ESSAYS ON THE POLITICAL ECONOMY OF MONETARY INSTITUTIONS AND
POLICY

by

Alexander William Salter
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DEDICATION

To my mother, who taught me to value work, and to my father, who taught me to value reason.

And most of all to my beloved fiancée, Lauren, whose love and support saw this project to fruition.

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TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

ESSAYS ON THE POLITICAL ECONOMY OF MONETARY INSTITUTIONS AND POLICY

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The microfoundations revolution in macroeconomic theory has almost entirely displaced the hydraulic Keynesianism of old. Nonetheless, monetary policy in mainstream models is still primarily concerned with the appropriate estimation of changes in output and employment following the manipulation of short-term interest rates. There is little consideration of whether policy makers—or the individual agents whose behavior they are attempting to influence—possess the knowledge or incentives necessary to act in the way prescribed by the models. My dissertation addresses these concerns on three separate margins.

In "Robust Political Economy and the Lender of Last Resort," I apply the standard of robust political economy to the three chief versions lender-of-last-resort doctrine (hereafter LLR) has historically taken: Bagehot's rules; open market operations only; (Richmond Fed doctrine); and any actions necessary to stop financial contagion (New York Fed doctrine). I compare each to the mechanisms to prevent financial panics

that developed in free-banking systems. Robust political economy questions how institutions function to solve social dilemmas even in unfavorable knowledge and incentive environments; if social cooperation breaks down in the presence of deviations from the ideal of perfect information and sufficient altruism, then the system is not robust. I conduct an ordinal ranking of LLR, based on the robustness criteria outlined above. I conclude that market-based LLR responses, because they are based on profit-seeking residual claimants acting on the basis of their local knowledge, are more robust than responses that place LLR responsibility in a public authority.

In "Is There a Self-Enforcing Monetary Constitution?," I extend robustness considerations to the search for desirable monetary rules. A self-enforcing monetary constitution is one whose rules do not require sovereign enforcement and therefore do not rely on the wisdom and virtue of the sovereign. Agents in the market uphold the rules, even when they have, realistically, imperfect knowledge and incentives to be selfish. I discuss two radical alternatives to current monetary institutions—a version of NGDP targeting that relies on market implementation, and free banking—that provide self-enforcing monetary constitutions. To evaluate such proposals we go beyond monetary theory narrowly conceived and consider insights from constitutional political economy.

In "A Theory of the Dynamics of Entangled Political Economy with Application to the Federal Reserve," I present a framework that explains the dynamics of entangled political economy, illustrating how, over time, a public authority (the Fed) interacting with private organizations (banks and other financial businesses), results in the public authority "exporting" its logic of orderings to the private institutions. This blurs the

distinction between private and public organizations, resulting in unintended and undesirable consequences. Distorting the boundary between public and private organizations results in incentives that encourage the worst aspects of both, such as having rights to profits remain in the hands of private claimants, but the burdens of losses be passed on to the taxpaying public. This framework, while yielding conclusions similar to the regulatory-capture story of traditional public-choice economics, highlights aspects of the interaction between public authorities and public organizations that only an emphasis on the *process* of entanglement can reveal.

ROBUST POLITICAL ECONOMY AND THE LENDER OF LAST RESORT

1. Introduction

A growing body of literature critically assesses the performance of U.S. central banking in light of the 2007–9 financial crisis.[1] One theme arising from this literature is that policy failure on the part of the Federal Reserve was the proximate cause of the recession following the crisis.[2] While some argue that the Federal Reserve was partly responsible for the unsustainable run-up in asset prices that preceded the bust (e.g. Beckworth 2012; Horwitz and Luther 2010; White 2012), others contend that it failed to offset the severe monetary contraction following the bust that itself was not the Federal Reserve's doing (e.g. Hetzel 2012; Sumner 2011, 2012)[3,4]. These accounts of the crisis and its aftermath call for a reconsideration of the proper form and function of monetary institutions. This chapter contributes to that effort by reexamining historical interpretations of the lender of last resort policy first elaborated by Thornton (1939 [1802]) and popularized by Bagehot (1896 [1873]). In particular, this chapter will

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[1] See for example Ahrend (2010); Beckworth (2012); Benes and Kumhof (2012); Boettke and Smith (2013a, 2013b, 2013c); Diamond and Rajan (2009); Dowd and Hutchinson (2010); Espinosa (2012); Hetzel (2012); Horwitz and Luther (2010); Jarocinski and Smets (2012); Leamer (2007); Mehrling (2010); O'Driscoll (2012); Kling (2010); Kotlikoff (2010); Roberts (2010); Selgin, Lastrapes, and White (2010); Sumner (2011, 2012); Taylor (2007, 2009); White (2008, 2009, 2012); Woodford (2012); Woolsey (2012).

[2] This is not the only explanation of the financial crisis put forth. For a sample of opinions on the causes of the financial crisis see *Critical Review* Vol. 21, No. 2–3.

[3] The former explanation draws on the Austrian theory of the trade cycle (Garrison 2000; Horwitz 2000) whereas the latter draws on the monetarist story of Friedman and Schwartz (1963). These theories are not irreconcilable, and may in fact be complementary (Boettke and Luther 2009).

[4] Moral hazard explanations also feature prominently in these works. See especially Espinosa (2012), Roberts (2010), and White (2012).

consider the three chief versions of that policy—the Classical system of central bank lending on good collateral at a penalty rate, the Richmond Federal Reserve system of open market operations to prevent liquidity drains, and the New York Federal Reserve system of commitment to taking any and all action necessary to prevent the spread of financial contagion—and, comparing them to free banking systems' ability to stem off financial panic, determine which systems are robust to agent imperfections in the form of information and incentive frictions.

The literature on the lender of last resort takes two forms. The first can be described as exercises combining comparative economics with the history of economic thought. Scholars writing on past interpretations of lender of last resort doctrine provided a framework for deriving policy implications from this doctrine (e.g. Bordo 1990; Humphrey 1989; Selgin 1989, 2012). More recent works are characterized by formal models that examine whether asymmetric information, the idiosyncrasies of interbank loan markets (with special focus on collateral and repo markets), and moral hazard allow an unambiguous interpretation of lender of last resort doctrine (e.g. Freixas, Parigi, and Rochet 2004; see also Goodhart and Huang 2005 and Rochet and Vives 2004). While these latter efforts seriously consider information and incentive frictions in their attempts to determine optimal lender of last resort policy, they unfortunately limit these frictions to private agents.[5] They seem to assume that the lender of last resort, provided with the optimal policy from the models' reduced-form solutions, can unerringly implement that policy in real time and will have the right incentives to do so. In order to appreciate the

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[5] The lender of last resort in these models is assumed to be an actor of a different kind from the profit-seeking bankers.

desirability of any particular lender of last resort policy, this assumption must be relaxed. In doing so this chapter follows the structure of the comparative-economics literature since a broader approach is better suited for investigating the political economy considerations.[6]

This chapter also contributes to the literature on alternative monetary institutions that considers possible arrangements to replace central banking. Popular alternatives include unrestricted note issue on the part of individual banks, known as free banking (Sechrest 2008; Selgin 1988, 1994; Selgin and White 1994a; Smith 1990 [1936]; White 1989, 1995), a separation of the money and credit functions in banking, known as limited purpose banking (Kotlikoff 2010; Kotlikoff and Leamer 2009), and an enforced 100 percent reserve requirement, known as full-reserve banking (Huerta de Soto 2012; Jarocinski and Smets 2012; Rothbard 2008, 2009). These are for the most part overarching works of system, whereas the scope of this chapter is more narrow, focusing only on the lender of last resort function. However, the findings of this chapter may have implications for the debate as to which of these alternative arrangements, if any, is superior to modern central banking.

In the following section, I outline the framework of robust political economy. I judge the various interpretations of lender of last resort doctrine using standards derived from the robust political economy literature in Section 3. In Section 4, I conduct a

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[6] An approach similar to the one I advocate can be found in Calomiris (2013). While concerned with banking panics rather than last-resort lending per se, Calomiris considers similar historical cases and reaches similar conclusions to those to be discussed later in the chapter.

comparative analysis of the four lender of last resort conceptions. In Section 5, I offer

closing thoughts on the implications of the findings for public policy and future research.

2.   Robust Political Economy: The Positive Framework

In the abstract, robustness designates a system's ability to perform well under

stress. In the context of political economy, robustness "examines deviations from ideal

conditions with respect to (but need not be limited to) actor motivation and information"

(Leeson and Subrick 2006: 108). Robust political economy focuses on the ability of the

political-economic system to achieve beneficial outcomes when actors are limited in

knowledge or information-processing ability or may engage in opportunistic behavior.

The question robust political economy tries to answer is, "Which institutions perform

best when people have limited knowledge *and* are prone to self-interested behavior"

(Pennington 2011: 3, emphasis in original)?

Robust political economy has its roots in two separate strands of analysis. This

interplay is summarized in Figure 1. The "epistemic" side (the columns of Figure 1)

focuses on what has come to be known as the knowledge problem. Relaxing the "strong"

informational assumptions of perfect information and perfect rationality requires us to

consider individuals who are boundedly rational at best and may be subject to sheer

ignorance—they may not know what they do not know (O'Driscoll and Rizzo 1985).

Robustness requires functioning well under the inevitable ignorance that results from

Figure 1: Incentive-Information Matrix

scarce information and limited ability to process new information (Hayek 1948). The informational process can either be facilitated or hampered by the underlying institutional framework (Hayek 1960, 1973). Complete and perfect information and perfect agent rationality, while useful assumptions in formal modeling, often poorly characterize actors in the real world (Leeson and Subrik 2006: 107), especially in non-market settings. The incentive side (the rows of Figure 1) distinguishes two archetypes of human behavior: Actors can be "angels," meaning their actions are harmonious with social welfare, or "knaves," meaning they may act opportunistically where their own payoff comes at the expense of their institution's interest or the public good. The potential for opportunism in non-market actors follows from the behavioral symmetry of individuals as self-interested agents in scenarios of private and public choice (Buchanan and Tullock 1962). Thus

concern for robustness requires that institutions "be judged on their capacity to channel potentially self-interested motivations in a way that generates beneficial outcomes at the societal level" (Pennington 2011: 3).[7]

As Boettke and Leeson (2004: 100) note, command-and-control solutions to political-economic problems can look more efficient than market solutions when we assume complete information and angelic behavior on the part of planners. When we relax these assumptions to consider possibilities of imperfect information and knavery among planners parallel to what we assume for market actors, we arrive at more balanced criteria for the analysis of real-world institutions. In a perfect world, social outcomes are invariant to the institutional framework. Either the institutions exist and are superfluous, or the problems that institutions are created to overcome never arise.

Robust Political Economy Applied to Monetary Institutions

Monetary institutions have been examined from the perspective of robust political economy by Boettke and Smith (2013a, 2013b, 2013c). Their arguments focus mostly on incentive frictions, although they are clearly aware of information frictions. Boettke and Smith argue that the Federal Reserve, though nominally independent, does not operate in a political vacuum, and thus political considerations ought to occupy a much more prominent place in our theories of how monetary policy operates. They note that F. A. Hayek, James Buchanan, and Milton Friedman all recognized the problem of misaligned

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[7] While the range of human behavior is perhaps better captured by a continuum rather than the discrete categories presented above, these categories highlight the essential feature of robust political economy: comparing best-case to worst-case scenarios. Robust political economy is fundamentally a search for those institutions that function well even in these worst-case scenarios. As Boettke and Leeson (2004: 100) recognize, "Many systems can stand up to the test of the easy case, but very few remain standing when confronted with the hard case."

central bank incentives and made efforts to solve it (Boettke and Smith 2013c; see also

Friedman 2007, Buchanan 2010, and Hayek 1978).

The above discussion suggests three dimensions along which to judge institutional

arrangements for the lender of last resort function:

   (1) Information: does the lender of last resort arrangement rest on reasonable

       assumptions about the information possessed and processed by the agents acting

       within the system?

   (2) Incentives: does the arrangement rest on reasonable assumptions about the

       incentives agents face when called upon to act as the doctrine requires?

   (3) Stability: given the answers to (1) and (2), can we expect the arrangement to

       persist in its proposed form in future stress situations?

A robust arrangement will receive affirmative answers to the above questions.

Assessment would be difficult were we looking for some cardinal measure of

performance. But our concern here is comparative institutional efficacy, which requires a

ranking of alternative versions of the lender of last resort.

It is important to emphasize that the following comparative evaluations are not

claims about superiority in every single circumstance. If one lender of last resort policy is

found to be more incentive- and information-compatible than another, this does not mean

it is impossible for the policy which is dominated to yield a desirable outcome. Rather, it

means that there is a strong *tendency* for the dominated policy to produce inferior

outcomes. Thus the statements that will be made concerning comparative efficacy are

pattern predictions rather than point predictions (Hayek 1967).

Having made explicit the criteria by which we will judge the four alternative conceptions of the lender of last resort, we now proceed to spell out those conceptions. It will be useful to begin with a brief summary of the conditions under which a lender of last resort is desirable.

3.　Versions of Lender of Last Resort Doctrine

Banking, Banking Panics, and the Lender of Last Resort

At its most general level, commercial banking consists of issuing small retail liabilities that are used to finance portfolios of loans and other assets. Commercial banks make profits to the extent they can exploit an interest rate spread between their liabilities, such as savings and demand deposits, and their assets, such as mortgages or commercial paper. Commonly their liabilities are shorter in duration than their assets. These banks, realizing that depositors are extraordinarily unlikely to present their claims for redemption *en masse*, are able to hold reserves that are only a fraction of their demandable deposits. The rest are used to finance their investment portfolio. The resulting arrangement is acceptable to both bank customers—even uninsured depositors—and the banks themselves: Bank customers can expect to earn interest on their savings deposits (and sometimes on their demand deposits as well) and to enjoy unpriced transaction services, which compensate them for the risk of the possibility that they will not be able to withdraw their funds in certain scenarios. The bank meanwhile enjoys higher profits.

Banks with different investment strategies are likely to keep different (fractional) reserve levels. Conservative banks will retain higher reserves and invest in lower-

yield/lower-risk assets. Banks with higher risk appetites will keep a lower reserve ratio and pursue higher-yield/higher-risk assets. Customers' compensation for this risk with their (uninsured) deposits will take the form of varying interest on deposits, as determined by market conditions and the terms of agreement between the individual banks and their customers. When the banking *system* is functioning well, customers are not concerned about the security of their deposits. The liabilities backing the banks' abilities to finance their portfolios—consumer deposits—are *information insensitive*. In other words, it is not profitable for private speculators to invest in acquiring private information about the soundness of these securities (Gorton 2010: 20). Unsound management by any one bank that leads to that bank's ability to redeem claims becoming suspect will undoubtedly harm the bank in question. Such behavior may lead depositors to transfer their funds to another bank in a "flight to quality" that disciplines the risk-taking propensities of each individual bank (Kaufman 1988). But these events do not constitute a reason to question the integrity of the banking system as a whole (Bordo 1990: 19).

