

The robust political economy of central banking and free banking

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Abstract This paper uses robust political economy to assess whether free banking or central banking can better use its institutional structures to minimize macroeconomic disequilibrium. Robust frameworks leverage their incentives, reward structures, and epistemic resources to achieve monetary policy objectives. We relax the assumptions of political pressure, self-interest, and the degree of decision makers' knowledge to see which arrangements are more robust.

Keywords Monetary disequilibrium · Federal reserve · Monetary policy · Robust political economy · Central banking · Free-banking

“One of the great defects of our kind of monetary system is that its performance depends so much on the quality of the people who are put in charge. [...] That raises a question about the desirability of our present monetary system. It is one in which a group of unelected people have enormous power, power which can lead to a great depression or which can lead to a great inflation. Is it wise to have that power in those hands?”

—Friedman 2007

1 Introduction

Economists have been highly concerned with the role of central banks in generating disturbances to relative prices, the general price level, and nominal income. But most,

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despite being concerned with cyclical fluctuations, have dismissed the necessity of evaluating our existing arrangements' robustness. Hence a broader, post-crisis reassessment of our monetary framework has been lacking. I am concerned with understanding how different monetary frameworks can sidestep incentives problems and epistemic limitations and allow us to avoid monetary mischief. To that end, this paper contributes to developing a broader framework of institutional comparison, drawing elements both from monetary theory as well as political economy. Such a framework could be used to evaluate alternative monetary regimes such as NGDP targeting (Sumner 2012; Salter 2014b). This would enrich our understanding about which monetary rules might dominate others and allow us promote sound reforms accordingly. Although economists have been interested in how to minimize systematic discoordination from policies, they do not address institutional alternatives, but rather seek technical optimality policies that take the existent framework as given (Mishkin 2011; Taylor 2009, 2012; Woodford 2003). Institutional concerns have arisen recently (Calomiris 2013; Calomiris and Haber, 2014; Salter 2014b) among those who recognize that central banks have contributed to the Great Recession and the meager recovery thereafter (Beckworth 2012; Hetzel 2012; Sumner 2012; Taylor 2012; White 2012).

Despite the literature that acknowledges the role of central banks in the financial crisis, most economists have dismissed the necessity of evaluating existing arrangements' robustness (Boettke and Smith 2012; Buchanan 2010). Moreover, economists not only have been supporters of the current, hypothetically optimal monetary framework as it is but have argued for further enhancements on central bankers' discretionary powers (Caruana 2011; Goodhart 2010; Blanchard et al. 2010). These economists have been more concerned in analyzing the technical role that monetary policy played during and after the crisis (Bernanke 2010; Blanchard et al. 2010; Mishkin 2011) than on reassessing the institutional resilience of central banking. On the other hand, economists such as Buchanan, Friedman and Hayek have recognized the possible inherent fragilities of existent monetary frameworks. They have addressed the technicalities of monetary policy with broader political economy concerns (Boettke and Smith 2012). These three Nobel Prize winners were pioneers in promoting different institutional solutions to deal with the problem of the "right supply of money." They saw monetary problems not in specific technical plans of action, like the Taylor rule (Taylor 2009). Their proposals were instead in the more general framework of institutional and constitutional reforms of the rules of the 'monetary policy game' (Boettke and Smith 2012; Brennan and Buchanan 2000 [1985]; Buchanan 1983a, 2010; Salter 2014b).

Friedman, for one, looked for monetary rules-based constraints on central banks' discretion, particularly through limiting the growth of the monetary base (Friedman 1994). Buchanan thought an explicit constitutional limitation over the Fed's power and capacity of issuing money was more robust (Buchanan 1999 [1962], 2010). And, by the end of his academic career, Hayek had proposed the denationalization of issuing money (Hayek 1990 [1976c]). Driven by these economists' insights, recent contributions have captured the essence of the political economy research program applied to institutional considerations of money and banking. Salter (2013) applies the framework of robust political economy (Leeson and Subrick 2006; Pennington 2011) to study which lender of last resort arrangement might dominate others in a world in which realistic incentives and information imperfections are present. Similarly, Salter (2014b)

evaluates monetary policy rule's degrees of robustness linked to their enforceability. Bédard (2014) studies large US financial institutions' insolvency procedures to see whether liquidation systems or bailouts of large financial institutions are more robust to deal with asymmetries of information, moral hazard and misalignment of incentives. This paper aims to enrich this emerging literature by providing a useful framework for thinking about monetary policy provided through alternative institutions.

In addition, modern political economy literature exists outside the Robust Political Economy framework. This literature addresses the institutional and political dynamics of economic crises and monetary and banking instabilities. Calomiris and Stephen (2014)¹ suggest that crises are recurrent on banking frameworks characterized with fragile monetary and banking rules. Those fragilities emerge from the complex political bargains among politicians and interest groups (Calomiris and Stephen 2014, chapters 1 and 2). Robust banking frameworks, they argue, possess checks and balances on how policy makers and regulators are influenced by coalitions and interest groups that might degrade the rules of the banking-and-credit game. Despite these research programs, a broader post-crisis reassessment of existent monetary frameworks has been absent. This should come as a surprise to anyone who knows monetary history and historical monetary reforms (Rockoff 2015).

