CEP council on economic policies

Against Amnesia: Re-Imagining Central Banking

Benjamin Braun and Leah Downey

January 2020

Discussion Note 2020/1

Abstract

The purpose of the present paper is to identify and challenge contemporary adherence to the core of the prevailing monetary policy consensus. This consensus consists of what we call the *holy trinity* of the inflation targeting paradigm: price stability as the primary *goal* of the central bank; central bank independence as the *institutional arrangement*; and the short-term interest rate as the *operational target*. Drawing on the literature on the history and political economy of central banking, we argue that the inability to think beyond this holy trinity stems from a severe case of collective institutional amnesia and comes at a heavy cost. We highlight that monetary policy can be deployed towards social purposes other than controlling inflation, in institutional configurations other than isolation from the rest of the government and with instruments other than interest rate manipulation. One central message is that whereas central banks are commonly portrayed as commanding only one instrument, in reality they have a battery of instruments at their disposal. We should think of central banking not as a hammer – a tool to hit inflation where it rears its ugly head – but as a Swiss army knife – a multi-purpose tool with many instruments. Doing so will help overcome the collective amnesia that stands in the way of an enlightened debate about how the power of central banking can – and perhaps should – be harnessed in the pursuit of collective social goals.

About the Authors

Benjamin Braun is a political economist at the Max Planck Institute for the Study of Societies, and currently a member of the Institute for Advanced Study in Princeton. He has written on the state-finance nexus, especially in the area of monetary policy. His future research will focus on the political economy of 'asset manager capitalism'. Benjamin holds a PhD from the University of Warwick and Université Libre de Bruxelles, as well as a M.A. from the University of Munich.

Leah Downey is a political theorist with interests in the politics of economic theory, economic policymaking, and the administrative state. Her current research focuses on the democratic status of monetary policy. Leah is a PhD candidate in the Harvard Government department and a graduate fellow at the E. J. Safra Center for Ethics. She received an MSc in Economics and Philosophy from LSE and B.A.s in both Economics and Mathematics from the University of North Carolina at Chapel Hill.

CEP Discussion Notes

Contents

1 Introduction 1

2 The Holy Trinity 2

3 Historical Specificity 4

3.1 Pre-War 5

3.2 Post-War, Pre-Inflation 5

3.3 Holy Trinity 7

3.4 Shoring up the Holy Trinity: The Tinbergen Rule 9

4 Beyond the Tinbergen Rule: A Swiss Army Knife Theory of Central Banking 10

4.1 Lender of Last Resort 10

4.2 Financial Market-Shaping I: Monetary Policy Implementation 12

4.3 Financial Market-Shaping II: Monetary Policy Transmission 13

5 Conclusion 15

References 17

1 Introduction

The purpose of the present paper is to identify and challenge contemporary adherence to the core of the prevailing monetary policy consensus. This consensus consists of what we call the *holy trinity* of the inflation targeting paradigm: price stability as the primary *goal* of the central bank; central bank independence as the *institutional arrangement*; and the short-term interest rate as the *operational target*.[1] With these three 'dos' come three 'don'ts' – don't pursue additional goals; don't cooperate with the fiscal authority; and don't act in ways that are less market-neutral than short-term money market interventions.

As is any economic policy regime, the holy trinity is the product of a specific historical juncture. In the early 1970s, President Nixon pulled the gold rug from under the international monetary system and OPEC sparked an oil-fueled global inflation crisis. Governments and central bankers were desperate for a new nominal anchor for the global monetary system. It was in this context that monetarists and New Classical economists launched a sustained attack on the Keynesian synthesis in macroeconomics. In the wake of the Thatcher and Reagan revolutions, economists' insistence that the best the state could do in the realm of macroeconomic steering was inflation control fell on fertile political ground.[2] Although it came at a heavy cost in terms of growth and employment, Paul Volcker's success in bringing down the inflation rate in the US helped consolidate the consensus that controlling inflation should be the core *goal* of central banking. To create the political conditions for monetary policy to achieve that goal, governments flocked to the *institutional arrangement* of central bank independence. Between 1990 and the mid-2000s, the institution of central bank independence spread globally, in high-, middle-, and low-income countries alike. At the operational level, initial experiments with monetary targeting soon gave way to the targeting of the short-term interest rate through open market operations. The instruments deployed in pursuit of this *operational* target were hailed for their purported market neutrality, limiting the central bank's direct interventions to the interbank money market.

Despite its historical contingency, the holy trinity has ossified into a rigid ideological and institutional structure that – by design – shackles the central bank to the narrow task of inflation control. The challenge today is to excavate central banking's wide-reaching potential for supporting state capacity that is currently hidden under the sediment of the political settlement of the 1980s and 1990s. That sediment is thick and deep. The intellectual victory of New Classical macroeconomics and the political victory of neoliberal macroeconomic governance have produced a severe case of collective institutional

[1] In this paper we will at times defer to common parlance and refer to the operational target as the instrument.
[2] Peter A. Hall, "Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain," *Comparative Politics* 25, no. 3 (1993); Mark Blyth, *Great Transformations. Economic Ideas and Institutional Change in the Twentieth Century* (Cambridge: Cambridge University Press, 2002).

amnesia.[3] It is taken for granted that central banks must serve as non-democratic bulwarks against 'popular' – read: majority – pressure for policies which they deem too potentially inflationary. However, there is nothing about the institution of central banking that prevents democratic majorities from harnessing its power to help achieve broader societal objectives, perhaps most notably in the areas of global warming and inequality.[4]

Drawing on the literature on the history and political economy of central banking, this paper is an attempt to overcome this institutional amnesia. We will make the case that monetary policy can be deployed towards social purposes other than controlling inflation, in institutional configurations other than isolation from the rest of the government and with instruments other than interest rate manipulation. One central message is that whereas central banks are commonly portrayed as commanding only one instrument, in reality they have a battery of instruments at their disposal. We should think of central banking not as a hammer – a tool to hit inflation where it rears its ugly head – but as a Swiss army knife – a multi-purpose tool with many instruments.[5] Doing so will help overcome the collective amnesia that stands in the way of an enlightened debate about how the power of central banking can – and perhaps should – be harnessed in the pursuit of collective social goals.

2 The Holy Trinity

For four decades, the holy trinity has been the gold standard for conventional monetary policymaking. Even central banks with legislative mandates that are not entirely in line with the holy trinity have found ways to abide by it. The U.S. Federal Reserve, for example, has a dual mandate from Congress. That has not stopped the U.S. monetary authority—the Federal Open Market Committee (FOMC)—from adhering to the "central tenant of inflation targeting that price stability must be the primary long-run goal of monetary policy."[6] One FOMC member is even reported to have said that "Congress had gotten it wrong" in adding the 'superfluous' aim of maximum employment to the mandate.[7]

We have chosen to call the prevailing approach to monetary policy the holy trinity for two reasons: consensus and power. During the Great Moderation, central bankers believed they had cracked the code of monetary policymaking. Marvin Goodfriend published a paper in the

[3] For a study of collective amnesia with regard to the role of the state in the US economy, see Jacob S. Hacker and Paul Pierson, *American Amnesia: How the War on Government Led Us to Forget What Made America Prosper* (New York: Simon and Schuster, 2016). For a broader discussion of the issue see Alastair Stark and Brian Head, "Institutional Amnesia and Public Policy," *Journal of European Public Policy* 26, no. 10 (2019).