However, the situation is very different when events call into question the soundness of the entire system. Examples include the inability of the banking system to supply a currency sufficiently elastic to suit the needs of trade, as in the Panic of 1907 (Smith 1990) and the bursting of the bubble in collateralized mortgage debt leading to widespread uncertainty in the "shadow" banking system (Gorton 2010). In situations such as these, bank liabilities become *information sensitive*—there is a payoff from acquiring private information concerning the soundness of the banks' securities. When bank

depositors become aware that there is a possible solvency problem, because this information is costly to acquire and is asymmetrically distributed, all depositors have an incentive to withdraw their funds as quickly as possible (Gorton 1988). This desire is rational since bank deposits are convertible on demand (Bordo 1990: 19). When depositors do try to redeem their claims *en masse*, the result constitutes a bank run. Bank runs spell doom for insolvent banks (banks whose total liabilities exceed their total assets), but because the flight to liquidity forces asset sales at fire sale prices, which necessitates depressed asset prices for *all* banks, the run can turn solvent banks into insolvent banks.

The lender of last resort is supposed to prevent the spread of financial contagion by meeting the public's demand for liquidity. The job of the lender of last resort is to stop the panic by intervening at the point when the liquidity of solvent but illiquid banks is threatened (Bordo 1990). This impels the question of what particular form the lender of last resort ought to take to best ensure that it plays its desired role. By analyzing from the perspective of robust political economy the theory and history of the systems of private clearinghouses, public Bagehotian authorities, and the interpretations of the Richmond Federal Reserve and New York Federal Reserve, we can hopefully shed light on this important question.

The Baseline Scenario: Free Banking[8]

Free banking systems, such as the one that developed in Scotland (White 1995), predate the formal development of lender of last resort doctrine by Thornton and

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[8] The following is a condensed summary of the process described by White (1999: ch. 1), to which I refer the reader interested in a more in-depth discussion.

Bagehot. As such, there is no formal (i.e. public) authority providing last-resort lending services. Nevertheless, banks in these systems developed, in the course of conducting ordinary business, practices that (unintentionally) lessened the chance that a panic would cripple the system. The practices to be discussed reduced the chance that bank runs evolved into systemic panics. This obviated the need for a concerted lender of last resort policy.

An example—perhaps the most important example—is the interbank clearinghouse. Many clearinghouses existed for decades more up until their functions were absorbed by developing central banks in the early twentieth century. The development of private clearinghouses is an evolutionary story that ties in to explanations of how monetary systems, including banking, develop as a result of decentralized market forces (Fink 2011; Selgin 1988; Selgin and White 1994a; White 1995). Following the evolution of a monetary system from barter (e.g. Menger 1892, Kiyotaki and Wright 1993), some standardized commodity money is established prior to a banking system. Traders, seeking to avoid the high transactions costs of coin and bullion, especially in large-value and long-distance trade, began to trade claims to outside money drawn on financial institutions where the traders stored their coins.[9] These claims were transferable deposits and later on paper banknotes, issued by goldsmiths and money changers that evolved all the essential features of modern banking.

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[9] These institutions, such as money changers and warehousers in thirteenth-century Italian city-states, can be thought of as proto-banks. Commercial banking as we know it developed contemporaneously with these economizing arrangements as the needs of trade necessitated (White 1999: 12).

Because a bank would profit from maintaining high note circulation (the greater the public's holding of its notes, the greater a bank's float), banks had an incentive to make mutual agreements to accept each other's notes. The accumulation of each other's notes led in turn to the need for an efficient interbank clearing process. The clearing and settlement process evolved from bilateral into multilateral to economize on transaction and reserve-holding costs: "Eventually all the banks within an economy will be connected through one or a small number of clearinghouses … [t]he histories of the best-known early clearinghouses, in London, Edinburgh, and New York, all conform to this general pattern" (White 1989: 231). In some cases the clearinghouse would become a "banks' bank," with each bank keeping deposits at the clearinghouse for the purpose of settling balances.

Clearinghouses, once formed, performed several economically useful functions. The clearinghouses shared information among member banks on scams and forgeries. It also served as an enforcer of sound policies amongst member banks. The clearinghouses—through the voluntary agreement of their members—established capital requirements and bank examinations as a way of disciplining member banks (Gorton 1987: 457). Lastly, they provided a source of liquidity sharing and even liquidity creation during times of crisis. When bank runs broke out, clearinghouses facilitated liquidity transfers between member banks, creating a short-term credit market analogous to the federal funds market in which banks in the U.S. participate today (White 1989: 233).[10]

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[10] Clearinghouses in the U.S. during the National Banking Era provided a unique way to ameliorate a crisis. Member banks of a single clearinghouse would suspend operation, suppress information concerning the solvency of other banks, and issue certificates redeemable by the clearinghouse as a whole. This was an important source of emergency liquidity in a system constrained by regulations that prohibited branch

The interbank coordination achieved through the private clearinghouses helps to prevent individual bank failures from evolving into a system-wide crisis in the first place. A good example is how the Scottish free banking system coped with the failure of the Ayr Bank. The Scottish free banking system and accompanying interbank clearinghouses were well developed by 1769, when the Ayr Bank opened its doors. Within three years of operation it was obvious the Ayr Bank had overissued its notes, had made too many bad loans, and had become insolvent. The effectiveness of the interbank clearing mechanism quickly saw the return of the Ayr Bank's liabilities, which it was unable to redeem. The bank was forced to close its doors, and the spillover effects were large enough to bring down 13 more small private bankers in Edinburgh and one small provincial bank near Perth. For comparison, there were 32 total banks in Scotland just before the Ayr failure (White 1995: 27). Notably, despite the size of the Ayr Bank, the failure of the Ayr Bank did not cause a systemic event. The clearinghouse mechanism allowed the other largest Scottish banks to divest themselves of the Ayr Bank's liabilities before the crash, preventing the Ayr failure from threatening the integrity of the system. The largest note-issuing institutions were able to continue business, with the spike in public demand for liquidity lasting merely one business day (White 1995: 29).

In addition to the clearinghouses, free banking systems had other features and practices that promoted stability. The most basic of these is due to the distinction between inside and outside money that prevailed during the historical periods when free banking

banking and, due to collateral requirements, rendered the conversion of currency to deposits artificially inelastic (Smith 1990). This had the benefit of substituting the solvency of the system as a whole for the solvency of individual member banks during a panic. However, the uniqueness of the U.S. case makes it inappropriate for drawing general inferences, so it will not be treated in detail here. Interested readers should consult Gorton (1985, 2010), Gorton and Mullineaux (1987), and Timberlake (1984).

systems flourished. It is especially important that banks issued their own liabilities,

namely notes and deposits. These liabilities served as the day-to-day medium of

exchange and were redeemable in the underlying money commodity. This allowed banks

to cope with changes in the public's money demand, as well as changes in the public's

compositional preference for notes vs. deposits (Selgin 1988; Selgin and White 1994).[11]

A currency stock elastic to the requirements of trade is important in preventing the

collapse in liquidity that Friedman and Schwartz (1963) showed is very dangerous for

system-wide stability.

Another stability-enhancing feature of free banking was the temporary suspension

by banks of deposit redemption during times of turbulence. Often banks included clauses

in deposit contracts giving banks the option of temporarily not honoring the public's

demand for redemption if such demands might result in liquidity problems for the bank.

Banks could invoke this clause for a pre-defined period, and in return the public was

granted a special interest payment on their held liabilities for the duration of the

suspension (Selgin 1993; Selgin and White 1994: 1729). While governments have not

always been favorable to the inclusion of such provisions in deposit contracts, they were

permitted in Scotland from 1730 to 1765, Sweden from 1864 to 1903, and Canada during

the majority of the nineteenth century (Selgin 1993: 356; Dowd 1989: 12-14). Diamond

and Dybvig (1983) rightly note that suspension can burden consumers with welfare costs

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[11] Evidence of this stability can be seen by comparing Canada's laissez-faire approach with that of the U.S. during the National Banking Era. While in the U.S. there were small seasonal variations in note circulation and large fluctuations in interest rates come the harvest season, in Canada note circulation was around 20 percent higher in the autumn relative to its own mid-winter seasonal lows and there were no noticeable seasonal interest rate fluctuations (Schuler 1992: 88; Selgin and White 1994b).

by obstructing consumers' ability to engage in planned consumption. However, this must be balanced against the potential welfare gains achieved by the prevention of bank runs afforded by suspension. In addition, suspension clauses serve as an alternative to deposit insurance as a means of countering runs. Importantly, "[b]ecause suspension contracts are incentive compatible, they can avoid the moral hazard problem associated with insurance" (Selgin 1993: 360).

The Canadian banking system in the first half of the nineteenth century shows the effectiveness of redemption suspension in preventing bank runs from growing into banking panics. In 1837, a financial panic that began in Britain began to affect the Canadian banking system. In response, banks suspended payments to note holders and depositors. While technically illegal, it was tolerated by government officials on the assumption that forcing payments would lead to a system-wide collapse.[12] The suspension of payment allowed the banks time to liquidate their assets without having to resort to fire sales (Schuler 1992: 83).[13] Temporary suspension of redemption thus blunted the impact of financial contagion that began overseas.

We can now consider the questions concerning information, incentive, and stability. Free banking systems were equipped with an effective mechanism, namely the clearinghouse, for coping with the informational asymmetries inherent in banking. In non-crisis times, the clearinghouse served an informational role by facilitating

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[12] In Upper Canada, the governor threatened to shut down banks that suspended payments. As a result, banks suffered reserve drains and were forced to contract their loans more than banks in other provinces. The crisis in Upper Canada was said to be worse "than anywhere else in North America" (Schuler 1992: 83).
[13] This historical example suggests clearinghouses also had a way of dealing with the problem posed by Diamond and Dybvig (1983). This suggests that under panic condition the suspension of payments, contrary to Diamond and Dybvig, was welfare-enhancing (Selgin 1993).

cooperation among member banks. In times of crisis, when bank liabilities have become information-sensitive, the clearinghouse provided a node of coordination for the system as a whole. In lowering the transaction costs for interbank cooperation, they also lowered the transaction costs (especially collateral evaluation costs) of a potentially troubled bank securing emergency liquidity from one whose financial position was sounder. The private clearinghouse system did not require any heroic assumptions about the agents operating within its framework.

The incentive issue also appears favorable. Bank customers, both depositors and borrowers, were disciplined by normal market forces. Importantly, the separation between inside money and outside money, which allowed banks to adjust the money supply and its composition (notes or deposits) to the needs of trade, did not also afford banks an incentive to over-issue liabilities. Any bank that printed up more notes than the public was willing to hold would find those notes presented back to it for redemption (Selgin 1988: ch. 3). In addition, suspension of redemption, when not forbidden by law (and, as the Canada example shows, even sometimes when it was), provided a way to stem a potential bank panic. The use of these clauses as an incentive-compatible alternative to modern-day deposit insurance further strengthens the case that free banking systems, as a matter of day-to-day business, took steps to prevent bank runs before they occurred. Finally, due to the presence of a hard budget constraint among banks, the potential for moral hazard problems seems low under free banking.

Stability seems still more difficult to assess. On the one hand, free banking persisted in Canada and Scotland for over a century in each case. Sweden had a similarly

long-lived experience with free banking. The persistence in substantively unchanged form of free banking during these periods suggests they were stable arrangements. On the other hand, today these systems have almost completely been replaced by central banks as the lender of last resort. Historical and theoretical analysis suggests that free banking systems were replaced not as the result of market forces but political forces (Smith 1990). If the possibility of political influence from outside the system is sufficient to render a system unstable, it is not clear how any system could ever be judged stable. It makes more sense to consider a system as stable if that system does not itself generate the behaviors that lead to its unraveling. In other words, *given current monetary institutions*, do we expect the current lender of last resort mechanism to persist? In this sense we may say that free banking is stable.

In summary, mechanisms that prevent the problem that last-resort lending policies are intended to solve arise endogenously in free banking systems. These mechanisms make it less likely that a run will evolve into a panic, with the accompanying threat to solvent but illiquid banks, which is the source of the desirability of a lender of last resort. The operation of these mechanisms rests on reasonable assumptions about the information and incentives of real-world agents. Lastly, the system appears internally stable over time. This result is not definitive, however. We need to compare the robustness of free banking mechanisms to those of the other versions before we can make any statements of comparative efficacy.

The Classical System: Central Bank Lending on Good Collateral

The legacy of Bagehot's *Lombard Street* is its blueprint for stopping bank panics. The book was motivated by the series of panics in England from 1847 to 1866. The Bank of England at this time responded to troubles by "curtailing credit to conserve the Bank's own liquidity" in the face of an internal drain of specie reserves (Selgin 2012: 303), thereby exacerbating the crises and contributing to their evolution into full-scale panics. Bagehot's message caught on, and the Bank of England assumed the responsibility, accompanying its monopoly issue of legal tender banknotes, of acting as the lender of last resort to the English financial system.[14] According to Meltzer (2003: 52), the bank's assumption of this role was instrumental to the prevention of future crises escalating into panics, including the infamous 1890 Baring crisis.

Bagehot (1896: 58–59) succinctly summarized his policy prescription for the lender of last resort: "[V]ery large loans at very high rates are the best remedy for the worst malady of the Money Market." Meltzer (1986: 83) elaborates on this criterion:

- "To prevent illiquid banks from closing, the central bank should lend on any collateral that is marketable in the ordinary course of business when there is a panic."

- "Central bank loans, or advances, should be made in large amounts, on demand, at a rate of interest above the market rate."

- "The above … principles of central bank behavior should be stated in advance and followed in a crisis."

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[14] Interestingly, Bagehot himself preferred free banking, or what he called "the natural system—that which would have sprung up if Government had let banking alone" (Bagehot 1893: 69), to central banking. He advocated his now-orthodox rules for last-resort lending because he believed the *political* constraints prevented a transition to the kind of banking system that existed in Scotland.