In Section 2 we review the robust political economy framework and how it could be a tool for institutional analysis to evaluate alternative monetary frameworks. Section 3 proposes the ideal benchmark of monetary equilibrium on which comparative monetary institutional analysis could be based. Section 4 analyzes the incentives problems concerning political pressure and incentive compatibility that might affect central banking and free banking. Section 5 reevaluates the assumptions concerning decision makers' epistemic resources within these institutional settings and how their limitations could be circumvented. Section 6 concludes.

2 Robust political economy and alternative monetary frameworks

Borrowing from the framework of *Robust Political Economy: Classical Liberalism and the Future of Public Policy* (Pennington 2011), we apply the concept of robust political economy (RPE from here on out) to a more realistic evaluation of two specific monetary institutions: free banking and central banking broadly understood.² Under this institutional context, robustness refers to “a political economic [or institutional] arrangement's ability to produce *social welfare-enhancing outcomes* in the face of *deviations from ideal assumptions about individuals' motivations and information*” (Leeson and Subrick 2006, emphasis added). The degree to which social-economic

¹ There are other interesting works on institutional fragilities on banking and monetary institutions: see for example Bordo and Rousseau (2006), Calomiris and Gorton (1991) and Calomiris (2013).

² It is relevant to define what a central banking system and a free-banking system mean in this paper. A central bank system entails a national or international centralized institution that possesses a legally granted monopoly of note issuing. It either possesses a monopoly or a virtual one in guiding the supply of money (Selgin 1988). After issuance, private banks hold these central bank notes as reserves to expand credit to the rest of the economy. It is assumed that under this system liabilities are irredeemable in commodities. A free-banking system is a decentralized competitive arrangement of the money supply and a lack of overarching guidance of it. It is based on the free entry and competition of banks in the supply of banknotes, which can be redeemed by the public in an agreed form of a good, commodity or bundle of commodities.

institutions will be determined robust or fragile will depend first on the benchmark, (on this case monetary equilibrium), that those institutions aim. Secondly robustness depends on how well that goal could still be achieved if we were to put pressure on the institutions under worst-case scenarios assumptions concerning the motivations and knowledge of the agents involved.

The RPE framework acknowledges that modelling institutions under the assumptions of perfect knowledge and benevolence is erroneous because it is based on false premises concerning human nature and its endowments (Hume 2008 [1748]). Evaluating institutional rules under the wrong premises runs the risk of complacency and overconfidently designing weak and fragile institutions. According to RPE, political-economic institutions are robust and resilient—and likely to promote coordination—only if they are able to support the systemic tensions that continuously arise from human imperfections. In particular it largely focuses on relaxing two major assumptions: “limited human rationality” and “limited benevolence.”

We must consider how monetary arrangements are able to address human imperfections and which institutionally specific contextual mechanisms they will leverage to overcome them so as to tend towards optimal monetary policy. RPE suggests that more robust institutions are desirable, first, because they leverage and check economic actors’ self-interests and reorganize incentives structures to promote wealth-enhancing outcomes (Alchian, 2006 [1965]) in the form of non-distortive monetary policies (Horwitz 2000). Secondly, they provide the context into which knowledge, knowledge proxies and relevant information for policymaking could emerge and be communicated (Lavoie 1985; Boettke 1998) so that cognitive limitations of individuals and policymakers can be circumvented.

The framework applied to monetary alternatives informs us how well each system copes with less-than-ideal conditions based on human fallibility and how likely it is that it can promote economic coordination and maintain monetary neutrality.³ This is crucial to understanding the real political and epistemic environment in which monetary policy’s technical rules and frameworks are *actually implemented* (Mayer 1993 [1990]). A robust framework should provide feedback and incentives for corrections to provide tendencies towards “optimal quantity of money” consistent with maintaining monetary equilibrium and minimizing the dangers of discoordination (Horwitz 2000). Such frameworks allow actors and policy makers to adapt and learn from unforeseen circumstances, with incentives and epistemic feedback to improve their quality of decision making concerning monetary supply policies. A fragile monetary system instead produces money and credit supplies that are politically optimal (Mayer 1993 [1990]), reflecting either political entanglements or an inability to deal with information problems and incentives (Wagner 2010; Salter 2014a) or bargains (Calomiris and

³ In the following section we will further detail what we mean by ‘optimal monetary policy.’ Our idea of monetary optimality is one in which monetary policy and the monetary rule aim to stabilize nominal income while simultaneously achieving allocative neutrality and avoiding monetary disequilibrium (Hayek 2013 [1935]; Horwitz 2000; Salter 2014b). Money enables the process of rational economic calculation and allows goods and services to be expressed as a single homogenous cardinal form of communication that enables economic exchanges. Money, is the other half of every exchange (Clower 1984; Yeager 1986), lacking a single market in which its supply and demand can adjust. Therefore money supply excesses or deficiencies could potentially be felt across the whole spectrum of the price system and their markets. Money could pervasively affect the price relationships and generate nominal ‘noise’ to the price system, hampering the capacities of rational economic calculation and coordination.

Haber, 2014). Instead of using human fallibilities and incentives to correct or improve upon mistakes, monetary policies in fragile frameworks deviate under less-than-ideal conditions.