[4] The view that central banks will need to play an active part in a green transition is rapidly gaining traction. See Pierre Monnin, "Central Banks and the Transition to a Low-Carbon Economy," in *CEP Discussion Note no. 1* (Zurich: Council on Economic Policies, 2018); Adam Tooze, "Why Central Banks Need to Step up on Global Warming," *Foreign Affairs*, 20 July 2019; Ulrich Volz, "On the Role of Central Banks in Enhancing Green Finance," in *UN Environment Inquiry Working Paper 17/01* (2017).

[5] Recent events suggest that contemporary monetary policy is best analogized to a sledgehammer since it seems to have the power to hammer inflation down, but not to pry it back up again.

[6] Ben S. Bernanke et al., *Inflation Targeting - Lessons from the International Experience* (Princeton University Press, 1999), 10.

[7] Tarullo, Dan. "On Not Writing About the Fed." Speech at Faculty Scholarship and Awards Luncheon, Georgetown University Law Center. 26 April 2018. Draft on file with authors.

fall of 2007 entitled, “How the World Achieved Consensus on Monetary Policy.”[8] “Monetary policy was easy” during the Great Moderation because the central banker’s task was clear: execute monetary policy according to best practices, the holy trinity.[9]

The holy trinity spread across the world, even reaching countries that had heretofore not established a central bank or a statistical agency.[10] The effort by the international central banking community to evangelize the holy trinity made for incredible continuity in policymaking approaches across nations. Martin Marcussen wrote in 2003, “we are witnessing the emergence of a ‘transgovernmental governance network’ of central bankers.”[11] It is a powerful network. In order to effectively and efficiently spread the good word about the ‘optimal’ approach to monetary policymaking, evangelizers boiled it down to the essentials, to a prescription that could be repeatedly applied to nations around the world. The simplicity and clarity of the holy trinity make it immensely powerful, as does its apolitical veneer.

In the wake of the Great Financial Crisis, at a hearing before a committee of the United States House of Representatives, Alan Greenspan declared that he had “discovered a flaw in the model that I perceived is the critical functioning structure that defines how the world works”.[12] Indeed, the housing market bubble was, in part, the consequence of a failure of supervisory, regulatory, and monetary policy. What is more, after the financial crisis, conventional monetary policy failed to stabilize the economy, and all major central banks conducted large-scale asset purchases that had not been part of the holy trinity framework. How has the holy trinity fared in light of this double failure?

In 2012, Otmar Issing, macroeconomist and former member of the Board of the European Central Bank (ECB), wrote in a tellingly entitled piece, “Central Banks - Paradise Lost,” that “proponents of this approach [the holy trinity] see inflation targeting still as the optimal strategy or even more so as a consequence of the financial crisis.”[13] This is largely correct, although recent currents suggest that there are efforts to add on to the holy trinity because of the persistently low natural interest rates we are facing today.[14] Central bankers and

---

[8] Marvin Goodfriend, “How the World Achieved Consensus on Monetary Policy,” *The Journal of Economic Perspectives; Nashville* 21, no. 4 (October 2007): 47–68, http://dx.doi.org.ezp-prod1.hul.harvard.edu/10.1257/jep.21.4.47.

[9] Bernanke et al., *Inflation Targeting - Lessons from the International Experience*, 3.

[10] Juliet Johnson, *Priests of Prosperity: How Central Bankers Transformed the Postcommunist World* (Ithaca: Cornell University Press, 2016).

[11] Quoted in Alasdair Roberts, *The Logic of Discipline: Global Capitalism and the Architecture of Government* (Oxford University Press, 2010), 37.

[12] Alan Beattie and James Politi, “‘I Made a Mistake,’ Admits Greenspan,” *Financial Times*, October 23, 2008, https://www.ft.com/content/aee9e3a2-a11f-11dd-82fd-000077b07658.

[13] Otmar Issing, “Central Banks - Paradise Lost,” *IDEAS Working Paper Series from RePEc; St. Louis*, 2012, 6, http://search.proquest.com/docview/1698578110?rfr_id=info%3Axri%2Fsid%3Aprimo.

[14] Ad hoc responses to the Great Financial Crisis include macroprudential policy measures as well as proposals for policy changes to address the looming effective lower bound (ELB).

economists alike advocate expanding the operational instruments available to central bankers beyond manipulating short-term target rates into things like quantitative easing.[15]

In the wake of the GFC and the deployment of quantitative easing (QE), Joseph Stiglitz also took aim at the holy trinity, but his take was much more radical. “There does not, in general, exist a Pareto superior monetary policy.” It is this point that we want to emphasize here. The prevailing historical narrative around monetary policymaking—that the holy trinity represents the ‘optimal’ approach to monetary policymaking—suggests that a Pareto superior approach does exist.[16] Furthermore, the implication of this narrative is that the holy trinity is a *technically* optimal way to conduct monetary policy and as such, there is no need, nor any space, for politics in the choice to deploy it. The legislature can simply ‘set it and forget it.’ In the remainder of this paper we argue against this view.

3 Historical Specificity

We reject the version of monetary policymaking history that portrays it as one continuous ascent to a Paretian summit. Instead we show that throughout history, monetary policy regimes have changed based on economic and political circumstance as well as ‘mere fashion of beliefs.’[17] The implication of this version of monetary policymaking history is that choosing how to conduct monetary policy is a difficult political decision without an obviously (Pareto) superior answer. There are various potential approaches to monetary policy, each will have different effects, elevate different values, and will be appropriate to different economic and political contexts. The lack of an optimal approach implies the need for a *political* choice and, in democratic systems, for a *democratic* choice. If there’s no optimal monetary policy, then none of the three elements of the holy trinity is safe from contestation: not the goal, not the institutional arrangement, not the instrument.

[15] Some see quantitative easing as a mere expansion of existing instruments, rather than constituting a new instrument. After all, QE is merely a massive open market operation. From this perspective, the ‘unconventionality’ of QE is more about its magnitude than its technical character.

[16] See Jeffrey C. Fuhrer et al., “Should the Fed Regularly Evaluate Its Monetary Policy Framework?,” *IDEAS Working Paper Series from RePEc; St. Louis*, 2018, 15–24, http://search.proquest.com/docview/2153177655?rfr_id=info%3Axri%2Fsid%3Aprimo. In this piece the authors give a historical sketch in which monetary policy approaches an optimum over time and attribute all issues with monetary policymaking in the past to two things: missing elements and lack of clarity.” 15, 24.

[17] William R. White, “Is Monetary Policy a Science? The Interaction of Theory and Practice Over the Last 50 Years,” *Federal Reserve Bank of Dallas, Globalization and Monetary Policy Institute Working Papers* 2013, no. 155 (2013), https://doi.org/10.24149/gwp155. White argues that monetary policy is not a (natural) science because it is characterized by continuous change in response to change in the economic structure, changes in ‘accepted’ economic theory and changes in the nature of the problem monetary policy faces, rather than by the accumulation of knowledge about eternal realities. See also Claudio Borio, Piti Disyatat, and Phurichai Rungcharoenkitkul, “What Anchors for the Natural Rate of Interest ?,” BIS Working Paper, March 2019, https://www.bis.org/publ/work777.pdf. Borio et al. argue that the monetary policy regime influences the real economy via the financial cycles.