The first principle, lending abundantly on good collateral, is derived from the nature of a banking panic. Liquidity should be provided abundantly by the monetary authority because it is in the unique position to prevent *en masse* redemption sparked by the transition to information sensitivity of bank debt. Banks with good collateral to offer would be able to pay back once normal times return. Bagehot needed to persuade the privately held Bank of England that following his recommendations would not reduce the bank's profits.

The second principle, lending at a penalty rate, addresses the possibility of moral hazard. Bank of England officials had objected to lending reserves to banks with liquidity problems on the grounds that easy liquidity in times of turbulence would, at the margin, induce agents in the financial sector to make riskier investments in times of tranquility. Banks able to count on liquidity rescue would hold smaller reserves of their own and become dependent on the Bank of England's reserve. The provision of emergency liquidity at penalty (higher than market) rates is an active attempt to check this sort of behavior by making banks regret being in need of a last-resort loan.

The third principle, announcing the policy in advance, is a mechanism for anchoring market expectations. By announcing its commitment to stemming banking panics, the central bank can preemptively reassure the public that the crucial threshold from crisis to panic will not be crossed, which should stop the public from running on the banks in the first place. It also serves as a warning to those in the banking sector: In times of turbulence, if you are solvent but illiquid, you will pay a penalty. If you are insolvent, you will fail. Construct your portfolio accordingly.

At first glance, the Bagehotian system seems like a simple and effective mechanism for preventing the evolution of crises into panics, which explains its enduring presence in explaining modern central bank practice (e.g. Mehrling 2010) and in prescribing institutional improvements (e.g. Selgin 2012). In order to verify its effectiveness, we must now consider its robustness. Of special importance will be examining whether the central banks' pledge to restrict lending to banks whose position is fundamentally sound is credible.

Central banks from 1870 to 1970 seem to have taken Bagehot's prescriptions seriously (with the exception of the United States, which will be discussed below). As mentioned above, the Bank of England acted as a lender of last resort to prevent the Baring Crisis of 1890 from evolving into a panic. It accomplished this by working jointly with the Bank of France and prominent clearinghouse institutions. The cooperation of these organizations, which agreed to cover the Bank of England's losses in its attempt to meet the public demand for liquidity, formed a kind of joint lender of last resort (Schwartz 1986: 19). In 1901, the German Reichsbank stemmed a panic by purchasing prime bills on the open market and expanding its note issue, but in accordance with Bagehotian doctrine did not stop the failure of the Leipziger and other insolvent banks (Goodhart 1985: 96). The Bank of France followed a similar course in the crises of 1881 and 1889.

However, the experience post-1970 has been a different story. For example, the Bank of England rescued banks of questionable solvency in 1974 and 1982. In 1985 the Bank of Canada "arranged for the major chartered banks to purchase the assets of two

small insolvent Alberta banks and fully compensate all depositors" (Bordo 1990: 26).

The actions of the U.S. Federal Reserve in the most recent financial crisis, starting with

the $29 billion bailout of Bear Stearns creditors in March 2008, are an even more salient

case.[15] Interventions such as these suggest the impact of Bagehot's message, while still

receiving academic attention, have fallen out of favor with policy makers and

bureaucrats.

Unlike its European counterparts, the U.S. Federal Reserve (assisted by

Congressionally created regulatory organizations) has never taken Bagehot's advice. The

banking acts of 1933 and 1935 created the institution of deposit insurance. At the time,

the creation of deposit insurance was opposed by a number of bank presidents and

congressmen, as well as President Roosevelt, due to concerns over moral hazard (Hetzel

2012: 151). Moral hazard had been implicated in the failure of many state governments'

deposit insurance schemes in the nineteenth and early twentieth centuries. Numerous

provisions in the banking acts were explicitly constructed to curb the perceived moral

hazard problems. In addition, further elaboration on the rules of deposit insurance in the

1950s attempted to signal credibly that FDIC would only bail out insured depositors, with

no intention to extend these benefits to uninsured depositors or other debt holders. By

restricting entry into banking, and placing ceilings on interest rates payable on savings

accounts, the regulations simultaneously assured high net worth to banks. These rents

thereby made a bank charter a valuable asset; the desire to protect franchise value was

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[15] The response of the Federal Reserve to the recent crisis will be explored more fully in the section covering the development of the New York Fed doctrine.

supposed to be the force counteracting moral hazard, a kind of efficiency-wage model for banks (Hetzel 2012: 152–153; Gorton 2010).

However, the above only works if those in the banking sector perceive a limited response as credible. If banks expect to be bailed out, the benefit from treating a bank charter as a valuable capital asset is severely curtailed. The Fed's (along with the FDIC) bailing out of the Franklin National Bank in October 1974 was the first of several incidents suggesting regulators and central bank authorities would be unwilling to tolerate losses by uninsured depositors even at moderately sized banks. Fed officials allowed Franklin National, once the nation's 20th largest bank with total deposits of $1.45 billion (Sinkey 1977: 780), access to the discount window, but did not charge a penalty rate (Bordo 1990: 26), despite the fact that Federal Reserve System officials concluded in June of the same year that the bank would fail anyway. It was this bailout that "set the standard for TBTF [Too Big to Fail]" (Hetzel 2012: 154). This process was largely repeated with the 1980 bailout of First Pennsylvania Bank. The implicit policy of TBTF continued with the debt crises in Argentina, Mexico, and Chile in the early 1980s. These countries' defaulting on their debts led to a significant number of large U.S. banks becoming insolvent (Hetzel 2008: ch. 14): "Regulator unwillingness to close large, insolvent banks became publicly apparent in 1984 with the bailout of the debt holders and uninsured depositors of Continental Illinois and of its bank holding company" (Hetzel 2012: 156). In each of these cases banks had used uninsured short-term funding to create portfolios of risky long-term assets; the response of regulators and the Federal Reserve

strongly suggested that the commitment made during the period from the 1930s to the 1950s to refrain from rescuing uninsured depositors was not, in fact, credible.

TBTF policies were also extended to nonbank financial institutions: "The Fed's intervention in May 1982 into the bankruptcy of Drysdale Securities, a small dealer in government securities, is significant in that it established the precedent of not allowing creditors of nonbank financial institutions to incur losses" (Hetzel 2012: 158). The Fed's later involvement in Long-Term Capital Management further suggests the public-sector financial safety net, though not officially stated, is the rule rather than the norm (Hetzel 2008: ch. 17). In testifying before Congress, Federal Reserve Chairman Alan Greenspan claimed the Long-Term Capital Management intervention was necessary due to the heightened fragility of financial markets, which itself was a function of previous extensions of the unofficial safety net's severe curtailing of market discipline (Hetzel 2012: 159). A policy of seeking financial stability through bailouts undermines itself by fostering moral hazard (Goodfriend and Lacker 1999).

This brief overview calls into question the robustness of Classical doctrine on the incentive side. Bagehot's rules crucially depend on the lender of last resort restraining its activities to assist only those banks that are illiquid but not insolvent. But when faced with the failure of a bank that could possibly trigger a systemic event, the agents charged with carrying out Bagehot's recommendations have an incentive to go beyond those recommendations and bail out the bank. No central banker wants to be remembered as having allowed a financial crisis due to insufficient action. The historical record shows that lender of last resort policy was mixed at best with respect to Bagehot's rules, and the

successful instances occurred mostly in the latter part of the nineteenth century. In more

recent times, bailouts seem to be the norm, rather than the exception.[16]

The case of the U.S. Federal Reserve deserves special attention due to its role in

anchoring expectations in world financial markets and its status as unofficial manager of

the world's reserve currency. It is the biggest of the "big player" extramarket

organizations (Koppl 2002). Whether due to standard public choice explanations or more

altruistic motives that place the Fed in "Samaritan's Dilemma" (Buchanan 1975)

situations,"[t]he Fed, for its part, appears unable to resist lending to insolvent banks"

(Selgin 2012: 6). Even more so than other extramarket organizations such as the

European Central Bank or Bank of England, the Fed can be charged with sowing the

seeds of future crises by eliminating losses even to uninsured depositors in medium-sized

and larger banks, actions that generate moral hazard (Buiter 2008). At the margin, market

agents respond precisely as expected when offered a gamble yielding significant profits if

things go well, and other agents' money to cover their losses if things go poorly.

Ultimately we must seriously question the incentive compatibility of Classical doctrine.

Robustness with respect to the information side is a bit more complicated. First,

there is the issue of deciding upon an acceptable penalty rate for discount-window

lending. It is important that the penalty rate is above the rate that banks would charge

each other on similar loans during times of tranquility.[17] The monetary authority has little

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[16] It is also important to note that Bagehot's recommendations do not specify any punishment mechanism for central bankers who overstep their bounds, and none of the historical cases where Bagehot's rules were expected to be followed exhibited institutional fixes to rectify this oversight.
[17] Obviously, the penalty rate also must be below whatever rate prevails on the market during times of trouble, or else nobody would borrow using the discount window. This has not been a concern historically since during panics liquidity dries up, and banks can hardly afford to be making loans when they need

choice but to use historical data as a proxy. Another issue is whether market agents and

agents performing the lender-of-last-resort function can distinguish clearly between

sound and unsound collateral or have some other reliable indicator of the solvency of the

borrowing bank.

Goodhart (1985, 1987) argues that the informational burden associated with

collateral evaluation is significant. Because there is no clear line between sound and

unsound collateral, the line between illiquid and insolvent is blurry, if not entirely

unperceivable.[18] While not trivial, Goodhart's concerns are relevant only at the margin.

Agents may be unable to define precisely the line between sound and unsound collateral,

but this does not imply that this uncertainty applies to all collateral. In addition, since

market agents are aware that the lender of last resort will only lend on good and familiar

collateral, they presumably internalize the risk of taking on exotic assets to their balance

sheets.[19] Note that free banking systems were able to maintain industry-wide capital

requirements and other safety standards through the clearinghouse. This was possible due

to the clearinghouse's lowering of monitoring costs, as mentioned above. Collateral

evaluation under free banking requires that the agents operating within that system had

some reliable way, based on the accounting standards of the day, of assessing collateral

quality. In addition, we can be confident that public authorities could surmount the

difficulties of collateral assessment, since several European central banks (and the Bank

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liquidity to solidify their own short-term position. This makes loans between banks an exceedingly risky proposition even at high interest rates.

[18] Congdon (2009), along these lines, argues the Bank of England should be privatized so that it will lend *more* freely during times of turbulence.

[19] This is, of course, conditional upon market agents perceiving the limited response as credible, which we have seen is not the case. Nevertheless, exploring the information issues is important for the purposes of theoretical exposition.

of England especially) were successful in implementing Bagehotian solutions in the latter part of the nineteenth century. The main weakness of Classical doctrine is on the incentive side, not the information side.[20]

Our assessment of the stability criterion must take into account two divergent observations: Bagehotian responses characterized European lender-of-last-resort responses from (roughly) 1870 to 1970, but the Fed has never put Bagehotian remedies into practice.[21] The effectiveness of Bagehotian doctrine in Europe during the time period in question may explain its relative longevity, although as Bordo (1990: 24-25) explains, some of the blame must rest with the U.S.'s weaker banking system, which resulted from branching restrictions. However, the observation of numerous instances of deviations from Bagehot's rules in modern times prevents us from classifying the Bagehotian interpretation as truly stable.

In summary, the Classical system, while appearing sensible at first, is not without its difficulties. Using the case of free banking as a baseline with which we can determine comparative institutional efficacy, we can say the informational difficulties of Bagehotian doctrine are comparable. Agents in free banking systems had to evaluate collateral as a matter of daily business; agents following Bagehot's rules had to evaluate collateral during times of crisis, with the explicit end of deciding whether the collateral would be an

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[20] The interaction between incentive and information effects yields insight as to why banks load up on exotic high-risk, high-return assets: The informational point is moot, since the lender of last resort will likely bail them out in the event of trouble anyway.

[21] Bordo (1986, 1990) provides evidence, in the form of the number of panics, that European central banks acting as Bagehotian lender of last resorts outperformed the contemporaneous U.S. system. Also, Bordo (1990: 24) compares further the unique U.S. system to the Bank of England. In each of the crisis years common to both countries, the negative deviation from trend real output was greater in the U.S. than in Britain, and in three out of six cases from 1873 to 1932 the crisis evolved into a full panic in the U.S., whereas none of the crises evolved into panics in Britain.

acceptable base for the extension of emergency liquidity. Despite this, it seems appropriate to take a conservative position on the question of whether private or public agents are the low-cost evaluators of collateral. We (tentatively) conclude that on the information margin, free banking and the Classical doctrine are evenly matched.

However, we need to consider the Achilles' heel of Classical doctrine, which lies on the incentive side. Central bank behavior, and the Fed's behavior especially, post-1970 suggests the limited and targeted response necessitated by Bagehot's rules is not incentive compatible. Instead, we observe discretionary bailouts that result in moral hazard. Based on the criteria that determine robustness, free banking "weakly dominates" Bagehot's rules. Thus Classical doctrine is less robust than free banking as a foundation for the prevention of financial panic. The benefits of a formal lender of last resort, relative to free banking, are uncertain; the costs are all too apparent.

The Richmond Federal Reserve System: Open Market Operations Only

The Richmond Fed system, also called the Goodfriend-King view due to those authors' endorsement of the policy in an influential paper (Goodfriend and King 1988), offers a different interpretation of how liquidity should be allocated among individual firms in the event of a panic. It says that the monetary authority—here understood to be a central bank—ought never lend to individual banks.[22] Instead the monetary authority should rely on providing high-powered money to the financial system, as in the course of ordinary monetary policy. Sterilized discount window lending, which Bordo (1990: 21) calls banking policy, is unnecessary since this lending can be handled by private suppliers

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[22] This view is endorsed also by Friedman (1960), Kaufman (1991), and Schwartz (1992).

of credit: Both bank lending and private line-of-credit services require monitoring, but it is unclear that a central bank can provide these services at a lower cost than private organizations. Lending to the market allows individual intermediary firms to handle the insolvent-illiquid issue, as long as a sufficient quantity of high-powered money is provided to prevent a collapse of the money supply. In addition, as Flannery (1996: 805) notes, refraining from lending to individual banks prevents the monetary authority from giving in to the temptation of lending to insolvent banks and undermining market discipline.