We should emphasize that RPE is not a direct tool for institutional construction. It is just an approach to evaluating how institutions' inner mechanisms guide human behavior and lead to either the upholding of policies or their breakdown. As such, it provides only a method for comparing how they might operate under real impediments and how well they maintain policy *rules* and promote *dynamic robustness*. We need not judge arrangements only on how well they achieve the monetary equilibrium 'target' at a given time. The standard is to what extent monetary frameworks accurately respond with changes in the money supply in less-than-ideal conditions to correct deviations from monetary neutrality through time. Robust monetary arrangements are systems that "gain from disorder" or that "thrive and grow when exposed to volatility, randomness, [and] disorder" (Taleb 2012, p. 3). Robust systems leverage errors by providing epistemic feedbacks and incentives for actors to promote tendencies towards the optimal monetary policy even when deviations from the ideal are pervasive.⁴

3 Monetary equilibrium as a benchmark for RPE analysis

Monetary equilibrium is "the state of affairs that prevails when there is neither an excess demand for money nor an excess supply of it at the existing level of prices" (Selgin 1988, p.49).⁵ We understand the demand for money using the "cash balance" approach (Yeager 1986, 1996), which says that money demand originally stems from the preferences of individuals within a market economy. Economic actors possess a subjective preference for holding purchasing power in the most 'liquid' form: money (Horwitz 1990, 2000, 2013).⁶ Their "desired money balances depend, in large part, on the economy's physical volume of transactions *contemplated* and on the *prices* at which goods and services change hands. Actual money balances add up to the money supply, and if it equals the total of *desired* money balances, the flow of transactions continues without monetary impediment" (Greenfield and Yeager 1989, p.405, emphasis added). An inconsistency between actual money balances and desired money balances,

⁴ Both Thomsen (1992) and Kirzner (1997) provide good examples of a system with epistemic signals and incentives to act as well as correct mistakes in the whole system of disequilibrium market prices.

⁵ This paper uses monetary equilibrium as a framework to understand severe disequilibrium processes that arise from mismanaging the money supply. Mismanagement includes both when a monetary system experiences an excess in the nominal money supply and excesses in the demand for real balances. This broader monetary framework serves as a theoretical instrument to evaluate different monetary institutional arrangements and how they will be more robust (or fragile) under realistic assumptions concerning human capabilities, in order to achieve an "as close as possible" monetary equilibrating environment. For a more comprehensive work on monetary equilibrium theory see Myrdal (1965 [1939]) and Warburton (1981). Additionally, for a review of the historic evolution of the idea of monetary disequilibrium in classical economics, see Montgomery (2006). For a technical and mathematical exposition of monetary equilibrium theory, see Hendrickson (2015).

⁶ Considering a subjectivist approach to demand and the desire of heterogeneous individuals to hold money as cash balances could be considered part of a broader tradition of the "subjectivist monetary theory," which began with the theory of the origin of money by Carl Menger (2009 [1892]). Since Menger, we have seen some advances in the subjectivist approach to the demand of money by Selgin (1987) and Horwitz (1990).

however, constitutes monetary disequilibrium. Whenever the demand for holding money balances exceeds (or falls below) the supply of money, this mismatch between preferences and supply may create disturbances among individuals and markets. In particular, individuals may change their consumption and investment decisions. Eventually those disturbances will be reflected in changes in the pattern of economic activity (Friedman 1994). And as Yeager (1983, p.307) notes, “not merely coordination but, more broadly, economic calculation is at stake.”

The problem arises because money lacks a single market in which it can clear (Clower 1984). Goods and services are exchanged not through barter but through the intermediary of money. It is under this intermediary role that the “money veil” could be pernicious to the market coordination process. Changes in demand that are not met with an adjustment of supply will affect potentially all markets and their price structures. This skews the communication of underlying real scarcities, curtailing the system’s capacity to allocate resources to their highest value uses. Further, market coordination and entrepreneurship rely on signals like money prices and interest rates.

The potential for money to curtail the market depends on the institutional arrangement’s robustness for supplying money. In theory, the adjustments of individuals’ preferences could work themselves out through price adjustments. But this mechanism is not optimal.⁷ Hence, a fragile monetary arrangement that promotes monetary disturbances will “overtax the knowledge-mobilizing and signaling processes of the market” (Yeager 1986, p.376).⁸ Instead, individuals within a robust monetary framework may be able to communicate changes in their desire for holding money balances, and policymakers may be able to promptly change the supply of money accordingly by leveraging informational proxies and incentives. RPE monetary frameworks should minimize the severity of individuals’ mistakes, promptly correcting them, and generate tendencies towards monetary equilibrium by providing contextual epistemic signals, relying on feedback, and providing incentives structures. The institutionalization of these tendencies helps generate relevant contextual knowledge and ensure self-enforceability of the rules (Salter 2014b).⁹

⁷ Prices and wages in the real world possess “stickiness” due to real market frictions and dynamic market processes that unfold through different timeframes. If money is not supplied or withdrawn due to changes in the desire to hold money balances, individuals will have to adjust their asset holdings and consumption patterns to respond to the changes in their liquidity preferences. In this case, adjustments will occur through changes in the price level and relative prices, making the accommodation difficult, sluggish and economically impractical. Relying on monetary alterations of the relative prices to match the changes in the demand for money is as pernicious as altering relative prices to match changes in unwanted excesses in the money supply (Yeager 1986, 2010).