3.1 PRE-WAR

The Federal Reserve was not founded to secure price stability. Rather, it was the result of a political settlement. Some advocates were worried about financial stability, they were living in fear because of a recent bout of bank runs and desired a central bank to act as lender of last resort. Others, mostly farmers, were preoccupied by the lack of available credit, particularly the mismatch between the elasticity of currency in the country and the cycle of the harvest. They wanted a central bank which could govern the money supply to match the needs of the real economy. Finally, there were those who wanted to fight the large money trusts, to break up the financial monopolies and divert resources to small businesses. They saw a central bank as the ideal tool for redistribution via the promotion of competition.[18] Price stability was not part of the conversation.

Nevertheless, price stability prevailed as the central aim of monetary policy during the age of the gold standard. Convertibility was everything. That did not last long however, because more important goals were allowed to take precedence. Fighting World War I, the Great Depression, and World War II took priority and therefore took the reins. Most countries temporarily suspended gold convertibility in order to fund their war and recovery efforts. In the U.S., the Reserve System was so actively involved in managing the war economy that its employee count increased from 11,000 in 1939 to 24,000 in 1944.[19] These efforts, and their successes, planted the seeds for the post-war monetary policy framework that was highly interventionist and largely successful.

3.2 POST-WAR, PRE-INFLATION

In 1968 Milton Friedman gave a presidential address at the annual meeting of the American Economics Review that compared the aims of monetary policy in the period in which he was speaking to those of the early 1920s: “today, primacy is assigned to the promotion of full employment, with the prevention of inflation a continuing but definitely secondary objective.”[20] What Friedman describes is an approach to monetary policy quite obviously at odds with the holy trinity. Indeed, it is generally recognized that the Great Depression and the accompanying collapse of the gold standard “represented a huge failure of central banks” whose “objectives, […] models and […] mental framework all fell apart.” [21] From these ruins emerged a model of ‘activist’ central banking that constituted a key pillar of the highly

[18] For more on the politics of the founding of the Fed see Nadav Orian Peer, “Negotiating the Lender of Last Resort: The 1913 Federal Reserve Act as a Debate Over Credit Distribution,” *NYU Journal of Law & Business* 15, no. 2 (2019): 452.
[19] Gary Richardson, "Federal Reserve's Role During WWII," https://www.federalreservehistory.org/essays/feds_role_during_wwii.
[20] Milton Friedman, “The Role of Monetary Policy,” *The American Economic Review* 58, no. 1 (1968): 5. He writes, “Then (referring to the late 1920s) the chief roles assigned monetary policy were to promote price stability and to preserve the gold standard; the chief criteria of monetary policy were the state of the ‘money market’ and the extent of the ‘speculation’ and the movement of gold.”
[21] C. Goodhart, “The Changing Role of Central Banks,” *Financial History Review* 18, no. 2 (2011): 135–154, https://doi.org/10.1017/S0968565011000096.

successful macroeconomic policy regime that prevailed in advanced economies between World War II and the stagflation period of the 1970s.[22]

The central feature of this – broadly 'Keynesian' – policy regime was the active role the state played in the economy, and especially in the financial system. For a period of around thirty years, "governments sought to exercise sufficient control to guarantee all citizens a minimum standard of living, both materially and qualitatively in terms of opportunities, and to ensure that market economies operated as rationally and effectively as possible." [23] This meant close monetary-fiscal policymaking coordination, expansion of government financial resources and administrative structures, and even monetary debt financing. The fundamental assumption was that "government could manage economic life to the greater collective good."[24] Central banks were largely subordinated to government, implementing "general macro-economic policy" which included multiple aims: full-employment, economic growth, and price stability.[25] In many advanced economies, "central banks and finance ministries used forms of credit guidance as the norm, rather than the exception."[26]

We are not suggesting that activist monetary policies were the sole cause of the singular economic success of the *trente glorieuses*. Rather, we argue that given that success, it would be odd and theoretically difficult to categorize the then-dominant approach to monetary policy as fundamentally incorrect, which is the implication of the prevailing narrative behind the holy trinity.

In the United States, the direct extension of credit to citizens and small businesses by the government was common.[27] The most well-known example of these programs, of course, are the mortgage giants Fannie Mae and Freddie Mac. Fannie Mae was created in 1938 to help homeowners struggling after the great depression. While neither entity was originally capitalized by the Federal Reserve, the Fed bought their debt, thereby indirectly funding them—a clear example of credit guidance policy. Fannie Mae is often characterized, even villainized, as the epicenter of the Great Financial Crisis (GFC). However, as Adam Tooze has expertly shown in his recent history of the GFC, *Crashed*, Fannie Mae was successfully

---

[22] For a study of how and why policy errors of the Fed contributed to the rise of inflation in the 1970s, see Athanasios Orphanides and John Williams, "Monetary Policy Mistakes and the Evolution of Inflation Expectations," in *NBER Working Paper no. 17080* (Cambridge, MA: National Bureau of Economic Research, 2011).

[23] Robert Elgie and Helen Thompson, *The Politics of Central Banks*, Routledge Advances in International Relations and Politics ; 7 (London ; New York: Routledge, 1998), 17.

[24] Elgie and Thompson, 148.

[25] Kenneth Dyson and Martin Marcussen, *Central Banks in the Age of the Euro: Europeanization, Convergence, and Power* (Oxford: University Press, 2009), 374.

[26] Dirk Bezemer et al., "Credit Where It's Due," *UCL Institute for Innovation and Public Purpose*, UCL Institute for Innovation and Public Purpose Working Paper, November 30, 2018, 10, https://www.ucl.ac.uk/bartlett/public-purpose/publications/2018/nov/credit-where-its-due. We follow these authors in defining credit guidance policies as "any means employed by the government or the central bank to influence the allocation of credit."

[27] As far back as the 19th century credit supported the development of infrastructure in the US. It was a large part of government support of the economy. More recently, "between 1980-1990, a third of all net credit issued to non-federal sectors was either directly provided, subsidised or guaranteed by federal credit programmes." For more on this see Bezemer et al., 10. Sarah Quinn, *American Bonds : How Credit Markets Shaped a Nation - Harvard University* (Princeton University Press, 2019), 4, https://hollis.harvard.edu/primo-explore/fulldisplay?docid=01HVD_ALMA212311123620003941&context=L&vid=HVD2&lang=en_US&search_scope=everything&adaptor=Local%20Search%20Engine&tab=everything&query=any,contains,sarah%20quinn%20american%20bonds&offset=0.

extending loans to those borrowers who were sidelined by private credit providers despite being fundamentally creditworthy. Instead, it was the inappropriate private use of the financial instruments originally introduced by Fannie Mae that led to the explosive extension of irresponsible mortgages and the consequent housing crisis.[28]

Post-war Canada is another example of successful 'activist' monetary policy. After the Great Depression, the Canadian central bank was focused primarily on financing the war effort. That involved guaranteeing cheap money conditions, interest free loans to the government, nationalizing debt and liquidizing private banks. During this period monetary and fiscal policy were almost indistinguishable. From the end of WWII until the 1980s, the Canadian central bank held 20-25% of Canadian public debt. After the war, many of these tools were redirected toward industrialization and the development of economic sectors in need. In 1944 the central bank capitalized a development bank in Canada that successfully authorized 65,000 loans totaling over 3 billion Canadian dollars for 48,000 businesses, well over 90% of which were repaid.[29] These sorts of 'activist' central banks could be found all around the world.