The main difficulty in assessing the robustness of the Richmond Fed view is that no monetary authority during a panic has restricted itself to preventing a collapse in the money supply by providing high-powered money to the market. Unlike free banking, which performed well in Scotland, Canada, and Sweden, and Bagehot's rules, which were used successfully for a period of time in Europe, there is no historical experience that can be used to shed light on robustness criteria. In particular, it is not obvious that preventing a collapse in the money supply, which is a demand-stabilization policy, is sufficient to prevent a panic. If supply-side factors, such as "capital" built up in the relationship between banker and borrower (Goodhart 1985, 1987) or intermediation services (Bernanke 1981, 1983), are also significant, the effects of the panic may be only partially stemmed.[23, 24]

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[23] Supply-side factors will be an important part of the New York Fed doctrine, which will be explored in the next subsection. Remember also the private clearinghouse response in the U.S. avoided potential supply-side problems by grouping under a single organization for the duration of the crisis; Bagehot's rules avoided them by committing to intervene on a bank-by-bank basis.

[24] Why wouldn't these supply-side factors also be a problem for adherents to Bagehot's rules? After all, the end result—illiquid banks stay open at a cost, insolvent banks close—is the same. The answer lies in the

Our robustness analysis is necessarily more speculative than that of the other cases. We begin with the information side. The guarantee of the monetary authority to limit its actions to providing however much high-powered money the market demands places the burden for evaluating the liquidity of bank assets, and thus the line between illiquidity and insolvency, on private actors. This includes relegating the pricing of emergency loans to market forces, freeing the monetary authority from concerns over what rate of interest is an appropriate penalty rate. Because the monetary authority is only called upon to conduct ordinary open market operations and leaves the emergency pricing of liquidity to private actors, the Richmond Fed doctrine ranks ahead of Bagehot's rules and the private clearinghouses on the information margin.

The incentive side is more interesting. In theory, the monetary authority's limited response suggests that illiquid banks will be able to secure emergency funds, but insolvent banks will be forced to close. The difference from the Classical case is that the sorting process has become decentralized. This means that individual banks should not expect to be bailed out in the event that their excessively risky portfolio strategy comes back to plague them, and cannot appeal to the central bank to rescue them. But is a limited central bank response credible? The lack of historical evidence means we may only answer this question imperfectly, but the experience of monetary authorities with Bagehot's rules does shed some light on the issue.

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monetary authority's lack of a hard budget constraint. This frees the monetary authority from the worries that private agents must confront in times of trouble, such as evaluating the soundness of other agents' underwriting standards (Flannery 1996).

The Richmond Fed doctrine, from the perspective of the monetary authority, limits its response even more than Bagehot's rules do. We have seen that there are serious incentive-compatibility issues with Bagehot's rules. The incentive problems with Bagehot's rules strongly suggest similar problems for the Richmond Fed doctrine. The familiar moral hazard problems are the result.

The above casts serious doubts as to whether the Richmond Fed doctrine, if it were ever officially adopted, would be stable. Our analysis suggests, relative to Classical doctrine and free banking, a somewhat more favorable informational environment, but no accompanying improvement of an already incentive-incompatible position. The lack of evidence does render these claims speculative, but our reasons for these suspicions are not unfounded. Perhaps, in this case, absence of evidence is evidence of absence: that which is unlikely to exist is unlikely to be stable. Incentive concerns over the action of the monetary authority especially suggest the Richmond Fed doctrine, if it were ever adopted, is not a stable equilibrium.

All things considered, we have strong reason to suspect the Richmond Fed doctrine is less robust than free banking on the incentive margin, but is more robust on the informational margin due to its eschewing of concerns related to the soundness of collateral. Since the Richmond Fed doctrine is in a more secure position than Bagehot's rules on the information margin, in theory it is more robust. But without historical examples comparable to the private clearinghouses' response and central banks' experiences with Bagehot's rules, we cannot (1) be sure that the Richmond Fed doctrine

is sufficient to contain panics[25] or (2) make robustness claims as strong as that of

Bagehot's rules *vis-à-vis* free banking.

The New York Federal Reserve System: Prevent the Spread of Contagion

The final interpretation under consideration is that of the New York Federal

Reserve, which holds that the proper function of the lender of last resort is a commitment

to preventing the spread of financial contagion. The landmark work supporting this view

is Bernanke (1983). Attempting to explain the severity of the Great Depression,

Bernanke's credit channel hypothesis offers an explanation of nonmonetary shocks to

aggregate demand rooted in banks' provision of intermediation services: "The basic

premise is that … [t]he disruptions of 1930–33 reduced the effectiveness of the financial

sector as a whole" (Bernanke 1983: 257). This thesis is actually an interesting mix of

demand- and supply-side factors suggesting that attempts to stem a panic by supplying

high-powered money to the market will be insufficient. Further scholarly support for this

view includes Goodhart (1985, 1987), who affirms the importance of relationships

between lenders and borrowers, and Solow (1982), who believes the Fed is responsible

for maintaining the integrity of the financial system. The associated policy implication is

that interventions on an individual-bank basis are not only justified, but necessary.

The New York Fed doctrine explains the Fed's response to the most recent

financial crisis.[26] In conducting monetary policy via open-market operations, the Fed

relies on a group of private organizations to serve as intermediaries through which the

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[25] Remember Bernanke's (1983) theoretical explanation for why a banking panic may occur even without a collapse in the monetary aggregates, although we have yet to observe such an event.
[26] Though rarely discussed, the legality of these actions is somewhat ambiguous. See Todd (2002) for a lawyer's perspective on the legality of lender of last resort activities.

Fed supplies reserves to the banking system and thereby to the market. These intermediaries are known as the "primary dealers."[27] In conducting expansionary open market operations, the Fed buys Treasuries from the primary dealers, who deposit the proceeds, expanding aggregate bank reserves. In addition, the Fed relies on private organizations known as the "clearing banks"—currently J. P. Morgan Chase and the Bank of New York Mellon—to buy and sell repo contracts (Selgin 2012: 306).[28] Normally, this system allows the Fed to implement its policies without interfering very much at all in credit markets, and "[b]ecause it relies on the private market to price and direct funds, the system avoids any risk of credit being provided at subsidized rates, and so heeds Bagehot's classical prescription" (Selgin 2012: 308).

However, this operating method is problematic in times of turbulence. If the private organizations with which the Fed deals become illiquid or insolvent, their effectiveness as monetary policy channels is thrown into doubt. The role of expectations complicates things further: worries about the financial health of the primary dealers makes other private organizations reluctant to transact with them, throwing a wrench in the policy-transmission mechanism. This results in a situation where illiquid but solvent firms cannot acquire short-term liquidity. The market "freezes up." This transmission mechanism collapse is a kind of nonmonetary concern described by Bernanke (1983). Thus the Fed may "be compelled to bail out a monetary policy agent" (Selgin 2012: 304) in order to preserve the integrity of the primary dealers and clearing banks out of fear that

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[27] The list of current primary dealers can be found at
http://www.newyorkfed.org/markets/prildealers_current.html.
[28] The Fed relies on repo contracts mainly as a way to conduct temporary monetary policy, e.g. meeting seasonal demands for currency during the holidays. See Selgin (2012: 303–8) for an overview and Tuckman (2010) for a detailed explanation in the context of the financial crisis.

their failure could lead to a cascading collapse of the financial system as a whole. In other words, following Goodhart (1985, 1987), the New York Fed doctrine implicitly affirms that the lender of last resort is responsible for bailing out systemically important institutions.

As Gorton (2010) has shown, the recent financial crisis was essentially a banking panic, albeit an unconventional one, centered as it was around non-commercial-bank intermediaries or "shadow banks." The Federal Reserve's response can be viewed as a lender-of-last-resort effort to minimize the nonmonetary transmission mechanisms of the crisis. On the eve of the financial crisis, it was discovered that many of the primary dealers had portfolios characterized by a prevalence of toxic assets. In addition to making other agents hesitant to continue transacting with the primary dealers,[29] the primary dealers, facing falling asset values, attempted to rebuild liquidity by refraining from lending. The primary-dealer system thus resulted in a systemic drying up of liquidity, the exact opposite of its intended purpose. The Fed "felt obliged to rescue several primary dealers, and to do so at the expense of solvent banks" (Selgin 2012: 310). The rescue was achieved through the creation of "special facilities to provide loans of cash and Treasury securities to primary dealers, the securities broker-dealers that have a trading relationship with the Federal Reserve Bank of New York" (Federal Reserve 2010a). These included the Primary Dealer Credit Facility (PDCF), which provided overnight loans, and the Term Securities Lending Facility (TSLF), which loaned Treasuries to primary dealers for one month against appropriate collateral, both begun in March 2008 following the failure

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[29] For example, JPMorgan Chase refused to process Lehman's payments, freezing $17 billion of its assets on the eve of its collapse (Duffie 2009: 39).

of Bear Stearns.[30] In addition, as part of the first round of its "quantitative easing" program, the Fed purchased $400 million of mortgage-backed securities and $250 billion of commercial paper and toxic assets from Bear Stearns and AIG (Selgin 2012: 311).

It is important to note that these interventions did not aim to prevent a collapse in monetary velocity. The Fed's response did not take the form of liquidity injections to the market. Instead, these were largely "sterilized" policies—asset swaps, rather than the expansion of high-powered money—of the kind discouraged by adherents of the Richmond Fed doctrine. These policies were intended to allow the primary dealers to replace risky assets temporarily with Treasuries. Sterilized lending expanded when the Fed gained the power to pay interest on reserves in May 2008. This policy did result in an unprecedented increase in the monetary base—from $850 billion to $1.7 trillion in a span of four months—but was not a traditional liquidity injection because the Fed used interest on reserves to sterilize the effect on M1 and M2. In Hummel's words, the Fed "made itself the preferred destination for a lot of bank lending.… [The Fed] in effect created money and then borrowed it back from the banks by paying them interest" (Hummel 2012: 193, 195).[31] This fits the view of the Fed emphasizing decisive action in nonmonetary channels as essential for combating contagion.

We now proceed with robustness analysis of the New York Fed doctrine, beginning with the information margin. As before, during times of tranquility, there is no

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[30] The PDCF was basically a "new and improved" discount window for primary dealers. By the time the Fed closed the PDCF in February 2010, total accumulated lending through the program was approximately $9 trillion; Merrill Lynch, Citigroup, and Morgan Stanley each received approximately $2 trillion (Sheridan 2011: 14).

[31] These are not the only steps the Fed took to prevent the spread of financial contagion; I limit my discussion to the mechanisms above because they are the most relevant to this paper. For a more detailed account see Hummel (2012) and Stewart (2009).

difficulty for either private or public agents. During times of turbulence, private agents

must cope with reduced credit availability due to uncertainty about asset values. Under

New York Fed doctrine, primary dealers and clearing-bank organizations are in a favored

position because they can sell toxic assets to the Fed, a buyer who is committed to

preserving these agents' solvency and is not constrained by a hard budget. Even if the

Fed buys toxic assets only from primary dealers and clearing banks, as it did with the

PDCF, other holders of toxic assets benefit from the Fed's support for toxic-asset prices.

The process is correspondingly simple for the Fed: Because it no longer has to distinguish

between good and bad collateral and is committed to supporting the primary dealers and

clearing banks, informational concerns associated with asset quality are virtually

nonexistent. For example, between January 2009 and March 2010, the Fed directed the

FOMC to purchase $1.25 trillion of mortgage-backed securities "to provide support to

mortgage and housing markets and to foster improved conditions in financial markets

more generally" (Federal Reserve 2010b). Even after financial markets have largely

stabilized, as part of its third round of quantitative easing, the Fed has committed to

purchasing an additional $40 billion per month of mortgage-backed securities (MBS)

"[t]o support a stronger economic recovery and to help ensure that inflation, over time, is

at the rate most consistent with its dual mandate" (Federal Reserve 2012). Indiscriminate

buying of MBS means that informational concerns for both private and public agents are

probably *least* severe under this interpretation! This suggests the New York Fed doctrine

is more information-compatible than free banking, Classical doctrine, and even the

Richmond Fed doctrine. This is so because the New York Fed doctrine frees the

monetary authority from even the minimal task of deciding which assets may be traded in the conduct of ordinary monetary policy.

The incentive margin tells a different story. Of all the lender-of-last-resort doctrines considered so far, the New York Fed approach most distorts the incentives of the potential borrowers. This is because private agents have little incentive to worry over the insolvency-illiquidity boundary. The usual moral hazard arguments still apply, but the narrative changes slightly: The primary dealers and clearing banks, aware that they are unlikely to bear the full costs of their decisions concerning portfolio structure if bearing those costs contributes to the possibility of a systemic event, have less incentive to worry about the risk side of the risk-return tradeoff. This is evidenced by the high leverage (and thus great sensitivity to price decreases in the underlying assets) prevalent among Wall Street banks and financial firms on the eve of the crisis.[32] Thus these organizations have a significantly weakened incentive to avoid exotic assets, being fairly confident that the Fed stands ready to cushion their downside losses. Also, unlike Classical doctrine, there is no clearly defined notion of a penalty that, at least in theory, would prevent private agents from taking on excessive risk. Public agents no doubt wish private agents would not engage in the sort of behavior that, from their perspective, necessitates last-resort lending or bailouts, but it is unclear what mechanism, if any, the New York Fed doctrine offers to offset the moral hazard it creates.

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[32] This process is described in detail by Gorton (2010). The only "anomaly" with the above story is the failure of Lehman Brothers, which was on the list of primary dealers in 2007. Hummel (2012: 189–90) suggests the limited *initial* response of the Fed can be explained by worries over inflation, since commodity (and especially oil) prices were rising in 2007–8, just as the crisis was unfolding.

Finally, we consider stability: Once public authorities have adopted a New York Fed–style lender-of-last-resort policy, is it likely to persist? This is more difficult to pin down, given that the Fed's extraordinary response to the most recent crisis is the only example of its kind from which we can draw inferences.[33] Intuitively, it does seem that this version of lender-of-last-resort doctrine results in a kind of perverse equilibrium: The monetary authority focuses heavily (even if not exclusively) on nonmonetary channels, which requires interventions at the level of individual banks (and other financial organizations conducting quasi-banking activities). Their solvency must be preserved to prevent the nonmonetary effects from crippling the system. The banks and other financial organizations, aware of this, shift towards "heads I win big, tails I get rescued" strategies at the margin, precisely the sort of risk-taking behavior that leads to intervention in the first place. The crucial aspect here is the commitment of the lender of last resort to heavily weighting nonmonetary channels, combined with a lack of a budget constraint. In contrast, incentives were aligned under free banking because the budget constraints of individual banks were binding. Since this allowed the banking system to ride out the storm, it also had the side effect of preserving the nonmonetary channels crucial for financial stability, i.e., the intermediation services specified by Bernanke (1983).

