.org/10.1080/09692290.2016.1252415>
- Bresciani-Turroni, C. (1937). *The economics of inflation—A study of currency depreciation in post war Germany*. Augustus Kelly Press.
- BuBa. (1996). *The monetary policy of the bundesbank*. Deutsche Bundesbank.

- Buiter, W. H. (2014). The simple analytics of helicopter money: Why it works—always. *Economics*, 8(1), 1–45. <https://doi.org/10.5018/economics-ejournal.ja.2014-28>
- Buiter, W. H. (2020). *Central banks as fiscal players: The drivers of fiscal and monetary policy space*. Cambridge University Press.
- Buchanan, J., & Wagner, R. (1977). *Democracy in deficit: The political legacy of lord keynes*. Liberty Fund.
- Buetzer, S. (2022). Advancing the monetary policy toolkit through outright transfers. *IMF Working Papers*, Article 2022/087. <https://ideas.repec.org/p/imf/imfwpa/2022-087.html> <https://doi.org/10.5089/9798400209949.001>
- Capie, F. (2010). *The Bank of England: 1950s-1979*. Cambridge University Press.
- Carli, G. (1990). *Report to the European Council*. ECOFIN Council.
- Casanova, C., Hardy, B., & Onen, M. (2021, September 20). Covid-19 policy measures to support bank lending. *Bank of International Settlements Quarterly Review*. https://www.bis.org/publ/qtrpdf/r_qt2109d.htm
- Chang, M., & Leblond, P. (2015). All in: Market expectations of eurozone integrity in the sovereign debt crisis. *Review of International Political Economy*, 22(3), 626–655. <https://doi.org/10.1080/09692290.2014.941905>
- Choudhry, M. (2019). *Analysing and interpreting the yield curve*. (2nd ed.). Wiley.
- Clapham, J. (1944). *The Bank of England: A History*. Vol 2, Cambridge University Press.
- CoG. (1990, September 11). *Minutes of the 248th Meeting on* (11 September 1990). Basel: Committee of Governors of the Central Banks of the Member States of the European Economic Community.
- Constância, V. (2018, May 17). *Completing the Odyssean Journey of the European Monetary Union* [Presentation]. ECB Colloquium on “The Future of Central Banking”, Frankfurt. <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp180517.en.html>
- Cottarelli, C. (1993). Limiting central bank credit to government. *International Monetary Fund Occasional Papers*, no. 110.
- Crosignani, M., Faria-e-Castro, M., & Fonseca, L. (2020). The (unintended?) Consequences of the largest liquidity injection ever. *Journal of Monetary Economics*, 112(June), 97–112. <https://doi.org/10.1016/j.jmoneco.2019.01.020>
- Culham, J. (2020). Revisiting the concept of liquidity in liquidity preference. *Cambridge Journal of Economics*, 44(3), 491–505. <https://doi.org/10.1093/cje/bez057>
- Darling, A. (2009, March 3). [Letter to Mervyn King, Governor of the Bank of England].
- Grauwe, D. (2011). *The European Central Bank: Lender of Last Resort in the Government Bond Markets?*. (CESifo Working Paper Series 3569).
- Delors Committee. (1989). *Report on Economic and Monetary Union in the European Community*. Committee for the Study of Economic and Monetary Union. Brussels. http://aei.pitt.edu/1007/1/monetary_delors.pdf
- Desan, C. A. (2014). *Making money: Coin, currency, and the coming of capitalism*. Oxford University Press.
- Dickson, G. M. (2016). *The financial revolution in England: A study in the development of public credit, 1688-1756*. Routledge.
- Dornbusch, R and Draghi, M, Introduction. (1990). In Dornbusch, R. & Draghi, M. (Eds.), *Public debt management: Theory and practice*. Cambridge University Press.
- Draghi, M. (2020, March 26). We Face a War against Coronavirus and must mobilise Accordingly. *Financial Times*
- Dyson, K., & Featherstone, K. (1999). *The road to Maastricht: Negotiating economic and monetary union*. Oxford University Press.