Today, 'activist' monetary policies—credit guidance, monetization of national debt, etc.—are largely taboo. To the extent central banks have deployed such tools, they have been careful to describe their actions as temporary, crisis-fighting measures. Beyond such crisis measures, activist monetary policies continue to be seen as contrary to the holy trinity, and thus as Pareto inferior. Marvin Goodfriend, for example, argues that credit policies should not be considered potential monetary policy tools because they are in tension with the existence of an independent central bank—how could a central bank maintain its independence if it were in the business of choosing who should receive credit, be it from the state or from private lenders?[30] In light of the history just reviewed, however, this argument is a bit odd. Successful credit policies pre-dated the existence of central bank independence (CBI). Goodfriend's argument takes the primacy of CBI as given, with no apparent explanation except that the holy trinity is the most recently 'successful' monetary policy regime and as such has pride of place as universal best practice. As is obvious if one takes a longer view of history, however, that place is historically contingent and should not be taken to imply any sort of optimality.

3.3 HOLY TRINITY

The holy trinity coalesced in the 1990s as the consequence of a convergence of economic and theoretical developments. First, the inflation crisis of the late 1970s and early 1980s had

---

[28] Adam Tooze, "The Forgotten History of the Financial Crisis," *Foreign Affairs*, August 13, 2018, 47–48, https://www.foreignaffairs.com/articles/world/2018-08-13/forgotten-history-financial-crisis.
[29] Josh Ryan-Collins, "Is Monetary Financing Inflationary? A Case Study of the Canadian Economy, 1935-75," *Levy Institute Working Paper No. 848*, October 2015, https://doi.org/10.2139/ssrn.2679090.
[30] Marvin Goodfriend, "We Need an 'Accord' for Federal Reserve Credit Policy" (April 24, 2008).

sown a deep and wide-reaching fear of inflation. Second, stagflation broke apart the theoretical foundations of the previous macroeconomic policymaking approach. This made space for a new theoretical foundation.

Stagflation—rising inflation and rising unemployment—clashed with the prevailing idea of the Philips curve: that there is a stable tradeoff between inflation and unemployment. A theoretical overhaul was needed. Milton Friedman happily obliged, suggesting that there is actually no tradeoff between inflation and unemployment in the long run.[31] Friedman argued that “the only macroeconomic variable that the central bank can affect systematically is the inflation rate. It is unlikely that monetary policy can be used to reduce the unemployment rate *on average* over any substantial period of time.”[32] Friedman’s view that government could not alter the paths of output and employment was subsequently formalized by New Classical macroeconomics into a general “policy ineffectiveness” proposition.[33] Although it was relaxed by subsequent theoretical developments, the policy ineffectiveness proposition has left a lasting legacy.

In their 1999 book *Inflation Targeting*, Bernanke et al. write that there were lots of reasons to “dim the optimistic view of the capabilities of monetary policy that was dominant in the 1960s.”[34] The strongest of these is the fundamental belief, reborn as part of the holy trinity that “in the long run, the central bank can affect only inflation, and not real variables such as output.”[35] Bernanke et al. continue, “the awareness of what monetary policy can and cannot do has moved many monetary policy-makers toward a greater focus on price stability, particularly in the long run.” Notice what this is not. We are not seeing central bankers and macroeconomists saying, the economic conditions and/or political priorities of monetary policy changed in the face of the inflation crisis of the late 1970s and as such, so did the appropriate monetary policymaking framework. Instead they imply that the inflation crisis and the policy response to it revealed a universal truth about monetary policy—that it can affect only price levels in the long run—and therefore has revealed an optimal approach to monetary policymaking, the holy trinity.

Thus, what emerged from this concoction of high inflation, high unemployment and the New Classical revolution in macroeconomics was a policy paradigm aimed at keeping inflation low and stable. Central banks were made independent to prevent elected officials from using monetary policy for political gain, thereby risking price volatility or inflation. Central banks restricted themselves to adjusting short-term interest rates—partly to maintain the

---

[31] For evidence that there is no stable relationship at all see Dennis Snower, “A Fresh Look at the Inflation-Unemployment Trade-Off,” in *Inflation and Unemployment in Europe* (ECB Forum on Central Banking, Sintra, Portugal, 2015).
[32] Bernanke et al., *Inflation Targeting - Lessons from the International Experience*, 14.
[33] Thomas J. Sargent and Neil Wallace, ""Rational" Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule," *The Journal of Political Economy* 83, no. 2 (1975).
[34] Bernanke et al., *Inflation Targeting - Lessons from the International Experience*, 15.
[35] Bernanke et al., 16. The roots of this view go all the way back to David Hume who spoke about the neutrality of money.

separation between monetary and fiscal policy, partly to minimize the footprint of the central bank in the financial system.

3.4 SHORING UP THE HOLY TRINITY: THE TINBERGEN RULE

Since the financial crisis, scholars from various disciplines have studied the blind spots of the pre-crisis New Keynesian paradigm in macroeconomics and their consequences for the holy-trinity policy regime.[36] While in agreement with the criticisms made in this literature, we want to highlight another, powerful rhetorical device – the "Tinbergen rule". Developed by a Dutch economist in two books in the 1950s, the rule states that for each economic policy target the governments sets a separate, dedicated policy instrument is needed to achieve it.[37] It is not difficult to see why this argument – which Tinbergen developed from a model of the economy rather than through historical analysis – became a classroom classic in monetary economics. Applied to monetary policy, it provided a mathematical, seemingly irrefutable justification for why, once price stability had been identified as the policy goal, central banks could not pursue other goals. Under the holy trinity, the central bank had only one instrument at its disposal – the short-term interest rate – so that asking it to pursue any goals other than price stability was asking it to do the mathematically impossible.

There is, of course, an irony: at no point have central banks possessed only one instrument. What is more, central banks have continued to use a multiplicity of tools throughout the inflation targeting period – only without talking much about them. In other words, prevailing conceptions of what monetary policy can and should do is the product of a peculiar mix: sustained public pretense that the central bank has only one instrument-goal combination at its disposal, combined with sustained use of other instruments partly hidden from public view and absent from public debate. Whereas the use of the official instrument is generally embedded in a formal institutional arrangement with legal constraints and accountability mechanisms, it is unclear if central bank independence extends – or should extend – to these less visible instruments.[38] The remainder of this paper will shed light on these hidden instruments and explore their implications for the intellectual and political project of re-imagining central banking.