The other lender-of-last-resort mechanisms examined here that rely on the support of a public authority—Bagehot's rules and the Richmond Fed doctrine—can be viewed as alternative versions of the New York Fed doctrine, with differing weights placed on monetary and nonmonetary channels. The Richmond Fed doctrine puts a zero weight on

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[33] Although the passage of Dodd-Frank does seem to ratify TBTF in the U.S. See e.g. Wilmarth (2011).

nonmonetary channels; Bagehot's rule, with its insistence on intervening on behalf of individual banks conditional upon solvency and penalty rates secured by marketable collateral, weights nonmonetary channels somewhere between that of the Richmond Fed and New York Fed responses. With increased weight on nonmonetary channels comes increased discretionary action. While it is perhaps not inevitable that a system that institutionalizes a more limited lender-of-last-resort function will necessarily drift to a more expansive doctrine (remember Europe's relatively long-lived adherence to Bagehot's rules) it does appear unlikely that a transition to a limited-response equilibrium will occur through either a market or a political pathway. Former Federal Reserve Chairman Paul Volcker seemed to affirm this unsettling insight, remarking during the crises that by "transcending certain long-embedded central banking principles and practices," the Fed seemed to be approaching "the point of no return" (Volcker 2008: 2, in Selgin 2012: 311).

In summary, because it is the least discriminate, the New York Fed doctrine has low informational requirements. On this margin, the New York Fed doctrine, given its stated goals, is stronger than all the other interpretations. This strength, however, is a double-edged sword. It results in the New York Fed doctrine being weaker than all other interpretations on the incentive margin—the stronger the Fed's commitment to stemming contagion by discretionary action through nonmonetary channels, the greater the incentive for key banks and other financial organizations to adopt portfolio strategies that necessitate a lender-of-last-resort response. Lastly, the New York Fed doctrine is the most stable (self-reinforcing) of the three doctrines that place responsibility for lender-of-

last-resort activities in the hands of a public authority. A direct comparison with free banking is more difficult, given the vast differences in the underlying political-economic system, but it is probably at least as difficult to push the system away from an equilibrium characterized by a New York Fed–type solution as those that prevailed under free banking, suggesting the former is at least as stable.

4. Implications

Table 1 summarizes the results. The robustness criteria of each of the interpretations are listed in descending order. Consistent with the analysis, free banking (no lender of last resort) "weakly dominates" the Classical system since free banking is superior on the incentive and stability margins and ranks equally on the information margin. However, free banking does not dominate the New York Fed and Richmond Fed doctrines. While free banking is in a stronger position with respect to incentives, both the New York Fed doctrine and the Richmond Fed doctrine are more information-compatible with their stated goals, acquired at the price of weakening incentive compatibility. However, only the New York Fed doctrine is more stable. Since we have established that the Richmond Fed doctrine does not represent a stable political equilibrium—a way to tie the monetary authority's hands has yet to be devised, let alone practiced—the relevant comparison is between the two extremes of market discipline and completely discretionary authority.

Table 1: Ordinal Rankings of Robustness Criteria

	Information	Incentive	Stability
Free Banking	3	1	2
Classical (Bagehot's rules)	3	2	3
Richmond Fed*	2	3	4
New York Fed**	1	4	1

*No historical examples
**Based on 2007-2008 financial crisis

The preceding analysis, from the standpoint of examining how lender-of-last-resort doctrine has evolved as a result of the introduction of an extramarket actor, also suggests that more limited responses will naturally "drift" to more expansive—and hence discretionary—interpretations. This is likely due to the already-familiar time-inconsistency problem (Kydland and Prescott 1977) and is consistent with the theory of the cumulative interventionist process (Mises 1998; Ikeda 2004). A reasonable interpretation is that the long-run choice regarding the lender of last result function will be between market and political processes. In the latter case, we have strong reason to believe that systemic events are endogenous, meaning attempts to avert banking panics

by extramarket means will instead result in an environment wherein the behaviors that can cause such panics will be practiced regularly.

Theory and history suggest the market-based lender-of-last-resort interpretation results in a more desirable state of affairs. However, this by itself does not prove that radical shifts in the institutional framework of money provision are unambiguously desirable. The efficacy of various lender-of-last-resort mechanisms is only one margin on which the comparative institutional analysis of monetary regimes ought to be conducted. If one interprets the evidence in such a way that the gains from instituting a robustness-compatible lender of last resort are swamped by other costs, then the status quo may be a constrained optimum. And even if the status quo is not a constrained optimum, if we are living in a world of the second-best (Lipsey and Lancaster 1956), a return to more market-based mechanisms may not be feasible. The ambitiousness of our reforms may have to be limited to improvements within the current institutional framework. The obvious target here is the top-heaviness of the Fed's primary dealer system, as Selgin (2012) argues. Selgin's prescriptions (2012: 312) are explicitly formulated to realign the public lender-of-last-resort authority on Classical lines.

However, Selgin makes it clear that "mere tinkering with our existing, discretionary central banking system" will do little to reduce the specter of future financial crises (2012: 304). These are likely merely second-best solutions. In light of serious concerns over whether the Fed has, on its own terms, been unsuccessful in bringing about increased macroeconomic stability (Selgin, Lastrapes, and White 2012),

the claim that radical institutional reconsiderations are undesirable from a cost-benefit perspective is becoming increasingly hard to sustain.

Fortunately, alternatives to modern central banking are being discussed rigorously in the modern literature. Boettke and Smith (2013c) remind us that such noteworthy scholars as Milton Friedman, James Buchanan, and Friedrich Hayek have proposed systems to constrain the monetary authority with strict rules, constitutional provisions, and denationalized competing currencies, respectively. White (2010) has also discussed ways of bringing central bank behavior under the rule of law and elsewhere (2012b) has described a way of returning to the gold standard. Long before the crisis, Sumner (1989, 1995) and Dowd (1994) suggested ways market actors might themselves enforce the monetary authority's chosen rule—preferably a nominal income target.[34] Commenting favorably on the policy, Selgin writes, "Its main virtue is that it significantly reduces the discretionary element in monetary base adjustments aimed at implementing the nominal GDP rule, and thereby comes close to making the monetary supply adjustment process an entirely automatic one, largely free from any reliance on bureaucrats' judgment" (2010: 472). Just the works mentioned here show there are numerous proposals for monetary institutional reform. It is beyond the scope of this chapter to describe any one of them in detail, let alone evaluate them. Rather, in analyzing the robustness of various lender-of-last-resort doctrines, this chapter adds weight to the claim that these kinds of radical reforms should be on the table.

5.   Concluding Remarks

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[34] See Sumner (2011, 2012) for the theory behind a nominal income target, especially in the context of the financial crisis.

This chapter applied the standard of robust political economy to lender-of-last-resort doctrine. It considered the three most prominent versions of lender-of-last-resort doctrine: the Classical system of central bank lending on good collateral at a penalty rate, the Richmond Federal Reserve system of open market operations to prevent liquidity drains, and the New York Federal Reserve system of commitment to taking any and all actions necessary to prevent the spread of financial contagion. These were compared to the free banking system, where there was no lender of last resort. The chief concern was to determine the ordinal ranking of these doctrines, based on robustness to agent imperfections in the form of information and incentive frictions. The chapter showed that free banking weakly dominates the Bagehotian system. Free banking also outperforms the New York Fed and Richmond Fed systems on the incentive margin but is weaker on the information margin. In addition, the chapter discussed how the New York Fed doctrine is the only stable "interventionist" doctrine, since the limited response necessitated by the Bagehotian and Richmond Fed doctrines are not credible. The chapter discussed the ramifications of these findings and reaffirmed the necessity of radical reconsideration of the form and function of monetary institutions.

Milton Friedman, himself a proponent of radical reforms to monetary institutions towards the end of his life, famously wrote, "Only a crisis—actual or perceived—produces real change. When that crisis occurs, the actions that are taken depend on the ideas that are lying around" (1982: ix). It is incumbent upon scholars working at the intersection of money and banking theory and comparative institutional analysis to provide these ideas. Robust political economy, because it takes seriously both incentive

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and information concerns in its attempt to discern institutional arrangements that facilitate social coordination even in unfavorable circumstances, is the framework on which such ideas can be built. By applying the standard of robust political economy, this chapter reaffirmed the strengths of market-based lender-of-last-resort responses, in addition to highlighting the undesirable unintended consequences associated with more-interventionist doctrines. The findings of this chapter should be viewed as further evidence that the research program in alternative monetary institutions is warranted.

IS THERE A SELF-ENFORCING MONETARY CONSTITUTION?

1.   Introduction

The Great Recession has called into question several aspects of monetary institutions and policy that were taken for granted. The role played by the Federal Reserve in particular has been singled out for scrutiny. Some assert that the Fed caused the unsustainable bubble in financial markets by keeping interest rates "too low for too long," thereby inducing unsustainable expansions in time-intensive lines of production (Beckworth 2012; Horwitz and Luther 2010; Taylor 2007, 2009; White 2008, 2009, 2012) and encouraging excessive "carry-trade" activity in financial markets (Espinoza 2012). Others assert the Fed's fault lies in failing to prevent a collapse in nominal spending, turning what would have been a nontrivial but manageable market correction into the worst recession since the Great Depression (Hetzel 2012; Nunes and Cole 2013; Sumner 2011, 2012).[35] Still others indict Fed policy on other margins, arguing that the Fed's extraordinary response in bailing out large financial institutions via large-scale purchases of toxic assets, while perhaps preserving the integrity of the system in the short run, has sown the seeds for future crises by fomenting moral hazard (Buiter 2008; Dowd 2009; Ravier and Lewin 2012; Roberts 2010).

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[35] Boettke and Luther (2009) argue that these two positions are reconcilable.

James Buchanan (2010) has argued, in response to the crisis, in favor of the constitutionalization of money. Buchanan likens the value of money to that of other weights and measures. Money requires a definite and predictable value in order for commercial activity to prosper. This means the rule governing the monetary order must be subject neither to the market nor the day-to-day vagaries of the political process.[36] This view of money as a foundational necessity for a well-functioning market order justifies its inclusion in the social contract. Constitutionalization provides the necessary solution: "[T]he value of money must be part of the 'higher law,' as opposed to ordinary legislation that takes place within such law" (2010: 56). According to Buchanan, a sound monetary constitution, by explicitly specifying the "rules of the game" and forbidding uncertainty-generating discretionary action on the part of the monetary authority, would have curtailed the monetary aspects that contributed to the severity of the Great Depression and Great Recession. It would also go a long way to preventing similar occurrences in the future.

Insulating monetary factors from destabilizing forces, especially the political process, is certainly desirable. However, historical experiences with monetary constitutions[37] suggest that realizing Buchanan's vision is more difficult than it at first appears. Sweden's experience with a constitutional provision for money is an example. In 1873, Sweden officially adopted gold as the basis for its monetary system. Its currency, the krona, was explicitly tied to gold, with one krona equal to 1/2480 kilograms of gold.

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[36] Horwitz (2011) argues that market forces can devise a stable and predictable monetary order. I will revisit this claim in a subsequent section.

[37] Anna Schwartz (1987: 391) defines a monetary constitution as any established rule for monetary policy, which may or may not be formally embodied in a written document. This is how "monetary constitution" ought to be understood in this paper.

The convertibility of Swedish banknotes on the part of the central bank was guaranteed in the Swedish constitution.[38] However, with the advent of World War I, the central bank decided unilaterally to suspend conversion. Procedurally, laws relating to the gold standard could only be changed "by two identical decisions by Parliament with an election in between" (Jonung 1984: 368). This move, which was explicitly unconstitutional, was never challenged. "The constitutional guarantee turned out … to be an ineffective protection for the gold standard" (Jonung 1984: 368; see also Kydland and Wynne 2002: 17).

A more recent example involves the response of the European Central Bank (ECB) to the crisis. The ECB was explicitly mandated to maintain price stability in the Treaty on the Functioning of the European Union.[39] Today, according to its website, it "aims at inflation rates of below, but close to, 2% over the medium term."[40] In 2000, Professor Omar Issing, who was then a member of the ECB board, praised the ECB constitution as an effective countermeasure to the politicization of monetary policy: "In all industrialised countries monetary policy is now being managed by (more or less) independent central banks with the key objective of maintaining price stability. Monetary financing of the public sector is excluded. Monetary stability is protected by law and social consensus" (Issing 2000: 34). However, it was too soon to celebrate. Since the advent of the crisis, the ECB has abandoned much of its restraint. It began purchasing national debt of dubious quality from European Union member states in an attempt to

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[38] The necessity of an explicit constitutional provision for gold was deemed necessary due to the central banks' history of suspending redemption (Jonung 1984: 368).
[39] Article 127(1).
[40] Inflation is measured by the Harmonized Index of Consumer Prices (HICP), data for which is also available at the ECB's website.

keep interest rates low and prices high. This policy escalated in the summer of 2012 when, in response to sharply rising yields on Spanish and Italian bonds, the ECB announced a new bond-buying program of unlimited size on September 6 (Tornell 2012: 6). One result has been inflation consistently above the 2 percent target mandated in the ECB's constitution.[41]

Both of the above cases highlight a key problem that needs to be solved with respect to monetary constitutions: How is enforcement—including but not limited to appropriate punishment for violating the monetary constitution—to be handled?[42] In the Swedish case, the organization responsible for enforcing the rule was the same organization that, with the fiscal pressures typically associated with wars, benefited from ceasing its enforcement. In the case of the ECB, there is no specified penalty for deviating from the constitutional provision of price stability (White 2011). History suggests the need for a more rigorous enforcement mechanism, one that does not run into the problem of having the constitutional provision become sufficiently costly that it is no longer in the interests of the enforcers to uphold.

An intriguing possibility solves the enforcer problem by sidestepping it entirely: Instead of relying on an external authority to enforce the constitutional rule, the rule itself can be *self-enforcing*. Ideally, rules coordinate behavior by anchoring individuals' expectations, thus providing the framework within which mutually beneficial interaction can take place (Brennan and Buchanan 2000). It is possible for these rules to be self-

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[41] The range of inflation above the 2 percent target begins in December 2010 and continues today, although the most recent data shows falling inflation. As of this writing, the most recent estimate is 2.2 percent.
[42] This issue is inherent in all questions that fall within the scope of constitutional political economy (e.g. Brennan and Buchanan 2000).

enforcing, meaning that those in a position of power serve their self-interest by maintaining these rules. For example, Leeson (2012) considers the effectiveness of constitutional enforcement in government and clubs. Club constitutions are more likely to be self-enforcing than government constitutions because clubs have "residual claimants on revenues generated by constitutional compliance, operate in a highly competitive environment, and permit individuals to sort themselves according to their governance needs" (Leeson 2012: 301). If a monetary constitution can be found that has similar properties to those Leeson highlights as favorable to the self-enforcing nature of clubs' constitutions, then there may be a self-enforcing monetary constitution.