⁸ Horwitz (2006) provides a novel attempt to enrich monetary disequilibrium theory with an Austrian macroeconomic framework. In particular, Horwitz brings the concept of the Wicksellian natural rate system of coordination and the Austrian theory of heterogeneous capital into Yeager’s monetary disequilibrium framework. This creates a more integrated and rich approach to fully grasp the pernicious effects of monetary disequilibria and market discoordination and its effects on the structure of production and intertemporal allocation of capital.

⁹ The self-enforceability of a monetary framework as Salter (2014b, p.5) defines is when “those in a position of power serve their self-interest by maintaining the rules.” Moreover the argument of RPE robustness lies not only in the incentives structure but also in the institutional framework from which the indispensable epistemic resources might emerge.

4 Reevaluating the assumptions of political pressure and incentive alignments

The Federal Reserve System in the United States was established by the Federal Reserve Act in 1913 with the specific intention to deal with banking panics (Rockoff 2015). But the Fed, like other central banks, has shifted its money and banking roles.¹⁰ Today central banks possess the power and tools for guiding and controlling monetary policy.¹¹ Their high degree of “political independence” is intended to allow central banks to focus solely on “technically based” monetary decisions (Woodford 2003).¹² Setting aside technicalities, we are concerned with central banks’ incentives structures so we can determine how likely they are to optimally pursue a given policy and maintain its enforceability. We can assume that the Fed’s decision makers are omniscient and have found a ‘technically’ optimal monetary policy. Even so, how likely is it that policymakers will enact these policies instead of politically ideal ones? Optimal policy arguments usually rest on the idealized assumption of independence and incentives compatibility. These assumptions have been challenged after the Public Choice revolution (Buchanan and Tullock 1962; Mayer 1993 [1990]) and with the political business cycle theory (PBCT) (Nordhaus 1975; Tufte 1978).¹³

Empirical and formal models have shown that politicians can somewhat systematically influence key Fed decisions. As Kirshner (2003, p.645) notes, “the management of money is always and everywhere political: for every policy choice, there is an alternative that some actors would prefer.” Having brief political terms and facing reelection, politicians seek to maximize their probability of reelection. They pressure central bank authorities to steer the money supply towards their short-term political and economic interests, thereby inducing inflation-unemployment cycles (Nordhaus 1975; Toma 2004).¹⁴ Independent central banks might also agree to avoid radical policy actions in response to politically led fiscal stimuli from the executive branch during

¹⁰ Central banks have been established in different countries for different circumstantial and historical reasons. For instance the Bank of England was founded to ease financing to the government (Calomiris and Haber, 2014; Smith 1990 [1936]).

¹¹ It is relevant to emphasize that the Federal Reserve does not control the supply of money in the full meaning of the term “control.” What the Fed is allowed to do is guide and alter the overarching monetary policies that indirectly impact the banking system’s capacity to generate the money supply. Hence the Federal Reserve does not directly control the money supply. Nonetheless it possesses an extremely relevant and unique role in indirectly affecting the supply through utilizing various tools such as reserve bank ratios, the discount rate, and open market operations. For a guide of the Fed’s role in altering the money supply and its policies, see Horwitz (2013).

¹² To clarify, most central banks were not founded with the intention of being technocratic and politically independent to guide the money supply towards some optimal goal. Rather most were established, through monopoly grants, to raise revenue or find straightforward forms of credit for kings and governments to ease debt and finance trade and wars (Bagehot 1877; Smith 1990 [1936]; Calomiris and Haber, 2014). Currently modern states could consider central banks necessary to sustain their political order and guide the banking and political bargains to answer to political and social pressure groups (Calomiris and Haber, 2014). For an interesting evaluation of the current role of modern central banks, see Selgin (2010b).

¹³ For an enriching overview of the political business cycle theory literature and development, see Drazen (2001). For Public Choice theory application on monetary policy, see Mayer’s collection of essays (1993 [1990]).

¹⁴ Theoretical research on the PBC theory has been focused on pre-electoral manipulations with models of imperfect information about an incumbent’s competences (Rogoff 1990) and in partisan postelectoral cycles consistent with rational expectations (Alesina 1987). These models have been widely tested empirically. For a review on the major empirical results of the models, see Drazen (2001).

sensitive election periods to avoid appearing to interfere with the election process (Woolley 1984; Drazen 2001).

Overall the Fed is subject to congressional and presidential oversight and soft-pressure, which manifests itself in political business cycles or more general as monetary disequilibrium, providing non-market optimal money supplies. Empirical evidence (Alesina et al. 1992, 1997) has shown that political pressures have led to post-electoral inflation increases and significant effects on M1 growth rates before elections.¹⁵ Grier (1989, 1991) has provided statistical evidence of strong correlations between the shift of leadership inside the Senate Banking Committee and the growth of the monetary base. Through interviews with Fed employees, Weintraub found that the “monetization of [government] deficits was often cited as [a primordial] reason for rapid money growth” (Weintraub 1978, p.359).¹⁶ These findings provide support that politically optimal monetary policies have dominated technical optimal policies due to the structure of appointments and oversight. Further, Boettke and Smith (2014) review historical episodes showing that the Fed has systematically bowed to political pressure.