---

[36] Camilo Ernesto Tovar, "DSGE Models and Central Banks," *Economics - The Open-Access, Open-Assessment E-Journal* 3, no. 16 (2009). Charles Goodhart, "The Continuing Muddles of Monetary Theory: A Steadfast Refusal to Face Facts" (paper presented at the Economica, 2009); Neil Fligstein, Jonah Stuart Brundage, and Michael Schultz, "Seeing Like the Fed: Culture, Cognition, and Framing in the Failure to Anticipate the Financial Crisis of 2008," *American Sociological Review* 82, no. 5 (2017); Benjamin Braun, "Why Models Matter: The Making and Unmaking of Governability in Macroeconomic Discourse," *Journal of Critical Globalisation Studies* 7 (2014); Stephen Golub, Ayse Kaya, and Michael Reay, "What Were They Thinking? The Federal Reserve in the Run-up to the 2008 Financial Crisis," *Review of International Political Economy* 22, no. 4 (2015).
[37] Jan Tinbergen, *Economic Policy: Principles and Design* (Amsterdam: North-Holland, 1956); *On the Theory of Economic Policy* (Amsterdam: North-Holland, 1952).
[38] Paul Tucker, *Unelected Power: The Quest for Legitimacy in Central Banking and the Regulatory State* (Princeton: Princeton University Press, 2018); Jens van't Klooster, "The Ethics of Delegating Monetary Policy," *The Journal of Politics* (Forthcoming).

4 Beyond the Tinbergen Rule: A Swiss Army Knife Theory of Central Banking

The purpose of the first part of this paper was to place the holy trinity in history, thus showing that it represents a specific political settlement between competing interests at a specific historical juncture. Demonstrating this historical specificity is the first step towards opening up discursive and political space within which the holy trinity can be challenged. For this space to be used, however, a second element is required: ideas for alternatives. We propose thinking of central banking as a Swiss army knife with many potentially useful instrument-goal combinations. The great achievement of the holy trinity was to permanently stow away and seal – if not in practice then in theory and discourse – all but one of those instrument-goal combinations. Prior to the global financial crisis, central banks had successfully convinced themselves that they had only one instrument, the short-term interest rate. As noted by Stiglitz, this reduction of the central bank toolkit to a single instrument was "costly."[39] His call on central banks to re-learn to "use all of the instruments at their disposal" has since partly been heeded: central banks have used other instruments in the aftermath of the global financial crisis of 2008, ranging from creative lender of last resort policies, to market shaping, to large-scale asset purchases and targeted lending programs. Crucially, however, these interventions have been conceptualized as unconventional, exceptional, and temporary.[40] Making them permanent, the argument goes, would be inconsistent with central bank independence.[41] Thus, the task is to make the case to researchers, advocates, policymakers, and ultimately voters, that plenty of instruments are available and can be used for social purposes other than – and in addition to – price stability.

4.1 Lender of Last Resort

The holy trinity's narrow conception of monetary policy objectives always only applied to normal times. Whether or not financial stability is codified in central bank statutes, this goal takes precedence during times of financial upheaval. The central bank invariably assumes the role of lender of last resort (LOLR) because it is the monopoly issuer of central bank money, or 'reserves.'

[39] Stiglitz, "A Revolution in Monetary Policy," 14. He made this point while giving a lecture in 2013 entitled "A Revolution in Monetary Policy" in which he paid homage to C. D. Deshmukh, the first governor of the Reserve Bank of India, in part because Deshmukh "understood that the state may have to play an important role in providing credit."

[40] In a recent speech, Jens Weidmann, head of the German Bundesbank, cited the temporary, exceptional nature of QE as an argument against "Green QE": "In the monetary policy of the Eurosystem, however, bond purchases should be limited to exceptional situations and should not under any circumstances become a permanent instrument. Then another question would become superfluous, namely whether the bond purchase program in its existing form favours CO2-intensive companies and thus preserves existing structures." Jens Weidmann, "Climate Change and Central Banks," in *Speech at the 2nd Financial Markets Conference, 29 October* (Frankfurt 2019).

[41] Which is true – except that central bank independence, non-negotiable for central bankers, should very much be up for negotiation when the alternative is not to harness society's most potent financial agency to address existential challenges.

Capitalist financial systems are fundamentally unstable. Historically, banks have been the key source of systemic financial instability. Banks borrow short from risk-intolerant creditors and lend long in ways that remain opaque to outsiders.[42] This combination means that in a crisis, bank creditors demand repayment, and from most banks, regardless of their solvency. In such a situation, preventing a bank run requires a lender of last resort – an institution with the capacity to provide unlimited cash to illiquid but solvent banks. Since the middle of the 19th century, when Britain and France authorized their central banks to act as lenders of last resort, virtually all central banks have, de jure or de facto, acquired this authority. And yet, this institution has emerged at different times and evolved in different ways in different countries. In other words, even in the case of the most systemically determined responsibility of central banks, governments have chosen a wide variety of institutional arrangements. This should not be surprising: despite the systemic necessity for a lender of last resort, the latter "is a locus of political power, and as such, its creation should be viewed as the outcome of a political bargain."[43]

The LOLR function is not, of course, invisible. Its scope and limits, however, are often only loosely (and sometimes not at all) specified in law, which in practice leaves central banks with significant discretion in deciding how to use this powerful instrument. Over the long term, central banks have adopted an ever more expansive interpretation of their LOLR responsibilities. In combination with the expansion of deposit insurance and government bailouts of banks during banking crises, this policy drift has had deep and lasting consequences for the structure of the financial system. Too-big-to-fail banks are a product of these developments.[44] The reaction of the Fed to the global financial crisis of 2008 provides the most striking example. First, the Fed played a key role in the decision to let Lehman Brothers fail, and thus to let a problem in the US subprime mortgage market escalate into a global financial catastrophe. Its argument that it lacked the legal authority to rescue the bank has been challenged.[45] Second, in response to the fallout from that decision, the Fed established a series of emergency liquidity facilities for banks and other financial institutions. By offering asset and liquidity relief on favorable terms, the Fed facilitated the swift economic rebound of the financial sector, while limiting the political and legal fallout from the crisis.[46] Third, by extending swap lines to several foreign central banks, the Fed effectively acted as the international lender of last resort.[47] While credited for preventing a

[42] Charles W. Calomiris, Marc Flandreau, and Luc Laeven, "Political Foundations of the Lender of Last Resort: A Global Historical Narrative," *Journal of Financial Intermediation* 28 (2016).
[43] Ibid., 49.
[44] Ibid., 60.
[45] Laurence M. Ball, *The Fed and Lehman Brothers: Setting the Record Straight on a Financial Disaster* (Cambridge: Cambridge University Press, 2018).
[46] Lawrence Jacobs and Desmond King, *Fed Power: How Finance Wins* (Oxford: Oxford University Press, 2016).
[47] Daniel McDowell, "The Us as 'Sovereign International Last-Resort Lender': The Fed's Currency Swap Programme During the Great Panic of 2007-09," *New Political Economy* 17, no. 2 (2012); J. Lawrence Broz, "The Politics of Rescuing the World's Financial System: The Federal Reserve as a Global Lender of Last Resort," *Korean Journal of International Studies* 13, no. 2 (2015); Aditi Sahasrabuddhe, "Drawing the Line: The Politics of Federal Currency Swaps in the Global Financial Crisis," *Review of International Political Economy* 26, no. 3 (2019).

global financial meltdown,[48] these swap lines illustrate the virtually unlimited – six of the swap lines were unlimited – capacity of the Fed to devise and deploy unconventional instruments at will.