This chapter is concerned with discovering the properties that are likely to result in a self-enforcing monetary constitution. I first discuss why a monetary constitution is desirable, along with the features it ideally ought to possess, while simultaneously highlighting the shortcomings of modern discretionary central banking. I then discuss two monetary arrangements that may be consistent with the ideal monetary constitution, NGDP targeting and free banking, considering the pros and cons of each. I conclude by discussing the implications of these findings for future alterations to monetary frameworks and insist that securing the provision of this framework is necessarily tied into the larger constitutional political economy project.

2.   The Whys of the Monetary Constitution

There are three general reasons why a monetary constitution—a rule, which may or may not be formalized, that constrains the ability of any organization to meddle with

the monetary framework to achieve its own ends—is desirable. Two of these reasons are purely positive; the third contains both positive and normative criteria.

Time Inconsistency

The first rationale is the familiar time inconsistency problem, first articulated by Kydland and Prescott (1977) and later applied by Barro and Gordon (1983). The power of the time inconsistency argument is that it shows the undesirability of discretion even in the most favorable of policy environments. Even when policy makers and the public are rational and perfectly informed, and even when the policy makers are benevolent—their self-imposed goal is to satisfy the wishes of the public, as determined by the public—the interaction between policy makers and the public leads to suboptimal results so long as the policy makers are able to act with discretion. This is because a discretionary public policy organization cannot make a credible commitment to violate its period-by-period utility function: it will always be tempted to "cheat" by "helping" the public. In the context of monetary policy, this involves attempted surprise monetary creation in order to lower unemployment, which the public would value, all else being equal. But because the public knows the rules of the game, it knows to expect the money creation, and the result is simply higher inflation with no reduction of unemployment. However, if there were a rule that restricted the actions of the monetary authority, the monetary authority could credibly commit to not attempting to cause short-run deviations. Thus a monetary constitution of some form, provided it can be enforced, is welfare-enhancing for all parties.

Robust Political Economy

The time inconsistency argument shows that suboptimal results can follow even in the best situations, i.e. when all agents are machines of perfect cognition and the public authorities are completely altruistic. But real-world policy situations involve less-than-perfectly rational actors and less-than-perfectly benevolent public authorities. We must consider how the monetary arrangements fare when deviations from the "best case" scenario are the norm. The literature on robust political economy, which "examines deviations from ideal conditions with respect to (but need not be limited to) actor motivation and information," provides the positive framework (Leeson and Subrick 2006: 108). Robust political economy asks the question, "Which institutions perform best when people have limited knowledge *and* are prone to self-interested behavior" (Pennington 2011: 3, emphasis in original)? Robust political economy suggests an enforceable monetary constitution is desirable because it (a) checks agents' (policy makers' and individuals' alike) self-interested behavior and (b) mitigates the problem of the less-than-perfect cognitive capacities of these agents by providing a stable institutional framework that anchors expectations.[43]

Property Rights and Constitutional Governance

The structure and enforceability of property rights is crucial for the determination of economic outcomes (e.g. Alchian 1961; Alchian and Demsetz 1973; Coase 1960; Demsetz 1967). Constitutional provisions that protect private property rights can provide the foundations necessary for individuals to engage in widespread and interpersonal exchange for mutual benefit, the unintended result of which is the economic flourishing

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[43] Buchanan (1962), writing before the development of the robust political economy literature, argues for predictability as a chief criterion of a monetary constitution.

of the society (Hayek 1960, 1973). Hetzel (1997: 45) argues that since "[t]he monetary arrangements of a country either promote or undermine that protection" it is important to consider money from a constitutional perspective. Arbitrary, i.e. non-rule-based, interventions in the monetary framework can undermine property rights and introduce an element of uncertainty into the economic system. For example, if the monetary authority is subject to the whims of government, it may engage in money creation for the explicit purpose of generating seigniorage. But since creating money puts upward pressure on prices in general, and can interfere with the array of relative prices in the economy (Horwitz 2003), "money creation influences the extent of arbitrary redistributions of wealth among individuals. The institutional arrangements that govern the creation of money then bear on two aspects of the protection of property rights: the taking and disposition of wealth from the public and the distribution of wealth by government between individuals" (Hetzel 1997: 45). Thus the creation and maintenance of a monetary constitution is desirable from the positive standpoint of property rights economics and the normative standpoint of respecting the underlying norms, embodied in the rule of law, between individuals and those whom they consent to govern them.

3.   The Wherefores of the Monetary Constitution[44]

Given the criteria above, there are a few specific features an effective monetary constitution ought to possess. First, the monetary constitution ought to institutionalize some measure of predictability. The rule should anchor the expectations of the agents

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[44] In the following section I will develop an argument suggesting discretion is inherently not robust. However, I will not address the argument that optimal monetary policy, i.e. monetary policy in an "ideal" information and incentive environment, is context-dependent. I take the position that there is only one legitimate monetary goal—allocatively neutral demand stabilization (Hayek 1931)—but defending this position is beyond the scope of this paper.

operating within the system. Second, the monetary constitution must be consistent with the strictures of robust political economy. This means that those "in charge" of the system, i.e. those in a position to impact the rules, possess sufficient knowledge to behave appropriately, even under less-than-ideal conditions with respect to informational and cognitive capacities. The same holds on the incentive side: Agents' self-interested behavior, especially in situations of less-than-perfect altruism, must not lead to a breakdown of the rule. All of the above must be considered alongside the additional constraint that the monetary constitution must be self-enforcing. This means that the predictability criterion must be satisfactory to the agents who act within the system, and that these agents are capable of acting in accordance with the rule even when deviations from ideal knowledge and incentive endowments are significant.

Predictability

Buchanan (1962, 2010) argues that predictability entails granting to money the status of a weight or a measure. It should be a constant unit of measurement, enabling economic actors to have stable expectations through time as to what their money can purchase. In this context, predictability is best achieved through a stable purchasing power.[45] However, institutionalizing predictability via stable purchasing power overlooks the fundamental role of the medium of exchange in economic life. The widespread use of a given medium of exchange is the result of an evolutionary trading process whereby self-interested agents, in order to secure more ably the final goods they desire for consumption, trade those goods which are less marketable for intermediate goods, with

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[45] See also Greenfield and Yeager (1983) for another take on institutional arrangements that yield stable money.

the intent of using these intermediate, more-marketable goods to exchange for those goods and services they wish to consume (Menger 1892). Focusing on the role of money with emphasis on the importance of securing mutually beneficial exchange highlights the primacy of money's function as an enabler of exchange (Mises 1953: 34).[46] This theoretical understanding also yields insights into a potential difficulty facing the money-using economy: money is the "loose joint" in the economy (Hayek 1941; see also Garrison 1984, 2001), that which all markets have in common yet exists without an independent market of its own.

On the one hand, money enables economic calculation via profit-and-loss accounting, providing a common denominator for the comparison of resource flows that satisfy consumer demand and enabling market actors to effectively allocate scarce resources. On the other hand, the lack of a concrete pricing mechanism for money introduces the possibility that frictions in the "market" for money, a market comprised of individuals' desires to hold cash balances and the supply of these balances at a given purchasing power for money, introduce noise in the pricing system. This skews the communication of real resource scarcities and thus makes it more difficult for individuals to direct resources towards their highest-valued uses. These insights, captured in monetary equilibrium theory (most notably Hayek 1931 and Yeager 1956; see also Horowitz 2000 and Garrison 2001), suggest the importance of discovering arrangements that keep the money market as close as possible to equilibrium, and also set into motion

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[46] Although the evolutionary monetary system features commodity-based money, the emphasis on the primacy of money's role as a medium of exchange is no less valid in today's fiat money economies. See Mises (1953) and Selgin (1994) for defenses of the functional similarity of commodity and fiat money.

tendencies for that market to tend towards equilibrium whenever it is away. This ensures that money is as neutral as possible, meaning the spillover effects of changes in the demand to hold money relative to supply on real resource allocation are minimized.

The desired institutionalization of predictability, then, is one where agents can reliably expect prices to reflect relative scarcities, which best enables individuals to engage in economic calculation (Horwitz 2011: 335–37). While this is often consistent with stable purchasing power, that is not always the case.[47] The most obvious exception is in cases where productivity enhancements result in steady economic growth. In this case, if the supply of goods and services increases relative to the supply of money, then all else being equal, the purchasing power of money should rise (Selgin 1994).[48] If this did not occur, changing conditions of real resource scarcities would be masked, resulting in the difficulties outlined above.[49]

To summarize: The predictability criterion of the monetary constitution is concerned with institutionalizing an environment conducive to economic calculation. This requires an institutional arrangement that systematically reverses disequilibrium in the money market. Since we are concerned with a self-enforcing monetary constitution, the institutionalization of tendencies toward monetary equilibrium, and hence monetary neutrality, must also be self-enforcing. This arrangement must provide agents an

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[47] See White (1999: ch. 1–4) for an overview of the conditions that lead to stable purchasing power in an organic (evolutionarily established) monetary system.

[48] Of course, this increase in purchasing power overlies many changes in *relative* prices, based on the productivity gains in specific sectors at the micro level.

[49] It is important to note that agents concerned with maintaining their money's purchasing power would still be able to engage in post-constitutional contractual arrangements, such as purchasing inflation-indexed securities, to maintain that purchasing power. A monetary order that did not institutionalize monetary neutrality would be much more disruptive, and render such contracting much more difficult (costly). This is another argument for placing monetary equilibrium at a higher level of importance than stable purchasing power.

incentive to maintain this tendency, and this tendency must be likely to occur even when these agents' knowledge is less than ideal.

Knowledge

Just as robust political economy highlights the desirability of a monetary constitution, so must robust political economy inform our analysis of which monetary constitution (if any) is self-enforcing. If the monetary constitution is founded on unreasonable assumptions concerning agents' knowledge or incentives, it is also unreasonable to expect the monetary constitution to enforce itself.

The knowledge problem applied to monetary constitutions requires the monetary constitution to be upheld even when agents—whether ordinary market actors or policy makers—know very little about how the economy "really works." This may best be demonstrated by highlighting a situation that does *not* rest on reasonable knowledge assumptions, namely, modern discretionary central banking. Ideally this consists of applying a series of parameterized policy reaction functions that predict how a handful of target macroeconomic aggregates (inflation and/or unemployment) will respond to changes in a short-run interest rate (e.g. Bernanke and Mihov 1998);[50] it is the job of researchers to supply the data and models to ascertain the "correct" constants, i.e., constants which make the model best predict actual outcomes.[51] Ultimately the practice of modern central banking is conceived as problem solving. The paradigm is one admirably summarized by Mankiw (2006: 15), speaking in the context of central

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[50] The financial crisis has seen central banks adopt untraditional measures to combat deflation and unemployment, but the underlying paradigm remains the same.
[51] The theoretical justification for interest rates as the implementation mechanism is given in Woodford (2003).

banking: "If God put macroeconomists on earth to solve practical problems, then Saint Peter will ultimately judge us by our contributions to economic engineering."

Ultimately it is up to central bankers to implement monetary policy, but to do so the "engineer" central bankers must first have the correct model of the economy, or rather the correct model of how the relevant aggregates will respond to changes in the target instrument, which is provided by the "scientist" macroeconomists (Mankiw 2006). However, even putting aside the critique that this aggregative approach masks the actual economic reality of relative price changes (e.g. Hayek 1979), the dictates of robust political economy in the context of the knowledge problem suggest this exercise is fundamentally flawed. It consists of giving a relatively small number of individuals control over a large extramarket organization whose actions impact economic activity at all levels. Unless these individuals actually do have the "one true model" of monetary policy, this practice institutionalizes an environment of destabilization.[52] This occurs for two reasons:

(1) By granting a relatively small number of individuals control over monetary
   policy, the social intelligence of the marketplace is subsumed to the limited
   rationality and knowledge of these individuals (Hayek 1948). John Taylor (2012)
   sums up the situation succinctly: "The Fed has effectively replaced the entire
   interbank money market and large segments of other markets with itself—i.e., the
   Fed determines the interest rate by declaring what it will pay on bank deposits at
   the Fed without regard for the supply and demand for money."

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[52] This is extraordinarily unlikely due to the fact that individuals change their behavior in response to changing policy environments: the constants aren't so constant after all (Lucas 1976).

(2) Related to the above, the implementation mechanism—a short-term interest rate—is itself a vitally important price, namely the price of time. One does not need to accept the "Austrian" or monetary theory of the business cycle to recognize that the price of time is vital for the allocation of scarce capital, and thus the pattern of the capital structure (Hayek 1931; Lachmann 1956; Horwitz 2000; Garrison 2001).[53] This is where the limited knowledge of the non–policy maker agents matters. Market actors with limited knowledge will lack the ability to perfectly differentiate changes in relative prices, including the price of time, arising from real changes in the underlying conditions from changes arising due to injections or absorptions of money.[54] This implies capital investments will not mesh perfectly with the dictates of the underlying market conditions. To the extent that capital investments are to some degree irreversible (Dixit 1991, 1992, 1995; Dixit and Pindyck 1994), interference with the economy's signal of time preference is likely to result in costly resource misallocations.

A system that relies on a few individuals possessing sufficient knowledge to "out-market" the market is certainly not compliant with the knowledge requirements of robust political economy. Because robust political economy informs the necessary features of a self-enforcing monetary constitution, it must also be inconsistent with the latter. Instead we should be looking for a monetary environment where no individual or group of individuals must be familiar with the workings of the economy to achieve their separate desires and act in a way that maintains the integrity of that environment.

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[53] Stanford's John Taylor is such an economist (e.g. Taylor 2007).
[54] This is the signal-extraction problem made famous by Lucas (1972).

Incentives

A symmetric argument follows for the incentive side: A self-enforcing monetary constitution is one that agents operating within the system have an incentive to uphold. Non–policy making agents must have sufficiently strong incentives to act within the framework set up by the monetary constitution, rather than undermine it. Profit-seeking behavior on the part of market agents (conditional upon the appropriate background institutions) has the unintended but desirable consequence of driving the market process, weeding out inefficiencies by implementing a tendency towards the exhaustion of gains from trade. What is true in other markets will hold for the money market as well: Discovering a method to institutionalize a pecuniary incentive to uphold the monetary constitution would be a good first step towards self-enforcement. If there is a role for public agents (policy makers) as well, the self-enforcing monetary constitution must offer similar incentives, but without driving a wedge between the interests of the policy maker and the goals of the monetary constitution. In addition to the carrot, we also may wish to consider the stick. Punishment of either private agents or public authorities for undermining the monetary constitution may be desirable, provided such punishment is cost-effective and somehow solves the omnipresent "Who guards the guardians?" problem.