Thus, Fed policies adjust to the political-fiscal reality in which they are embedded. Monetary policy reflects nested political entanglements, potential pressure dynamics, and political bargains (Calomiris and Haber, 2014).¹⁷ This usually means easing the Federal debt burden (O'Driscoll Jr 2011) and having inflationary biases (Toma and Toma 1986). The Fed sacrifices economic optimality for personally and politically maximizing optimality, weakening the system's robustness. Centralized monetary frameworks generate neither incentive compatibility dynamics nor pressures on decision makers to learn from their mistakes and correct monetary disequilibria.

In this framework, neither policymakers, nor politicians, nor economic actors possess the motivations to aim for monetary neutrality. Monetary disequilibrium is thus an *inherent outcome of pre-constitutional features* that come from the institutional structure of centralized arrangements and their ‘native rules of the game’¹⁸ (Buchanan

¹⁵ Although Alesina et al. (1997) reject the existence of both a surge in economic activity and post electoral inflation after 1979, which somewhat contradicts political business cycle models. They found more evidence of post-electoral inflation existing prior to 1979. In addition, Alesina, Cohen, and Roubini (1992) found statistical evidence of significant political effects on the yearly growth of monetary aggregates. These results are consistent with other anecdotal evidence of the changes in the degrees of political pressure through different political periods (Boettke and Smith 2014). However the point is not so much about how constant these political pressure relationships are, but rather the recognition that they are latent and inherent in the existent institutional framework of monetary policy.

¹⁶ For a more comprehensive literature review concerning the statistical and empirical evidence between political pressure on the Fed and its positive effects and relationships with monetary policy, see Boettke and Smith (2012), Nordhaus (1975) and the collection of Public Choice oriented essays (Mayer 1993[1990]).

¹⁷ Selgin (2010a) argues that central banking arrangements are inherently discretionary. Policymakers, Selgin argues, given the constitutional framework they face, will not resist exercising their well-intended expertise to use discretion through policy. Selgin highlights that failure to adhere to rules of monetary policy is not necessarily the manifestation of political pressures or rapacity, but rather expert authorities' simple well-meaning willingness to act ad-hoc. Hence “an FOMC, consisting of expert monetary economists, simply cannot be expected to set that expertise aside in making policy” (Selgin 2010a, p.469).

¹⁸ We should clarify that this does not mean that different central banking arrangements are equally fragile from an RPE perspective. Centralized arrangements that possess more specific and enforceable rules anchoring agents' expectations and take into account decision makers' incentives might prove more robust than the Fed arrangement. Therefore central banks that possess explicit and enforceable rules of inflation targeting could potentially reveal more robust RPE speaking. RPE comparative evaluation among central banks could be a further area of exploration.

1983, 2010). Current arrangements do not leverage the self-interested behavior of the participants within the monetary rules of the game. Hence in situations of less than perfect altruism, the optimal monetary policy is superseded by politically optimal ones, weakening its political economic robustness.

Incentives in free-banking arrangements instead seem to weakly dominate centralized arrangements from an RPE perspective. In free banking, each issuance bank has economic incentives to increase or decrease its quantity of money liabilities according to economic actors' demand to hold notes and willingness to redeem them (Selgin 1988; White 1989). Economic actors and banks issuers' self-interested behavior leads to a post-constitutional dynamic of profit and loss signals as well as a dynamic through which the banks check each other. The self-interest action of individuals, even when substantially deviated from benevolence, leads to incentive compatibility and corrective tendencies toward optimality in the supply of money (Selgin 1988, chapter 3). Even if banks are rapacious, their self-motivated action leads them quickly to redeem excess notes from other over-expanding banks to penalize them. Hence knavery is leveraged to provide a decentralized, self-enforcing accountability system that aims to correct monetary disequilibrium while also releasing relevant information to them through the changes in their reserves.¹⁹

Under an RPE evaluation, free banking outperforms the robustness of incentives and political pressures on monetary policy of a centralized arrangement. Moreover, with the development of voluntary associations of clearinghouses, competitive note issuance frameworks were able to generate a mechanism of accountability and peer supervision. They oversee and monitor banks portfolios, which lowers both systemic risk and inter-banking transaction costs and eases the problems with financial panics (Calomiris and Gorton 1991; Timberlake 1984; Gorton and Mullineaux 1987). Clearinghouses have assumed the role of note issuance in times of distress, easing severe episodes of monetary disequilibrium (Timberlake Jr 2014). Finally the lack of political influence on the supply of money sidesteps political business cycles and public choice problems. Politicians would be unable to alter the overall decentralized competitive market of issuing notes and credit since *they lack the contextual institutional authority* to do so. Under a decentralize system, policymakers lack appointment structures and accountability mechanisms through which they can exercise pressure and guidance on banks' money supply decisions.

5 Reevaluating the assumption concerning actors' degree of omniscience

The makers of monetary policy not only have to deal with their incentives and potential political pressures but also must rely on emergent contextualized information or knowledge surrogates to enact their policies. Social orders have a problem of a societal

¹⁹ Selgin (1998, chapters 3 and 6) provides a more thorough and technical exposition of the internal dynamic mechanisms present in a free-banking system, such as the rule of excess reserve and the principle of adverse clearing in which a free-banking system contains and punishes overexpansion of unwanted notes. In addition, empirical historical cases of banking systems close to free banking exist, such as the case of Scotland during 1792–1844 (White 1995 [1984]), among others (Dowd 1992).