- ECB. (1998). *The single monetary policy in stage three: General documentation on ESCB monetary policy instruments and procedures*. European Central Bank.
- ECB. (2011, December). ECB Announces Measures to Support Bank Lending and Money Market Activity. *European Central Bank*. https://www.ecb.europa.eu/press/pr/date/2011/html/pr111208_1.en.html.
- ECB. (2015). The Fiscal Impact of Financial Sector Support during the Crisis. *ECB Economic Bulletin*, no. 6, 74–87.
- ECB. (2021). *An Overview of the ECB's Monetary Policy Strategy*. Frankfurt: European Central Bank. https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monpol_strategy_overview.en.html
- ECB. (2022), July 21). *The Transmission Protection Instrument* [Press Release]. European Central Bank. <https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220721~973e6e7273.en.html>

- Eichengreen, B., Garber. (1991). Before the accord: U.S. Monetary-financial policy, 1945-1951. In G. Hubbard (Ed.), *Financial Markets and Financial Crises*. University of Chicago Press, National Bureau of Economic Research.
- Eichengreen, B. (2011). *Exorbitant privilege: The rise and fall of the dollar*. Oxford University Press.
- Elmus, W. R. (1969). The World War II policy of fixing a pattern of interest rates. *Journal of Finance*, 24, 447–458.
- EMI. (1995). Eligible instruments for mobilisation and pledging during stage 3 of EMU. *Monetary policy sub-committee task force on eligible debt instruments for mobilization and pledging*. European Monetary Institute.
- Federal Open Market Committee. (2009a, March 11). *Large Scale Asset Purchases*. <https://www.federalreserve.gov/monetarypolicy/files/FOMC20090311memo02.pdf>
- Federal Open Market Committee. (2009b, March 17-18). *Transcript of Meeting on March 17-18, 2009*. <https://www.federalreserve.gov/monetarypolicy/files/FOMC20090318meeting.pdf>
- Federal Open Market Committee. (2010a, October 15). *Transcript of Conference Call on October 15, 2010*. <https://www.federalreserve.gov/monetarypolicy/files/FOMC20101015sconfcall.pdf>
- Federal Open Market Committee. (2010b, November 2-3). *Transcript of Meeting on November 2-3, 2010*. <https://www.federalreserve.gov/monetarypolicy/files/FOMC20101103meeting.pdf>.
- Federal Reserve Open Market Policy Conference. (1932, January 12). *Minutes of the Meeting of the Open Market Policy Conference*. <https://fraser.stlouisfed.org/title/minutes-meeting-s-open-market-policy-conference-5188/meeting-january-11-12-1932-23447>.
- Federal Reserve Bank of New York. (1919). *Report on Business Conditions*. (20 November 1919, New York.
- Federal Reserve Bank of New York. (1951). *Circular: No. 3665*. (Federal Reserve Bank of New York 5 March 1951).
- Fforde, J. (1992). *The Bank of England and public policy, 1941-1958*. Cambridge University Press.
- Fleming, M. J., Liu, H., Podjasek, R., & Schurmeier, J. (2021). *The Federal Reserve's Market Functioning Purchases*. Federal Reserve Bank of New York Staff Reports, no. 998. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr998.pdf?sc_lang=en (December 12, 2022).
- Friedman, M. (1948). A monetary and fiscal framework for economic stability. *American Economic Review*, 38(3), 245–264.
- Gabor, D., & Vestergaard, J. (2018). Chasing unicorns: The European single safe asset project. *Competition & Change*, 22(2), 139–164. <https://doi.org/10.1177/1024529418759638>
- Gabor, D., & Cornel, B. (2016). Banking on bonds: The new links between states and markets. *JCMS: Journal of Common Market Studies*, 54(3), 617–635. <https://doi.org/10.1111/jcms.12309>
- Gabor, D. (2021). *Revolution without Revolutionaries: Interrogating the New Politics of Monetary Financing*. [Policy Brief]. Finanzwende and Heinrich Boell Stiftung.