Again, it is important to recognize that modern discretionary central banking does not meet this challenge. Even if we assume today that the ideal of a truly independent public monetary authority has been realized, central bankers' incentives to steward the economy must be questioned. This is because independence is a double-edged sword:

Although it means central bankers can implement their preferred policy without fearing political reprisals, meaning the risk of political capture of monetary policy is small, it also rules out the possibility of an effective punishment mechanism should central bankers engage in monetary policy that undermines monetary equilibrium and thus adds undesirable noise to price signals. It is important to realize that this does not require maliciousness or laziness on the part of central bankers. Instead, it could take the form of insularity and resistance to new theoretical insights in monetary theory. Again, Mankiw provides an illuminating anecdote. Commenting on the memoirs of Laurence Meyer, an economist who left academia to serve as a Federal Reserve governor, Mankiw (2006: 14–15) writes:

> Recent developments in business cycle theory, promulgated by both new classicals and new Keynesians, have had close to zero impact on practical policymaking. Meyer's analysis of economic fluctuations and monetary policy is intelligent and nuanced, but it shows no traces of modern macroeconomic theory. It would seem almost completely familiar to someone who was schooled in the neoclassical-Keynesian synthesis that prevailed around 1970 and has ignored the scholarly literature ever since. Meyer's worldview would be easy to dismiss as outdated if it were idiosyncratic, but it's not. It is typical of economists who have held top positions in the world's central banks.[55]

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[55] In addition, Mankiw also counsels skepticism regarding the extent to which the rules vs. discretion debate has influenced central banking in practice: "[T]he institutional changes we have observed are at best loosely connected to the issues raised in the theoretical literature" (Mankiw 2006: 16).

Given a lack of a mechanism that tightly aligns the incentives of central bankers with the state of the economy, it is unsurprising that the attempt to implement their goals using approaches with which they are most comfortable but may very well lack the sophistication of modern theoretical refinements.[56]

However, even the ideal case of independence may be an overly optimistic view of the current relationship between the political sector and monetary policy makers. For example, Boettke and Smith (2013a, b, c) challenge this assumption by examining the record of the Federal Reserve. Boettke and Smith conclude that the Fed has indeed bowed to political influence on several occasions, such as debt accommodation during the Korean War and the well-known Nixon-Burns relationship. In the case of Europe, the introduction to this chapter discussed how adherence to its constitution weakened in light of the ECB's efforts to aid fiscally troubled nations. Piercing the veil of political independence is more worrisome even than independence and its accompanying lack of an enforcement mechanism. Although in theory this enables politicians to punish irresponsible central bankers, in practice political actors have an incentive to steer monetary policy to what is politically profitable. It is at least as unreasonable to expect political actors to be the guardians of responsible monetary policy as it is to expect independent but unaccountable central bankers to fulfill their charge.[57]

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[56] See also Boettke and Smith (2013c).

[57] Market actors are far from innocent on this margin. Influence of the monetary authority that is privately beneficial but socially costly is also a significant problem with current arrangements (Buiter 2008; Dowd 2009; Ravier and Lewin 2012; Roberts 2010; Selgin 2010, 2012). Of course, similar to political actors, market actors are simply responding to the profit incentives presented by a monetary authority which is susceptible to outside influence. An incentive-compatible monetary constitution must prevent socially detrimental influence on the part of public and private agents both.

In order for the monetary constitution to be self-enforcing, it must include incentive-compatible schemes that yield behavior patterns at the post-constitutional level very different from those we observe with modern discretionary central banking. This must be accomplished through some mixture of reward schemes and punishment mechanisms that can curb the socially detrimental aspects of profit-seeking behavior of public and private agents both.

4.   Two Versions of a Self-Enforcing Monetary Constitution

Having established the necessary features of a self-enforcing monetary constitution, we can now proceed to spell out actual arrangements that will result in (a tendency towards) monetary neutrality and are achievable in a world of information and incentive frictions. The first of these is a version of nominal gross domestic product (NGDP) targeting; the second is free banking, characterized by the creation of inside money by the individual banks and their associated branches.

NGDP Targeting

NGDP targeting has risen to prominence in the aftermath of the financial crisis due to the efforts of the market-monetarist school. Elaborating on the core of market monetarism, Lars Christensen (2011: 1) writes:

> Market Monetarism shares many of the views of traditional Monetarism but
> unlike traditional Monetarism Market Monetarism is skeptical about the
> usefulness of monetary aggregates as policy instruments and as an indicator for
> the monetary policy stance. Instead, Market Monetarists recommend using market
> pricing to evaluate the stance of monetary policy and as a policy instrument.

Contrary to traditional Monetarists—who recommend a rule for money supply growth—Market Monetarists recommend targeting the Nominal GDP (NGDP) level. The view of the leading Market Monetarists is that the Great Recession was not caused by a banking crisis but rather by excessively tight monetary policy. This is the socalled [sic] Monetary Disorder view of the Great Recession.

The implementation of the market monetarists' preferred rule is straightforward: The monetary authority responds to an increase in the demand to hold money by expanding the money supply, and responds to a decrease in the demand to hold money by decreasing the money supply. In the familiar equation of exchange, $MV=Py$, this amounts to changing M to offset changes in V. The result is a constant level of NGDP, Py.[58]

One benefit of an NGDP target is that it does not rely on any structural assumptions about the economy and thus significantly reduces the informational burdens in carrying it out. Also, an NGDP target performs as well as price-level targeting, which has typically been favored by academic economists and central bankers,[59] in the event of a demand shock, but dominates price-level targeting in the event of a supply shock. Targeting NGDP prevents the monetary authority from compounding the effects of supply shocks on real income. It is in virtue of the above that an NGDP target minimizes economic instability resulting from disturbances in the money market. Thus NGDP

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[58] Most market monetarists actually favor a constant growth path for NGDP, which, conditional upon appropriate expectations by market actors, yields similar results to a static NGDP target. This is evident from the equation of exchange's dynamic form, $gM + gV = gP + gy$, where g denotes growth rates.
[59] Proponents of a Taylor Rule will be pleased to discover that a generalized version of this rule is a special case of NGDP targeting (Koenig 2012).

targeting represents a significant theoretical step forward in achieving a framework of monetary neutrality (Hendrickson 2012: 257–58).[60]

Since an NGDP target must be consistent with the requirements of robust political economy in order to represent a self-enforcing monetary constitution, the kind of NGDP target advocated here has an extremely minimal role for the monetary authority. In particular, the kind of NGDP target consistent with the above requirements involves moving towards a market-based implementation scheme for monetary policy, based on the creation of a futures market in NGDP contracts. The monetary authority would offer to buy or sell an unlimited amount of a contract whose dollar value is tied to the desired level of NGDP. The trading of such contracts is the mechanism by which base money is either created or destroyed, incentivizing traders to harness trading strategies that will stabilize NGDP. This proposal limits the monetary authority's discretionary actions to choosing the form of the NGDP target—e.g. constant NGDP (0 percent growth), targeting the level of NGDP growth consistent with 5 percent NGDP growth per time period, or perhaps even a framework where NGDP falls in response to increases in total factor productivity (Selgin 1997). Once this target is established, the actual implementation scheme can be automated.

The proposal is heavily based off of Dowd (1994). Although Dowd's argument was written in the context of price-level stabilization, his arguments apply equally well to

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[60] Hendrickson's (2012) view that NGDP targeting can be viewed as a "technology" for achieving monetary equilibrium is characteristic of market monetarism. However, insights from Hayek's (1948) work on knowledge and the price mechanism suggest that the process by which NGDP is generated and sustained matters, and as such NGDP as a choice variable for a central bank is not the same thing as NGDP as the emergent outcome of market processes. This distinction has been noted elsewhere (Salter 2013a) but will not receive further treatment here.

stabilizing NGDP.[61] The monetary authority wishes to stabilize NGDP, Y_t, where t indexes the time period. The monetary authority must create a futures-contract instrument based on the value of Y_t[62] and then indefinitely commit itself to buy and sell this instrument for a fixed price based on the particular form of the NGDP target.[63] The buyer pays the price of the contract at time t, and the seller agrees to pay the buyer at time $t+1$ a payment comprised of (a) the value of NGDP at time $t+1$, i.e., Y_{t+1}, and (b) a factor which compensates the buyer for the time value lost by paying the buyer at t rather than at $t+1$, when the contract matures.[64]

The buyer pays the seller Y_t^c, the contract price, at time t. If the interest rate prevailing between t and $t+1$ is r_t, then a contract made at time t involves the seller at $t+1$ paying the buyer $(1+ r_t)(Y_{t+1})$. The present value for the buyer of the contract is

$$\frac{E_t(1 + r_t)Y_{t+1}}{(1 + r_t^*)} - Y_t^c$$

where E_t is the expectations operator taken at time t and r_t^* is an "appropriate" discount rate, i.e. the money-market rate of return. If $(1 + r_t)$ approximately equals $(1 + r_t^*)$—which arbitrage should ensure—then the above reduces to

$$E_t Y_{t+1} - Y_t^c.$$

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[61] See also Sumner (1989, 2006).
[62] This may be some fraction of NGDP. As of the time of writing, U.S. NGDP is approximately $16 trillion. The initial price of each contract could be, say, one one-billionth of this value, adjusted for the particular form of the desired NGDP target. Even simpler, at the start of the regime, NGDP could be normalized to one, with subsequent values decided by the desired percentage growth of target NGDP.
[63] It is assumed throughout that the monetary authority is the monopoly provider of base money, and can near-costlessly create or destroy additional balances, akin to the Fed's actions when conducting open market operations by electronically altering banks' account balances held at the Fed.
[64] This payment scheme is what leads Dowd (1994: 829) to refer to the contracts as Quasi-Futures Contracts (QFCs). In "real" futures contracts, payment is made at the time of maturity. In this case, payment at the time of the bargain is necessary to anchor the underlying variable which is being targeted.

Equilibrium requires arbitrage profits to zero, implying

$$E_t Y_{t+1} = Y_t^c.$$

Because the monetary authority is pegging Y_t^c, this should suffice to stabilize the expected future value of NGDP and hence its equilibrium value. Disequilibrium in the system will be eliminated by profit-seeking arbitrageurs. For example, if currently $E_t Y_{t+1} > Y_t^c$, market agents believe the monetary supply is expected to be too high to result in a level of NGDP consistent with its targeted value. Arbitrageurs will then buy the NGDP futures contracts for base money; this exchange will lead to a fall in the monetary base, and hence in the broader monetary aggregates, bringing expected future NGDP in line with its target value. Conversely, if currently $E_t Y_{t+1} < Y_t^c$, market agents believe the expected future money supply to be too low. "A speculator would perceive the contracts as overpriced relative to the low expected future payout, and he could make an expected present-value profit of about ... $[Y_t^c - E_t Y_{t+1}]$ ... from selling a contract" (Dowd 1994: 831). Such sales of contracts to the monetary authority would expand the monetary base, and hence the broader monetary aggregates, again bringing expected future NGDP in line with its target value.[65]

The strength of this approach lies in its eschewal of the need to discover the "one true model" of monetary policy. The undoubtedly significant heterogeneity of market actors' expectations is harnessed in a way that reinforces the underlying framework:

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[65] Because monetary policy is actually implemented by market actors, this scheme avoids the "circularity problem" outlined by Bernanke and Woodford (1997). However, the "first mover" problem discussed by Garrison and White (1997) is still a potential issue. Sumner (2006: 17-22) discusses ways this problem can be ameliorated.

Because traders' expectations are based on a wide variety of different structural

models, their forecasts will be similarly diverse. As with any futures market, in

equilibrium there will be traders taking both long and short positions. Unlike

ordinary futures markets, however, equilibrium is not established by movements

in the market price (which is fixed by the Fed at its policy goal). Instead,

equilibrium would be established as trades of … futures contracts shifted

monetary policy. (Sumner 2006: 11)

The system provides a financial incentive for agents with differing expectations to

harness their knowledge in a way that promotes rather than undermines monetary

stability. Because NGDP stabilization is the unintended consequence (from the

perspective of the individual agents) of the agents' trading behavior, it is information-

compatible; because agents have a financial interest in acting to stabilize the system, it is

incentive-compatible. It also represents an information- and incentive-compatible

situation for the monetary authority. The monetary authority's only discretionary action

would be the "stage zero" choice over the form of an NGDP target (stable NGDP, 5

percent growth path, productivity norm, etc.). Once this choice has been made, as

mentioned before, the actual implementation of the futures market can be automated. A

simple computer algorithm could keep track of the rolling target, and any human

personnel would be carrying out a predetermined and unambiguous command, akin to the

typical bureaucratic tasks associated with, say, the operations of the Fed's open market

desk, with no further room for discretion. Since the above provides a framework of

approximately neutral money and does not require heroic information or incentive

assumptions on the part of public or private actors, it fulfills the criteria necessary for self-enforcement.

Free Banking

A monetary order where the medium of exchange and unit of account co-evolve from a system of barter (Menger 1892; Kiyotaki and Wright 1993) into a state of affairs where the day-to-day media of exchange are short-term liabilities of banks of issue, redeemable in the society's money commodity, is the hallmark of a system of free banking (Fink 2011; Selgin 1988; Selgin and White 1994; White 1989; White 1995).[66] This evolutionarily established monetary order also represents a self-enforcing monetary constitution. Monetary stability is maintained by the actions of profit-maximizing banks. The crucial feedback mechanism is a bank's perception of the public's willingness to hold its notes, which is signaled through the amount of the bank's notes that return to it for redemption per operating period. Each bank of issue has a financial incentive to increase (decrease) its note issue when the public's demand to hold that bank's notes increases (falls). The unintended consequence of this course of action is the stabilization of *MV*, and hence the approximate maintenance of monetary equilibrium (Selgin 1988: ch. 3). It is important to recognize that this stabilization is achieved in an information- and incentive-compatible way. Each bank is required to know only the public's desire to redeem that bank's notes for the money commodity; the net change in a bank's money-commodity reserves provides this information. As mentioned before, each bank has a pecuniary incentive to act in the "appropriate" manner: When the public signals an

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[66] The evolution of free banking systems shows a remarkable degree of homogeneity across time and space. See the essays in Dowd (1992) for specific historical cases.

increased willingness to give the bank a zero-interest loan (i.e. hold its notes), the bank issues more notes, which are then used to finance its asset portfolio; when the public signals a decrease in this demand, the bank reduces its note issue by liquidating the appropriate amount of assets so it can be sure of meeting redemption requirements. The stabilization of the money market, and hence the minimization on real economic activity of changes in the supply of or demand to hold money, is the intention of no bank or group of banks; that it persists is a testament to the robustness of an evolutionary monetary order.