“division of knowledge”²⁰ (Lavoie 1985). How well different frameworks deal with this problem determines how robust they are. Robust institutions will be able to manage and generate epistemic resources and transmit ‘relevant information’ from different contexts to the specific decision makers who utilize it in their economic calculations. The question is how well individuals acting within different rules of the game leverage their specific institutional mechanisms to promptly enact monetary policy decisions to either achieve equilibrium or promote heuristics and feedbacks in order to correct deviations accordingly.

Monetary equilibrium can be better approached when individuals can ‘communicate’ their desire to hold money balances more accurately and promptly.²¹ The specific challenge to approaching equilibrium is that the epistemological conditions for elucidating the money supply that meets society’s money demand are complex and dynamic. The demand for money, as seen in Section 3, is heterogeneous, contextually based, and tacitly held at the individual level (Horwitz 2000).

Given this complexity, any institution will face severe epistemological limitations if they attempt to gather all the knowledge required to discover the ‘right’ supply of money so as to meet all individuals’ subjective preferences to hold it. A monetary policy aimed to achieve the optimal quantity of money would have to rely on ‘difficult to extract’ knowledge since it is burdensome or even impossible to obtain or decode individuals’ subjectively held preferences. What institutions do instead, is *leverage knowledge surrogates* that might allow signals and information to emerge. Relevant knowledge generated in society, specifically the knowledge that individuals inherently hold, is seldom articulated (Polanyi 1958, 1966). Further, individuals’ knowledge, expectations and preferences are formed under specific institutional settings or contexts and then are partly transmitted or communicated solely under specific institutional mechanisms (Boettke 1998, p.145).²² Indeed, without individuals’ interactions producing and communicating the contextual knowledge, it is impossible for some arrangements to accumulate a significant segment of societal knowledge, since that knowledge would never arise in the first place (Hayek 1948a [1945]).

The lack of knowledge surrogates (Lavoie 1985; Boettke 1998) could be the core problem centralized institutional arrangements face in striving to achieve “monetary neutrality” and may increase their epistemological fragility. Central banking arrangements

²⁰ It was Mises (1981 [1922]) who coined the term *Art geistige Arbeitsteilung*, meaning a “kind of mental division of labor” within a social order. The fact that individuals possess different knowledge and different subjective interpretations of objective facts was already very clear to Mises in the 1920s. Hayek further developed the idea when he challenged the epistemological assumptions of socialist arrangements (Hayek 1948a [1945]). Mises deserves some credit in unveiling the fundamental problem that afflicts every single decision maker under scarcity through showing how market prices under an institutional context of private property allow economic orders to handle allocation problems.

²¹ We should emphasize that the argument does not refer to communicating information in the literal sense in which we can communicate data. Institutional mechanisms can serve as epistemic bypasses or enablers that allow individuals to act *as if* the tacit underlying information had already been communicated (Hayek 1948b [1945]; Lavoie 1985; Boettke 1998).

²² It is beyond the scope of this paper to analyze the RPE of different forms of NGDP targeting. Nonetheless it is worth noting as an example, that NGDP targeting arrangements that rely on markets exchanges of NGDP futures (Sumner 2012) seek to address exactly this institutional epistemological issue exposed in this paper. By relying on market exchanges of NGDP futures contracts, policymakers create an institutional mechanism through which the expectations of the future NGDP and monetary policy stance can emerge. The mechanism also allows the expectations to be communicated to policymakers to enact monetary policy more promptly.

base their monetary policies mainly on large-scale structural models and Dynamic Stochastic General Equilibrium Models (DSGE),²³ which rely heavily on past measured aggregated data and on structural assumptions concerning the macroeconomy. This adds substantial epistemological burden to policymakers.²⁴ Their policies consist of estimating monetary policy models that forecast how key macroeconomic variables such as unemployment, output gaps and inflation should behave when they implement policies through targeting short-term interest rates (Bernanke and Mihov 1998). Central banks gather data post-policy implementation to adapt their models to the new measured changes in the aggregates. To implement an optimal policy, policymakers must possess reliable and accurate information concerning the exact way macro aggregates react to changes in the targeted instruments, while avoiding severe informational lags.²⁵ Central banking then, even if we assume benevolent agents, would still have to be able to find the perfect model of the economy to implement optimal monetary policy, as well as perfectly update it at all times with accurate data.

Central banks therefore rely on heroic epistemological assumptions concerning few individuals' capacities to know the true unique model of the economy, as well as on their capacities to correctly update the model when the underlying economic circumstances change. Furthermore they rely on severely lagged aggregated information such as changes in the nominal income and changes in the general price level which once measured might have already made disequilibrium effects that have already permeated throughout different markets (Friedman 1968). This impedes a prompt correction of monetary disequilibrium (Horwitz 2000).²⁶ A centralized system that guides broader measures of the money supply through targeting short-term interest rates and measuring their past effects on macro aggregates, eliminates local, decentralized, and contextual market relationships between individuals and banks.²⁷ Without such relationships, the overall capacity of the economic system to act on a specific part of the market by withdrawing or providing liquidity decreases. The emergence and communication of relevant knowledge concerning individuals' demand to hold money and their expectations concerning the growth of the economy will be inhibited through central banking. This adds a heavy epistemological and

²³ For an overview of the DSGE models see C.E. Tovar, "DSGE Models and Central Banks" (Tovar 2008).