None of this is to say that central banks should not act as lenders of last resort. The reason the LOLR function under the holy trinity regime is problematic is that the latter, intent on preserving central bank independence at all cost, confines the LOLR function to a space of "exception." As a result, in the heat of the moment, the central bank itself interprets the scope of its authority as lender of last resort, and both the interpretation and the resulting actions remain beyond ex-post accountability, let alone real-time democratic contestation. In reality, the room for maneuver central banks enjoy when it comes to financial stability in emergency situations directly challenges the first two elements that define the holy trinity during normal times: Central banks clearly have a large arsenal of *instruments* they can activate and they can define *goals* in an ad-hoc manner. Whereas, during normal times central banks reject other instrument-goal combinations out of concern for their independence, the LOLR function is exercised in a legal and political twilight zone in which central banks choose instruments and define goals under the protection of central bank independence. If the legal and political regime governing central banking is to be consistent, then either central banks' LOLR authorities should be curtailed or the holy trinity should be replaced by a broader institutional framework that (a) acknowledges that central banks have various instruments at their disposal and (b) brings these instruments into the fold of democratic deliberation.

4.2 FINANCIAL MARKET-SHAPING I: MONETARY POLICY IMPLEMENTATION

While the LOLR function is still a relatively visible instrument, central banks also use other, less visible instruments to shape the structure of financial markets. As part of the routine conduct of monetary policy, central banks face two challenges – they do not actually control the interbank interest rate directly (the challenge of monetary policy implementation), nor its effects on the broader economy (the challenge of monetary policy transmission). This dependence of monetary policy on financial market structures provides a strong incentive for central banks to actively shape these structures.

Let's look at the challenge of implementation first. While central banks are the monopoly issuers of reserves, they do not control the rate at which banks lend to each other – that rate emerges from private transactions in the interbank market. Between the late 1980s and 2008, central banks turned to implementing monetary policy via transactions – mostly open

[48] Adam Tooze, *Crashed: How a Decade of Financial Crises Changed the World* (Penguin, 2018); Perry Mehrling, "Elasticity and Discipline in the Global Swap Network," *International Journal of Political Economy* 44, no. 4 (2015).

market operations – in the interbank market.[49] In order for them to be able to do this, and for these transactions to feed through to the market-determined short-term rate, there had to be a deep and liquid interbank market in the first place. In the late 1990s and early 2000s, both the Fed and the ECB actively fostered the repo market. While the Fed was primarily concerned with the scarcity of collateral, the ECB sought to establish a uniform interbank market across the newly established euro area.[50] In the following years, this secured segment of the money market became *the* central funding market, allowing global banks to expand their leverage, and thus their balance sheets, to unsustainable levels. When crisis hit, the leading central banks backstopped the repo market.[51]

4.3 FINANCIAL MARKET-SHAPING II: MONETARY POLICY TRANSMISSION

The second challenge consists in the transmission of monetary policy signals from the interbank money market to broader macroeconomic aggregates such as employment, growth, and inflation. Without going into the details, suffice it to say that this transmission mechanism involves several channels and is both complex and fragile. From the 2011 peak of the euro crisis onward, the ECB warned that the transmission mechanism of monetary policy was “broken” due to the crisis-induced “fragmentation” of financial markets. Among the measures taken by the ECB to ameliorate the situation, the most noteworthy was a sustained attempt to revive the market for asset-backed securities (ABS).

ABSs are the product of securitization – the practice of packaging and bundling loans and to issue fixed-income securities the interest payment on which derives from the interest payments of the debtors on the individual loans. One type of ABSs, mortgage-backed securities (MBS), were at the center of the US subprime mortgage crisis. The demise of the US MBS market pulled the European ABS market down with it. In 2012, the ECB identified securitization as a means to “restore the impaired monetary policy transmission mechanism.”[52] The idea was that an active securitization market would give banks in, say, Italy, the ability to re-package their loans and sell the exposure in the form of ABSs to foreign investors, thus freeing up their balance sheets. In addition, such a market would provide a

[49] It is therefore more accurate to speak of the short-term interest rate as the “operational target” of the central bank, and to reserve the term “instrument” for the tools (reserve requirements, open market operations, and standing facilities) the central bank uses in order to achieve that target. See Ulrich Bindseil, *Monetary Policy Operations and the Financial System* (Oxford: Oxford University Press, 2014), 36. Since 2008, operational frameworks have undergone substantial changes, which include switching to full-allotment refinancing operations and paying interest on excess reserves.

[50] Benjamin Braun and Daniela Gabor, "Central Bank, Shadow Banking, and Infrastructural Power," in *The Routledge International Handbook of Financialization*, ed. Philip Mader, Daniel Mertens, and Natascha van der Zwan (London: Routledge, 2019); Daniela Gabor, "The (Impossible) Repo Trinity: The Political Economy of Repo Markets," *Review of International Political Economy* 23, no. 6 (2016); Daniela Gabor and Cornel Ban, "Banking on Bonds: The New Links between States and Markets," *Journal of Common Market Studies* 54, no. 3 (2016).

[51] Steffen Murau, "Shadow Money and the Public Money Supply: The Impact of the 2007-9 Financial Crisis on the Monetary System," *Review of International Political Economy* 24, no. 5 (2017).

[52] Benoît Cœuré, "Collateral Scarcity – a Gone or a Going Concern?," (ECB-DNB Joint central bank seminar on collateral and liquidity, Amsterdam, October 12012).

welcome area for asset-purchases by the central bank, in addition to government bonds – indeed, half of the Fed's QE3 program consisted of purchases of mortgage-backed securities. Based on these considerations, the ECB embarked on a campaign to support the ABS market through collateral, regulatory, and quantitative easing.[53] Its advocacy also played an important role in the making of the European Capital Markets Union, an early core piece of which was a regulation that established a "framework for simple, transparent and standardised (STS) securitisation".[54]

When it comes to central banks' influence on financial market structures, the gap between rhetoric and reality is large. Consider a recent statement by outgoing ECB Executive Board member Benoît Cœuré, according to which "[f]inancial structures should be the outcome of market forces. ... [C]entral banks should, in principle, play no active role here."[55] The statement expresses the principle, widely held by central bankers and monetary economists, that monetary policy can, and therefore should be, market neutral. The principle of market neutrality is used routinely by central bankers to stave off demands to "green" monetary policy.[56] And yet, the recent historical record is replete with examples of central banks influencing market outcomes or even, as in the cases described above, market structures. For instance, the ECB's TARGET2 Securities project effectively nationalized the settlement infrastructure for security transactions in the euro area.[57] Going beyond financial markets, the market-shaping activities of central banks reach into the real economy. Several of the asset purchase programs conducted by leading central banks in recent years directly subsidized the debt and equity funding costs of the largest corporations.[58] Labor markets, too, have been targeted by central banks. The ECB in particular, worried about the monetary transmission mechanism, has advocated for structural reforms in euro area labor markets since its inception in 1999.