- Galí, J. (2020). The effects of a money-financed fiscal stimulus. *Journal of Monetary Economics*, 115(vember), 1–19. <https://doi.org/10.1016/j.jmoneco.2019.08.002>
- Galofré-Vilà, G. (2021). *The Costs of Hyperinflation: Germany 1923*. (Universidad Pública de Navarra Working Paper D.T. 2101).
- Galle, B., & Listokin, Y. (2021). *Monetary Finance* [Unpublished manuscript]. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3885966
- Garbade, K. (2015). *The early years of the primary dealer system*. Federal Reserve Bank of New York Working Paper.
- Garbade, K. (2012). *Birth of a market: The U.S. treasury from the great war to the great depression*. The MIT Press.
- Garbade, K. (2014). *Direct Purchases of U.S. Treasury Securities by Federal Reserve Banks*. (Federal Reserve Bank of New York Staff Reports, No 684, August 2014).
- Garbade, K. (2016). *Repurchase Agreements as an Instrument of Monetary Policy at the Time of the Accord* (FRBNY Staff Reports, no 780, June 2016).
- Garbade, K. (2020a). *After the Accord: A History of Federal Reserve Open Market Operations, The US Government Securities Market, and Treasury Debt Management from 1951 to 1979*. Cambridge University Press.
- Garbade, K. (2020b). 'Managing the Treasury Yield Curve in the 1940s', Federal Reserve Bank of New York Staff Reports, No. 913: https://www.newyorkfed.org/research/staff_reports/sr913.html.
- Garbade, K. (2019). *Federal Reserve Participation in Public Treasury Offerings*. (FRBNY Staff Reports, No 906, December 2019).
- Gelpert, A., & Gerding, E. F. (2016). Inside Safe Assets. *Yale Journal on Regulation*, 33, 363–421.

- Germann, J. (2021). *Unwitting Architect: German Primacy and the Origins of Neoliberalism*. Stanford University Press.
- Genscher, H.-D. (1988, February 26). *Memorandum für die Schaffung eines europäischen Währungsraumes und einer Europäischen Zentralbank*.
- Giovannini, A. (2013). Risk Free Assets in Financial Markets. *BIS Papers*, 72, 73–78.
- Gräbner, C., Heimberger, P., Kapeller, J., & Schütz, B. (2020). Is the Eurozone Disintegrating? Macroeconomic Divergence, Structural Polarisation, Trade and Fragility. *Cambridge Journal of Economics*, 44(3), 647–669. <https://doi.org/10.1093/cje/bez059>
- Harding, W. G. (1925). *The Formative Period of the Federal Reserve System*. Houghton Mifflin.
- Hauser, A. (2021, January 7). *From Lender of Last Resort to Market Maker of Last Resort via the Dash for Cash: Why Central Banks Need New Tools for Dealing with Market Dysfunction* [Presentation]. Reuters, London. <https://www.bis.org/review/r210113a.pdf>
- Hemming, R. (2013). The Macroeconomic Framework for Managing Public Finances. In R. Allen, R. Hemming, & B. Potter (Eds.), *The International Handbook of Public Financial Management*. (pp. 17–37). Springer.
- Hetzl, R., & Leach, R. (2001). *The Treasury-Fed Accord: A New Narrative Account* (Federal Reserve Bank of Richmond Economic Quarterly, Winter 2001).
- Hjertaker, I., & Tranøy, B. S. (2022). Did they know what they were doing? The Euro-crisis as a policy fiasco. *Comparative European Politics*, 20(6), 770–788. <https://doi.org/10.1057/s41295-022-00317-1>
- Treasury, H. M. (1997). *The Future of UK Government Debt and Cash Management: A Proposal for Consultation by HM Treasury*. (HM Treasury, 29 July 1997).
- Kaldor, N. (1985). *The Scourge of Monetarism*. Oxford University Press.
- Kern, A., Reinsberg, B., & Rau-Goehring, M. (2020). (). *The role of IMF conditionality for central bank independence*. (European Central Bank Working Paper Series, No 2464/August 2020).