²⁴ To see the severe epistemic limitations concerning the structural models, beyond the argument here, exposed and the collective limitations of the profession to know the 'true' underlying structural model see McCallum (1988).

²⁵ It is problematic to achieve this degree of omniscience in the exact way that macro aggregates will react to changes in targeted rates. It is even more so in policy environments which are not bounded by predictable rules. Individuals in a changing policy framework will dynamically adapt and change their behavior accordingly (Lucas 1976). As for the evident lag problems affecting central banks, see Horwitz (2000).

²⁶ Horwitz argues that the fact that central banks rely on the aggregation and centralization of relevant information makes them informationally inferior to free banking. Central banks, he argues, are unable to accurately and promptly correct monetary disequilibrium because they rely on the aggregation of data, which suffers major lag effects making them slower to recognize, recollect, implement and measure their effect upon monetary disequilibrium. Instead, free-banking arrangements generate live microeconomic market information embedded with incentives for proper money supply corrections, which reduces policy lags (see Horwitz 2000, chapter 7).

²⁷ We need to stress that under central banking, there are market relationships between public and commercial banks. Banks issue 'inside money' liabilities as checkable deposits constrained in part by economic actors' capacities to redeem them for base money. Nonetheless the supply for checkable deposits is not totally determined by competitive market relationships but also by: the quantity of base money that central banks create, their policies of interest paid on reserves, and minimum reserve ratios. Hence central banks impede market feedbacks to be part of their money supply decision making; even more so they distort banks' feedback with their policies.

informational burden on decision makers and forces them to use other ex-post informational proxies such as surveys and statistics.

But if the knowledge concerning people's demands for holding money balances cannot be fully articulated, it cannot be part of the surveys and aggregated statistics (Horwitz 2000). The issue is how to extract such tacit information, which "by its nature cannot enter into statistics" (Hayek 1948b [1945], p.83).²⁸ Money demand signals—just as demand signals for other goods and services—appear to be only available in the context of the competitive market process. No other economic player besides the central bank can attempt to remedy disequilibrium, but they do not possess institutional feedbacks from the other players to succeed. This suggests massive epistemic impediments for a centralized authority and severe epistemological fragility.

Instead, under free banking there would be different money suppliers within a competitive market process. Different money suppliers, following prompt and contextual market signals of profit and loss would want to elucidate which quantity of money would be the most preferable for heterogeneous individuals at particular points in time. Decentralized competition allows those suppliers to use their entrepreneurial capacities to obtain, or better estimate, individuals' knowledge and preferences for holding money and corresponding fluctuations. Thus, just like in a capitalist institutional environment, signals emerge that allow better social coordination compared to socialist arrangements. Under decentralized competition, enhanced knowledge concerning the subjective demand for money will emerge, allowing entrepreneurs to engage in the discovery process. Analogous to the socialist calculation problem, under free banking, individuals' incomplete knowledge can be enhanced and made accessible under a system of exchanges and interactions between suppliers, clearinghouses and holders of money.²⁹

A free-banking arrangement instead, possesses robust tendencies to conduct the system towards monetary equilibrium through banks competitive issuance of short-term liabilities or notes and the economic actor's capacities to redeem them. Decentralized producers provide their money supply accordingly *as if* they possessed direct knowledge regarding consumers' personal money preferences (Selgin 1988). Banks' perception and estimates concerning the public's willingness to hold notes is based on the market signals and heuristics they obtain through the rates of notes and checks that are effectively returned to them in the clearing network for redemption. Banks use the fluctuations of their notes and checks' redeemability as knowledge surrogates. These signal economic actors' expectations and inclinations to hold the bank's money, overstepping the burden to rely on aggregated information and suffer the entailing lag problems (Horwitz 2000, chapter 7). The interaction

²⁸ Relying on statistics presents severe problems. First, related to information lags, there are lags in: recognizing disequilibrium, acknowledging policies' effects, aggregating the data, communicating statistical results to decision makers, and lags in implementation (Horwitz 2000, chapter 7). Second, statistical aggregates might not necessarily be accurate knowledge surrogates for the underlying money disequilibrium. Aggregated data might decontextualize local knowledge and hide local and individual imbalances regarding the demand and supply for money. At the institutional level relying on data collection and surveys impedes the possibility of getting 'closer' to the epistemic sources and for knowledge surrogates to emerge between supply and demand interactions as knowledge proxies. By sidestepping crucial institutional mechanisms, central banking systems have to rely on statistical and aggregated proxies instead of leverage institutional tools to 'communicate' personal knowledge. The substitution of contextual knowledge for measurements through surveys and statistics could potentially destroy the source of indispensable tacit knowledge (Polanyi 1966).

²⁹ To see a more technical and thorough description of the 'adverse clearing' mechanism under free-banking see Selgin (1988).

among economic actors and issue banks through this emergent competitive process unintentionally leads to the emergence of necessary knowledge that corrects monetary disequilibrium (Selgin 1988).