In short, the purported market neutrality of monetary policy is indeed a "myth."[59] The take-away, however, is not that central banks must try even harder to become market-neutral – instead, we should drop the pretense and highlight that neutrality is neither part of central banks' mandates, nor of their practice. Central banks have not shied away from using various instruments at their disposal to engineer financial market structures conducive to effective monetary policy implementation and transmission. These instruments include, among

[53] Benjamin Braun, "Central Banking and the Infrastructural Power of Finance: The Case of ECB Support for Repo and Securitization Markets," *Socio-Economic Review* (2018).
[54] Benjamin Braun and Marina Hübner, "Fiscal Fault, Financial Fix? Capital Markets Union and the Quest for Macroeconomic Stabilization in the Euro Area," *Competition & Change* 22, no. 2 (2018).
[55] Benoît Cœuré, "The Future of Central Bank Money," (Speech at the International Center for Monetary and Banking Studies, Geneva, 14 May2018).
[56] See, for instance, Weidmann, "Climate Change and Central Banks.": "Our mandate is price stability and the implementation of our monetary policy must respect the principle of market neutrality. To buy green bonds, for example, would contradict this principle, which derives from the EU Treaty (Art. 127)."
[57] Troels Krarup, "Between Competition and Centralization: The New Infrastructures of European Finance," *Economy and Society* 48, no. 1 (2019).
[58] Jens van 't Klooster and Clément Fontan, "The Myth of Market Neutrality: A Comparative Study of the European Central Bank's and the Swiss National Bank's Corporate Security Purchases," *New Political Economy* (2019).
[59] Ibid.

others, the collateral framework, asset purchases and targeted lending programs, and the power of "moral suasion" vis-à-vis private financial actors who invariably depend, in one way or another, on the goodwill of the central bank. Therefore, discussions about what the central bank can and should be politically mandated to do need not be discouraged by the Tinbergen mantra – the Swiss army knife that is central banking allows for more than one instrument-goal combination. The problem is that all but one of its instruments are currently wielded without political guidance, largely outside accountability mechanisms, and in a tenuous relationship to the scope of central bank independence. From a progressive perspective, the institutional design challenge is not to force central banks to relinquish these instruments but to "democratize central banks" so as to ensure these instruments will be wielded to further democratically determined social goals.[60]

5 Conclusion

Societies and economies change, and when they do, institutions tend to adapt, or be adapted. Every once in a while, a critical juncture reshuffles interests and power resources, produces new ideas, and ultimately a new institutional settlement. Sitting at the core of the public-private "finance franchise" that is the modern financial system, central banks tend to be strongly impacted at such moments.[61] Throughout their history, they have served different societal goals and used different instruments, while being embedded in different institutional arrangements.

Take the example of the United States. In 1979, the political coalition in power decided that the most pressing societal problem was inflation, which lead to the institutionalization of the holy trinity. But 40 years earlier, Nazi Germany had become America's greatest problem, and the Reserve Banks did whatever it took to support the war effort.[62] By contrast, in 2008, the most pressing problem was the financial fallout from the collapse of Lehman Brothers. Again, as recounted above, the Fed did whatever it took to contain the fallout. And today, 40 years into the holy trinity's reign, the political winds are once more changing. Calls are getting louder for the state to re-assert its primacy in a financial system that is best described as a "finance franchise". Growing debates about the role of central banks in addressing inequality as well as climate change are cases in point. Central banks are likely to be tasked to do what they can to achieve these goals. The key take-away from this paper is that there is nothing untoward in re-imagining central banking.

[60] David M. Woodruff, "To Democratize Finance, Democratize Central Banking," *Politics & Society* 47, no. 4 (2019); van't Klooster, "The Ethics of Delegating Monetary Policy."
[61] Robert C. Hockett and Saule T. Omarova, "The Finance Franchise," *Cornell Law Review* 102 (2017).
[62] Again, in the five-year period from 1939 to 1944, the Federal Reserve grew its workforce from 11,000 to 24,000. Richardson, "Federal Reserve's Role During WWII".

Central banks are *the* public instrument that allows societies to do whatever it takes, in the monetary-financial realm, to address the most pressing problems at a given historical juncture. Their reason to exist is not to prevent the inflation rate from rising above 2 per cent. Central banks exist because sovereignty requires the ability to exercise monetary and financial power in the pursuit of collective social goals. Many of the instruments needed to exercise that power happen to be folded into the Swiss army knife that is the central bank. Which of these instruments the central bank deploys is a question of which goals society mandates the central bank to pursue.

REFERENCES

Allen, Danielle S. Talking to Strangers: Anxieties of Citizenship since Brown v. Board of Education. Chicago: The University of Chicago Press, 2004.

Ball, Laurence M. The Fed and Lehman Brothers: Setting the Record Straight on a Financial Disaster. Cambridge: Cambridge University Press, 2018.

Beattie, Alan, and James Politi. "'I Made a Mistake,' Admits Greenspan." Financial Times, October 23, 2008. https://www.ft.com/content/aee9e3a2-a11f-11dd-82fd-000077b07658.

Bernanke, Ben S., Thomas Laubach, Frederic S. Mishkin, and Adam S. Posen. Inflation Targeting - Lessons from the International Experience. Princeton University Press, 1999.

Bezemer, Dirk, Josh Ryan-Collins, Frank van Lerven, and Lu Zhang. "Credit Where It's Due." London: UCL Institute for Innovation and Public Purpose, Working Paper, 2018.

Bindseil, Ulrich. Monetary Policy Operations and the Financial System. Oxford: Oxford University Press, 2014.

Blyth, Mark. Great Transformations. Economic Ideas and Institutional Change in the Twentieth Century. Cambridge: Cambridge University Press, 2002.

Borio, Claudio, Piti Disyatat, and Phurichai Rungcharoenkitkul. "What Anchors for the Natural Rate of Interest ?" BIS Working Paper, March 2019.

Braun, Benjamin. "Central Banking and the Infrastructural Power of Finance: The Case of ECB Support for Repo and Securitization Markets." Socio-Economic Review (2018).

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

Braun, Benjamin, and Daniela Gabor. "Central Bank, Shadow Banking, and Infrastructural Power." In The Routledge International Handbook of Financialization, edited by Philip Mader, Daniel Mertens and Natascha van der Zwan. London: Routledge, 2019.

Braun, Benjamin, and Marina Hübner. "Fiscal Fault, Financial Fix? Capital Markets Union and the Quest for Macroeconomic Stabilization in the Euro Area." Competition & Change 22, no. 2 (2018): 117–38.

Broz, J. Lawrence. "The Politics of Rescuing the World's Financial System: The Federal Reserve as a Global Lender of Last Resort." Korean Journal of International Studies 13, no. 2 (2015): 323-51.

Calomiris, Charles W., Marc Flandreau, and Luc Laeven. "Political Foundations of the Lender of Last Resort: A Global Historical Narrative." Journal of Financial Intermediation 28 (2016): 48-65.

Conti-Brown, Peter. The Power and Independence of the Federal Reserve. Princeton University Press, 2016.

Cœuré, Benoît. "The Future of Central Bank Money." Speech at the International Center for Monetary and Banking Studies, Geneva, 14 May, 2018.

———. "Collateral Scarcity – a Gone or a Going Concern?". ECB-DNB Joint central bank seminar on collateral and liquidity, Amsterdam, October 1, 2012.

Dyson, Kenneth, and Martin Marcussen. Central Banks in the Age of the Euro: Europeanization, Convergence, and Power. Oxford: University Press, 2009.

Elgie, Robert, and Helen Thompson. The Politics of Central Banks. Routledge Advances in International Relations and Politics ; 7. London ; New York: Routledge, 1998.

Fligstein, Neil, Jonah Stuart Brundage, and Michael Schultz. "Seeing Like the Fed: Culture, Cognition, and Framing in the Failure to Anticipate the Financial Crisis of 2008." American Sociological Review 82, no. 5 (2017): 879-909.

Friedman, Milton. “The Role of Monetary Policy.” The American Economic Review 58, no. 1 (1968): 1–17.