- Keynes, J. M. (1923). A Tract on Monetary Reform 2013 re-issue. In E. Johnson, & D. Moggridge (Eds.), *The Collected Writings of John Maynard Keynes*. : Volume IV. Cambridge University Press.
- Keynes, J. M. (1930). A Treatise on Money, II The Applied Theory of Money. Reproduced in E. Johnson, & D. Moggridge (Eds.), *The Collected Writings of John Maynard Keynes* : Volume IV (2nd ed., vol. VI). Cambridge University Press.
- Keynes, J. M. (1938). *The General Theory of Employment, Interest and Money*. Macmillan.
- King, M. (2009, February 17). [Letter to Alistair Darling, Chancellor of the Exchequer].
- Kolodko, G. (1991). Polish Hyperinflation and Stabilization, 1989-1990. *MOCT-MOST Economic Policy in Transitional Economies*, 1(1), 9–36. <https://doi.org/10.1007/BF01101589>
- Kregel, J. (2011). *Was Keynes's Monetary Policy, à Outrance in the Treatise, a Forerunner of ZIRP and QE? Did He Change His Mind in the General Theory?* (Economics Policy Note Archive, Economics Policy Note Archive). Levy Economics Institute, May 2011. <https://ideas.repec.org/p/lev/levypn/11-04.html>.
- Lagarde, C. (2020, March 12). *Our Response to the Coronavirus Emergency*. European Central Bank. ECB Blog. <https://www.ecb.europa.eu/press/pressconf/2020/html/ecb.is200312~f857a21b6c.en.html>
- McIndoe-Calder, T. (2018). Hyperinflation in Zimbabwe: Money Demand, Seigniorage and Aid Shocks. *Applied Economics*, 50(15), 1659–1675. <https://doi.org/10.1080/00036846.2017.1371840>
- Mee, S. (2019). *Central Bank Independence and the Legacy of the German Past*. Cambridge University Press.
- Mehrling, (2011). *The New Lombard Street: How the Fed Became the Dealer of Last Resort*. Princeton University Press.
- Minsky, H. (2008a). *John Maynard Keynes*. McGraw Hill.
- Minsky, H. (2008b). *Stabilizing an Unstable Economy*. McGraw Hill.
- Monnet, E. (2018). *Controlling Credit: Central Banking and the Planned Economy in Postwar France, 1948-1973*. Cambridge University Press.
- Monnet, E. (2021). *La Banque Providence: Démocratiser Les Banques Centrales et La Monnaie*. Seuil.
- O'Brien, K., & Palma, N. (2020). ' Not an ordinary bank but a great engine of state: The Bank of England and the British economy, 1694. *Economic History Review*, 1844. (Early View) <https://doi.org/10.1111/ehr.13191>
- Orphanides, A. (2017). *ECB Monetary Policy and Euro Area Governance: Collateral Eligibility Criteria for Sovereign Debt* (Working Paper 5258–17). Cambridge (MA): MIT Sloan School. <https://papers.ssrn.com/abstract=3076184>

- Orphal, P., Kern, F., & Krahé, M. (2023). *Interest Rates, not the Money Supply*. Dezerntat Zukunft. <https://www.dezernatzukunft.org/wp-content/uploads/2023/01/Orphal-et-al.-2022-Interest-Rates-not-the-Money-Supply-Towards-a-Non-Monetarist-Interpretation-of-the-TFEU-2.pdf>
- Papademos, L. (2005, June 3). *The Political Economy of the Reformed Stability and Growth Pact: Implications for Fiscal and Monetary Policy* [Presentation]. The ECB and Its Watchers VII, Frankfurt. https://www.ecb.europa.eu/press/key/date/2005/html/sp050603_1.en.html
- Ricardo, D. (1888). *Principles of Political Economy and Taxation*. in JR McCulloch (ed), *The Works of David Ricardo*. (John Murray.)
- Reinhart, C. M., & Rogoff, K. S. (2009). *This Time Is Different: Eight Centuries of Financial Folly*. Princeton University Press.