A decentralized framework not only obtains “contextual market signals” emerging during the competitive process of notes and checks issuance, but also as seen in the previous section, it possesses incentive compatibility. Profit motivated banks aim at unveiling and respecting individuals’ preferences. Hence they possess a far better alignment of market incentives. Profit and loss within the context of free-banking utilizes those mechanisms for promoting incentives and information for monetary equilibrium and penalizations for the emergence of disequilibrium. In particular adverse clearing provides the institutional mechanism in which incentives are checked and information is communicated (Selgin 1988; White 1989; Horwitz 2000). By increasing the bank’s liquidity risk through draining their reserves in the clearing network, it adds competitive market pressure to banks to not over-expand the money supply.

Consequently, free banking under an RPE comparison weakly dominates central-banking arrangements regarding the epistemic aspect of institutional evaluation by achieving better self-adjusting money supplies when information asymmetries and lack of omniscience are part of the institutional reality. Free-banking is more robust since it relies on timely market signals such as clearing mechanisms and fluctuations of reserves. These market signals promptly reveal the degree of accuracy of monetary policy, allowing information to emerge for adjustments and learning. Competition enables a heuristic process that will minimize the damage of disequilibrium brought about by any individual errors in the money supply (Hayek 1990 [1976c]; Selgin 1988). In contrast, a centralized institution is comparatively fragile under RPE scrutiny when human fallibility is present. A centralized arrangement that seeks to ‘guide’ the money supply lacks institutional mechanisms to retrospectively acknowledge supply mistakes. The lack of prompt and accurate feedback concerning the degrees of their disequilibrating policies hinders any robust learning from previous mistakes.

6 Conclusion

Recent experiences with centralized institutions have proven extremely fragile in maintaining monetary or nominal income stability (Selgin 2010b; Beckworth 2012; Sumner 2012). The last couple of decades have left us with financial panics, nominal income instability, and recurrent macroeconomic maladies (Hetzel 2012; Taylor 2009; White 2009). By reassessing the basic assumptions concerning human fallibility and political pressures, the robustness of a central banking institution appears suboptimal and inherently prone to generate disequilibrium. To the extent individuals believe it is fragile to have a sponsored monopoly or a centralized government agency supplying goods such as cars and shoes, the same skepticism should apply to governments’ centralized monetary institutions.³⁰ Under RPE, the post-crisis

³⁰ Although a free-banking system like the one exposed in this paper, and the theoretical one envisioned in the work of Selgin (1988), have not yet existed. We have some historical cases that may be called, in the practical sense of the term, free-banking systems. Successful systems which shared characteristics of a free-banking mechanism have been rare but nonetheless existent. Examples are found in Australia, Canada, China, Colombia, France, Scotland and Switzerland; for a historical account and review of these cases, see Dowd (1992).

consensus that implicitly believes in the robustness of central banking arrangements seems to be sustained on either a lack of serious institutional comparison of alternatives or heroic assumptions concerning policymakers' human endowments.

We live in a social world comprised of imperfect human beings. Institutions arising from imperfect human interactions are also prone to fallibility and imperfections. As such, no social or monetary institution could ever be perfect enough to achieve an optimal monetary policy target. Recognizing this should not be a matter of misfortune but rather the realistic foundation to better understand how to move towards robust institutions that promote social prosperity. RPE monetary frameworks better respond to irreducible errors, ignorance and deviations from benevolence that are inherent in human beings and promote adjustments to move towards monetary equilibrium. The robustness then resides on the *institutionalization of tendencies towards money neutrality* that might be incentive compatible, self-upholding and capable of providing contextualized knowledge. Societies should encourage monetary frameworks that fit these robustness measures.³¹

We have found that free banking's robustness outperforms central banking on both degrees of RPE addressed in this paper. The dominance is present solely whenever economic actors' epistemic and incentive conditions, within the rules of the game, are less than ideal. In contrast, in a world in which actors are omniscient and benevolent, both systems possess the same degrees of political economy robustness, thus perform similarly.

If our conclusions stand, why we do not see more free-banking reforms? One answer is that political and private corporate incentives contrast with reforms for free banking. As Calomiris and Haber (2014) have stressed, banking systems and hence monetary frameworks are the institutional embodiment of the political system and political bargains amongst interest groups and politicians. Hence coalitions and interest groups "shape laws, policies, and regulations in their favor—often at the expense of everyone else. [...] a country does not 'choose' its banking system: rather it gets a banking system that is consistent with the institutions that govern its distribution of political power" (Calomiris and Haber, 2014, p.4). Further work therefore should be focused on understanding the robustness of monetary frameworks against political recapture, political switching costs and how we can alter the incentive structures and compensations schemes of policy makers, politicians and interest groups so sound and robust reforms can be enacted at the pre-constitutional level (Brennan and Buchanan, 2000 [1985]).

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³¹ It seems that monetary frameworks that fit into this robustness category are free-banking arrangements as seen in this paper and also some specific forms of NGDP targeting (Salter 2014b). It is beyond our scope to analyze NGDP targeting robustness under the RPE framework. However it seems that a more thorough application of RPE to evaluate NGDP arrangements is necessary before making conclusive statements regarding their political economy robustness.

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