Fuhrer, Jeffrey C., Giovanni P. Olivei, Eric S. Rosengren, and Geoffrey M. B. Tootell. “Should the Fed Regularly Evaluate Its Monetary Policy Framework?” IDEAS Working Paper Series from RePEc; St. Louis, 2018.

Gabor, Daniela. "The (Impossible) Repo Trinity: The Political Economy of Repo Markets." Review of International Political Economy 23, no. 6 (/08/04 2016 2016): 967-1000.

Gabor, Daniela, and Cornel Ban. "Banking on Bonds: The New Links between States and Markets." Journal of Common Market Studies 54, no. 3 (2016): 617-35.

Golub, Stephen, Ayse Kaya, and Michael Reay. "What Were They Thinking? The Federal Reserve in the Run-up to the 2008 Financial Crisis." Review of International Political Economy 22, no. 4 (2015): 657-92.

Goodfriend, Marvin. “How the World Achieved Consensus on Monetary Policy.” The Journal of Economic Perspectives; Nashville 21, no. 4 (2007): 47–68.

———. “We Need an ‘Accord’ for Federal Reserve Credit Policy.” Symposium Conducted by the Shadow Open Market Committee, Cato Institute, April 24, 2008.

Goodhart, Charles. "The Continuing Muddles of Monetary Theory: A Steadfast Refusal to Face Facts." Economica, 2009.

———. “The Changing Role of Central Banks.” Financial History Review 18, no. 2 (2011): 135–154.

Hacker, Jacob S., and Paul Pierson. American Amnesia: How the War on Government Led Us to Forget What Made America Prosper. New York: Simon and Schuster, 2016.

Hall, Peter A. "Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain." Comparative Politics 25, no. 3 (Apr., 1993): 275-96.

Hockett, Robert C., and Saule T. Omarova. "The Finance Franchise." Cornell Law Review 102 (2017): 1143-218.

Issing, Otmar. “Central Banks - Paradise Lost.” IDEAS Working Paper Series, 2012.

Jacobs, Lawrence, and Desmond King. Fed Power: How Finance Wins. Oxford: Oxford University Press, 2016.

Johnson, Juliet. Priests of Prosperity: How Central Bankers Transformed the Postcommunist World. Ithaca: Cornell University Press, 2016.

Krarup, Troels. "Between Competition and Centralization: The New Infrastructures of European Finance." Economy and Society 48, no. 1 (2019): 107-26.

Krippner, Greta R. “The Making of US Monetary Policy: Central Bank Transparency and the Neoliberal Dilemma.” Theory and Society 36, no. 6 (2007): 477–513.

Livingston, James. Origins of the Federal Reserve System - Money, Class, and Corporate Capitalism, 1890–1913. Cornell University Press, 06.

McDowell, Daniel. "The US as ‘Sovereign International Last-Resort Lender’: The Fed's Currency Swap Programme During the Great Panic of 2007-09." New Political Economy 17, no. 2 (2012): 157-78.

Mehrling, Perry. "Elasticity and Discipline in the Global Swap Network." International Journal of Political Economy 44, no. 4 (2015): 311-24.

Monnin, Pierre. "Central Banks and the Transition to a Low-Carbon Economy." CEP Discussion Note no. 1. Zurich: Council on Economic Policies, 2018.

Murau, Steffen. 2017. “Shadow Money and the Public Money Supply: The Impact of the 2007-9 Financial Crisis on the Monetary System.” Review of International Political Economy 24, no.2 (2017): 802-38.

Nadav Orian Peer. “Negotiating the Lender of Last Resort: The 1913 Federal Reserve Act as a Debate Over Credit Distribution.” NYU Journal of Law & Business 15, no. 2 (2019): 452.

Orphanides, Athanasios, and John Williams. "Monetary Policy Mistakes and the Evolution of Inflation Expectations." In NBER Working Paper no. 17080. Cambridge, MA: National Bureau of Economic Research, 2011.

Quinn, Sarah. American Bonds : How Credit Markets Shaped a Nation. Princeton: Princeton University Press, 2019.

Richardson, Gary. "Federal Reserve's Role During WWII." https://www.federalreservehistory.org/essays/feds_role_during_wwii.

Roberts, Alasdair. The Logic of Discipline: Global Capitalism and the Architecture of Government. Oxford University Press, 2010.

Ryan-Collins, Josh. “Is Monetary Financing Inflationary? A Case Study of the Canadian Economy, 1935-75.” Levy Institute Working Paper No. 848, October 2015.

Sahasrabuddhe, Aditi. "Drawing the Line: The Politics of Federal Currency Swaps in the Global Financial Crisis." Review of International Political Economy 26, no. 3 (2019): 461-89.

Sargent, Thomas J., and Neil Wallace. ""Rational" Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule." The Journal of Political Economy 83, no. 2 (Apr., 1975): 241-54.

Snower, Dennis. “A Fresh Look at the Inflation-Unemployment Trade-Off.” In Inflation and Unemployment in Europe. Sintra, Portugal, 2015.

Stiglitz, Joseph E. “A Revolution in Monetary Policy: Lessons in the Wake of the Global Financial Crisis.” Reserve Bank of India. The 15th CD Deshmukh Memorial, 2013.

Stark, Alastair, and Brian Head. "Institutional Amnesia and Public Policy." Journal of European Public Policy 26, no. 10 (2019/10/03 2019): 1521-39.

Tinbergen, Jan. Economic Policy: Principles and Design. Amsterdam: North-Holland, 1956.

———. On the Theory of Economic Policy. Amsterdam: North-Holland, 1952.

Tooze, Adam. Crashed: How a Decade of Financial Crises Changed the World. Penguin, 2018.

———. “The Forgotten History of the Financial Crisis.” Foreign Affairs, August 13, 2018. https://www.foreignaffairs.com/articles/world/2018-08-13/forgotten-history-financial-crisis.

———. "Why Central Banks Need to Step up on Global Warming." Foreign Affairs, 20 July 2019.

Tovar, Camilo Ernesto. "DSGE Models and Central Banks." Economics - The Open-Access, Open-Assessment E-Journal 3, no. 16 (2009): 1-31.

Tucker, Paul. Unelected Power: The Quest for Legitimacy in Central Banking and the Regulatory State. Princeton: Princeton University Press, 2018.

van ’t Klooster, Jens, and Clément Fontan. "The Myth of Market Neutrality: A Comparative Study of the European Central Bank’s and the Swiss National Bank’s Corporate Security Purchases." New Political Economy (2019): 1-15.

———. "The Ethics of Delegating Monetary Policy." The Journal of Politics (Forthcoming).

Volz, Ulrich. "On the Role of Central Banks in Enhancing Green Finance." In UN Environment Inquiry Working Paper 17/01, 2017.

Weidmann, Jens. "Climate Change and Central Banks." In Speech at the 2nd Financial Markets Conference, 29 October. Frankfurt, 2019.

White, William R. “Is Monetary Policy a Science? The Interaction of Theory and Practice Over the Last 50 Years.” Federal Reserve Bank of Dallas, Globalization and Monetary Policy Institute Working Papers 2013, no. 155 (2013). https://doi.org/10.24149/gwp155.

Woodruff, David M. "To Democratize Finance, Democratize Central Banking." Politics & Society 47, no. 4 (2019): 593-610.