- Ryan-Collins, J., & van Lerven, F. (2018). *Bringing the Helicopter to Ground. A Historical Review of Fiscal-Monetary Coordination to Support Economic Growth in the 20th Century*. (UCL Institute for Innovation and Public Purpose Working Paper Series).
- Ryan-Collins, J. (2017). Breaking the Taboo: A History of Monetary Financing in Canada, 1930-1975. *The British Journal of Sociology*, 68(4), 643–669. <https://doi.org/10.1111/1468-4446.12278>
- Saka, O., Fuertes, A.-M., & Kalotychou, E. (2015). ECB Policy and Eurozone Fragility: Was De Grauwe Right? *Journal of International Money and Finance*, 54(June), 168–185. <https://doi.org/10.1016/j.jimonfin.2015.03.002>
- Sargent, T. J. (1982). The Ends of Four Big Inflations. in Robert E Hall, R. E. (ed) (1989), *Inflation: Causes and Effects*. University of Chicago Press.
- Sargent, T. J., & Wallace, N. (1981). Some Unpleasant Monetarist Arithmetic. *Quarterly Review*, 5(3), 1–17. <https://doi.org/10.21034/qv.531>
- Sayers, R. S. (1976). *The Bank of England, 1891-1944, volumes 1 and 2*. Cambridge University Press.
- Schenk, C. R. (2014). *Britain and the Sterling Area: From devaluation to convertibility in the 1950s*. Routledge.
- Schnabel, I. (2020a, September 11). *The Shadow of Fiscal Dominance: Misconceptions, Perceptions and Perspectives [Speech]*. European Central Bank. <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200911~ea32bd8bb3.en.html>
- Stasavage, D. (2016). ‘What we can learn from the early history of sovereign debt? *Explorations in Economic History*, 59, 1–16. <https://doi.org/10.1016/j.eeh.2015.09.005>
- Stigum, M., & Crescenzi, A. (2007). *Stigum's Money Market*. (4th ed.). McGraw-Hill.
- Strong, B. (1926). [Evidence to The Committee on Bank and Currency]. US Congress.
- Tanzi, V., & Schuknecht, L. (2000). *Public Spending in the 20th Century*. Cambridge University Press.
- Tily, G. (2006). Keynes's Theory of Liquidity Preference and His Debt Management and Monetary Policies. *Cambridge Journal of Economics*, 30(5), 657–670. <https://doi.org/10.1093/cje/bei104>
- Tooze, A. (2018). *Crashed: How a Decade of Financial Crises Changed the World*. Penguin Press.
- Trichet, J.-C. (2005, April 7). *Introductory statement to the press conference of 7 April 2005 [Speech]*. European Central Bank, Frankfurt. <https://www.ecb.europa.eu/press/pressconf/2005/html/is050407.en.html>
- Turner, A. (2015, November 5-6). *The Case for Monetary Finance. – An Essentially Political Issue [Paper presentation]*. The 16th Jacques Polak Annual Research Conference, International Monetary Fund.,
- Turner, A. (2016). *Between Debt and the Devil: Money, Credit and Fixing Global Finance*. Princeton University Press.
- Tymoigne, E. (2016). Government Monetary and Fiscal Operations: Generalising the Endogenous Money Approach. *Cambridge Journal of Economics*, 40(5), 1317–1332. <https://doi.org/10.1093/cje/bew012>
- US Treasury. (1925). *Annual Report*.
- US Treasury. (1959). *Annual Report*.
- US Treasury. (1971). *Annual Report*.
- van 't Klooster, J. (2022a). Technocratic Keynesianism: A paradigm shift without legislative change. *New Political Economy*, 27(5), 771–787. <https://doi.org/10.1080/13563467.2021.2013791>
- Van 't Klooster, J. (2022b, March). The Politics of the ECB's Market-Based Approach to Government Debt. *Socio-Economic Review*. <https://doi.org/10.1093/ser/mwac014>
- Weidmann, J. (2012, September 18). *Money Creation and Responsibility [Speech]*. 18th Colloquium of the Institute for Bank-Historical Research, Frankfurt.