We must also consider the knowledge and incentives of non-bank agents, namely, the banks' customers, in order to pass a final judgment on whether free banking represents a self-enforcing monetary constitution. The crucial consideration here concerns bank runs—situations where depositors have reason to question the integrity of the banking system as a whole, and so each depositor seeks to redeem his bank notes for the underlying money commodity. Because bank runs (and the possible accompanying financial panic) are not irregular "sunspot" events, but depositors' rational response to what they perceive as unfavorable circumstances (Gorton 1988, 2010), a free banking system must be able to cope with its customers attempting to redeem *en masse*. Failure to do so would represent a significant systemic weakness on the part of a free banking system, rendering it unsuitable as a monetary order and failing to live up to the standards of a self-enforcing monetary constitution.

Fortunately, the historical record on free banking suggests that a ubiquitous institutional arrangement accompanying these kinds of monetary orders can cope with

this issue. This arrangement is the interbank clearinghouse.[67] Originally arising from

banks' needs to settle interbank clearing (note redemptions), the clearinghouse evolved

into an organization that monitored individual banks' portfolios in order to ensure none

of its constituent banks undertook overly risky operations, lowered the transaction costs

of securing short-term liquidity, and in some cases served as a "bankers' bank," with

constituent banks holding deposits on the clearinghouse premise (Gorton 1985; Gorton

and Mullineaux 1987). The provision of short-term liquidity is of obvious interest, given

our concern with ascertaining whether a free banking system is a version of a self-

enforcing monetary constitution. In addition to this practice, the American experience in

the pre-Fed National Banking Era shows how clearinghouses can cope with pending

financial panics.[68] During times of turbulence, the constituent banks would come together

under a single organization, temporarily suspend note redemption and publication of the

financial health of individual banks, and issue certificates drawn on the clearinghouse

organization as a whole to serve as emergency money balances for public use. This latter

function was especially important in preventing a collapse in the supply of fiduciary

media, which ever since Friedman and Schwartz (1963) has been the *sine qua non* of

demand-side economic malaise. These actions, while not preventing bank runs, certainly

mitigated their impact, preventing them from evolving into the system-crashing events

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[67] Cf. White (1989: 231): "Eventually all the banks within an economy will be connected through one or a small number of clearinghouses… [t]he histories of the best-known early clearinghouses, in London, Edinburgh, and New York, all conform to this general pattern."

[68] This response is especially noteworthy, given that the U.S. system at the time was constrained by regulations that rendered the money supply extremely inelastic to changes in money demand (Smith 1990: ch. 5).

that they were in other historical circumstances.[69] Ultimately, the interbank clearinghouse is an endogenous response to the problem raised by Diamond and Dybvig (1983) and, just as important, can stabilize the financial system even in a world with marked information and incentive frictions (Salter 2013b: 9–17).

If *laissez-faire* does result in a self-enforcing monetary constitution, then a somewhat unintuitive result follows: Contra to Buchanan (2010), there is no need for a *specific* monetary constitution: "If the right general constitutional protections for private property, contracts, and the rule of law are in place, as well as the appropriate prohibitions on politicization, there is no need for a specific or distinct constitutionalization of money" (Horwitz 2011: 332). If a society's constitution provides for the protection of private property and contract enforcement, the body of literature on the evolution of money and banking systems discussed above suggests that the features of a desirable monetary order will follow. The constitution that protects property rights and promotes contract enforcement *is* a self-enforcing monetary constitution, though it may not explicitly be intended as such.[70]

4.   Implications

The above two monetary arrangements represent improvements from the status quo in terms of their ability to approximate monetary neutrality and their robustness to incentive and information frictions. Either would be an improvement from the current

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[69] See also White (1995: 27-29) for a description of how the Edinburgh clearinghouse prevented the failure of the Ayr Bank from crashing Scotland's free banking system.

[70] That a specific monetary constitution is unnecessary does not imply that the general constitution need not have provisions *preventing* government interference with the monetary order. Cf. Horwitz (2011: 332): "A constitution might expressly prohibit the state from playing such a role, much as the First Amendment to the US Constitution does with respect to speech."

position. But it is worth discussing the conditions that dictate which of these two ought to be preferred.

Both versions of a self-enforcing monetary constitution assume general protection of property rights and contract enforcement, in an environment characterized by the rule of law. For free banking, this is sufficient; for market-based NGDP targeting, an additional institutional specification, namely, the establishment and subsidization of the NGDP futures market, is required. The arrangement which utilizes market traders to adjust the monetary base to stabilize NGDP, while a radical institutional shift from current practices, seems the lower-cost solution, at least in the short run. Using the United States as an example, the bureaucratic structure of the Fed that carries out the dictates of the FOMC could be fundamentally preserved. The FOMC would be abolished (or, more properly, expanded to include everybody with sufficient capital to trade and differing in their expectations of future nominal expenditure) and, as mentioned above, the provision of the futures contract drawn on NGDP, along with its rolling value determined by the particular form of the NGDP target chosen, could be computerized. These shifts are almost certainly lower cost than those necessary to scrap completely the Fed and revert to privately provided (inside) money. However, this may also be the arrangement's Achilles' heel: that it is less costly to switch to may imply that it is less costly to revert to later. How sure can we be that changes that leave the *fundamental* aspect of the current monetary order—monopoly provision by a public authority—in place will persist over time? Much seems to depend on whether such a change will be sufficient to insulate the new framework from recapture. Recent explorations into the independence of central

72

banks from political influence, especially the Fed (e.g. Boettke and Smith 2013a), should lead us to question seriously this assumption. Indeed, if the recent financial crisis and accompanying fiscal crises in some countries have taught us anything, it is that the "juggling trick," discussed by Adam Smith (1776: 929), of continuous increases of public debt, the deleterious effects of which are temporarily forestalled by running the printing press, is an uncomfortably realistic description of where an uncritical examination of the politicization of macroeconomic stability has led us (Boettke and Coyne 2010; Buchanan and Wagner 2000).

That institutionalizing the version of NGDP targeting discussed in this chapter would be lower cost in the short run is not sufficient to prevent giving a fair hearing to a return to *laissez-faire* in banking and the provision of money. But, just as in the case of NGDP targeting, free banking's greatest strength—its evolutionary stability—may be the source of a final verdict of impracticability. Having deviated so sharply from the evolutionary path free banking has historically taken, is a return feasible? Can we get there from here? Much of this will depend on the currency preferences of the public. Interestingly, the network benefits associated with remaining on a given currency standard, even one of fiat currency, may outweigh the possible costs associated with remaining on such a currency, namely, the relative ease of inducing its devaluation (Luther 2013; Luther and White 2011). This means that even if government monopoly over the provision of money were eliminated and banks were allowed to issue notes redeemable in, say, gold, it may be prohibitively costly to induce holders of U.S. dollars to forsake trading in the world's reserve currency.

While it is beyond the scope of this chapter to provide any kind of an empirical assessment of the associated costs and benefits, the arguments presented suggest that the issue is not just one of monetary theory narrowly conceived. The question must necessarily engage considerations of political economy, and constitutional political economy in particular. Again, both of the above arrangements depend on the maintenance of society's constitutional protections of private property and contract enforcement. This means that the constitutional political economy project, concerned with understanding how the general rules governing interpersonal conduct impact the well-being of society,[71] is necessarily tied up with the project of securing a monetary order that enables the price system to function effectively even in unfavorable epistemic and motivational environments. Although Buchanan's (2010) particular solution is questionable, his insight that a stable monetary framework and the maintenance of the general constitutional protections mentioned above go hand in hand is indispensable. To extend our understanding of one is to extend our understanding of the other. Further "advances" in monetary theory or monetary policy that do not recognize this insight will offer little in the way of permanent improvements in our monetary framework.

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[71] Cf. Brennan and Buchanan (2000: 4):
What advice can we offer ourselves in our own societies, standing as we do with the benefits of cooperation and the prospects of conflict on either hand? What aspects of our social life should we discard? Where are there "rules of social order"—institutional arrangements governing our interactions—that lead us to affect one another adversely? Where are there forces for harmony that can be mobilized? What rules—and what institutions—should we be struggling to preserve?...These questions represent the area of inquiry we term "constitutional political economy" (in the spirit of the classical political economists, for whom such questions were also central).

A THEORY OF THE DYNAMICS OF ENTANGLED POLITICAL ECONOMY WITH

APPLICATION TO THE FEDERAL RESERVE

1. Introduction

The policies of the Federal Reserve have fallen under strict academic scrutiny

since the financial crisis. Many scholars are critical of the Fed's role in handling the

crisis. Some hold that the Fed is responsible for the unsustainable rise in real estate prices

and the associated financial market bubble because it held interest rates "too low for too

long" during the early 2000s in order to combat the malaise resulting from the dot-com

crash (Beckworth 2012; Horwitz and Luther 2010; Taylor 2007, 2009; White 2008, 2009,

2012b). Others assert the Fed reacted too hesitantly in the early days of the crisis, failing

to stabilize aggregate expenditures and thereby allowing what would have been a severe

but manageable market correction to turn into the worst recession in 80 years (Hetzel

2012; Nunes and Cole 2013; Sumner 2011, 2012). Others point to the Fed's bailouts of

financial organizations as prioritizing short-term systemic health over long-term financial

stability due to the institutionalization of moral hazard (Buiter 2008; Dowd 2009; Ravier

and Lewin 2012; Roberts 2010; Salter 2013b).

This chapter also takes a critical view of the Fed, but using an alternative framework than the works cited above: that of entangled political economy, pioneered by Wagner (2009, 2012b). Entangled political economy is an alternative to the mainstream way of theorizing about the relationships between polity organizations, such as bureaucracies, and economy organizations, such as business firms. The mainstream approach to political economy, best exemplified by works such as Becker (1983), Besley (2006), Persson and Tabellini (2000), and Wittman (1989), treats the relationship between polity and economy as one of direct action upon the latter by the former. In doing so it views both polity and economy as a series of organizations whose plans are pre-reconciled, allowing each to be treated as a point-mass entity. This necessitates limiting the analysis of the relationship between economy and polity as one of equilibrated relationships taken at discrete snapshots in time. Furthermore, in analyzing hypothetical states of change via exercises in comparative statics, it views the outcomes of agents' actions as fundamentally reducible to those agents' choices. The consequence is a framework that categorizes choice and consequence as existing at the same level of complexity. In addition, these choices are understood as solutions to constrained maximization problems in scenarios where preference functions and constraints are fully defined and external to the passage of time.

To be sure, this framework has been extremely fruitful in analyzing certain aspects of the relationship between polity and economy, and many would cite the accompanying increase in understanding as both necessary and sufficient justification for

the chosen framework. Yet, as Wagner (2012: 6) notes, such an argument puts the epistemological cart before the horse:

> A choice between theoretical frameworks is typically posed on epistemological grounds by asking which framework fits better some given set of observations. Yet those very observations have been selected with some theoretical framework necessarily in the background if not in the foreground. If the frameworks suggest different types of relevant data, a choice between frameworks cannot be made just on the basis of goodness of fit … but must be suitable in light of the nature of the object being analyzed.

Undoubtedly equilibrium analysis, as an imaginary construction to be used as a theoretical tool, can help us understand the real world. This can be so even if these constructions are not founded on realistic assumptions, let alone actually exist: "Even imaginary constructions which are inconceivable, self-contradictory, or unrealizable can render useful, even indispensable services in the comprehension of reality, *provided the economist knows how to use them properly*" (Mises 2008: 237, emphasis added). The effectiveness of these analytical constructs is maximized when juxtaposed with reality, which allows us to draw insights from the dissimilarities between the construct and the world in all its messiness.

As Wagner (2012a: 7-13) notes, there are ontological grounds to go beyond equilibrium theorizing in our analyses of polity and economy, not merely for the sake of realism of assumptions, but also for the sake of developing a framework for understanding aspects of the polity-economy relationship that are less evident, if not

77

altogether ruled out, by equilibrium theorizing. These include the open-ended nature of choice in a world categorized by radical uncertainty and the existence of emergent phenomena, which necessarily render some consequences of choice to a higher level of complexity than the decision calculus from which they result (Wagner 2012b: 3-7; see also Wagner 2012a).[72] These point to the meaningfulness of apprehending *non-equilibrium*, yet still orderly, social relationships. It is for this reason that this chapter seeks to apply the framework of entangled political economy to the Fed.

The purpose of this chapter is to better understand the actions of the Fed and its effects on economy organizations in the financial sector. In Section 2, I further explain the difference between additive (equilibrium-based) and entangled political economy. I also extend the entangled political economy framework by postulating the possibility of a continuum of entanglement and describe the dynamics of how the links between polity and economy can progress to the point where the line between economy (private orderings) and polity (common pool orderings) becomes blurred. In Section 3, I apply this framework to the Fed, first by categorizing its features in line with the theory of Big Players (Koppl 2002) and then explaining how the Fed's bailouts of various financial institutions in latter part of the twentieth century and the most recent financial crisis embody the theory presented in the previous section. In Section 4, I discuss institutional changes, namely constitutional craftsmanship, that may be able to reverse and prevent entanglement. I conclude with a brief examination of the remaining questions the employment of this framework raises.

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[72] These decisions are still (and indeed, must be) analyzed using the pure logic of choice (Mises 2008: Ch. 2).

2. Two Conceptions of Political Economy

Current formulations of political economy fall into one of two types: additive and entangled. Additive political economy is the more prevalent. Wagner (2012b: 9) describes additive political economy as "a scheme of thought where economic equilibrium is conceptualized prior to political activity, with political activity then modifying that equilibrium." The entity denoted "economy" is conceived as an equilibrated set of relationships, with each agent's plans perfectly reconciled with the plans of the others, allowing the theorist to treat it as a point-mass entity (Wagner 2010: ch. 8). Correspondingly, the entity denoted "polity" is a point-mass entity existing separately from the economy that sometimes acts on the economy in order to refine the economy's equilibrium. The relationship between economy and polity is depicted in Figure 2. The economy is currently in equilibrium with characteristics the agents making up the (completely separate) polity find distasteful.[73] The polity acts upon the economy in order to direct that economy to a more preferred outcome, much as one billiard ball acting on another directs the latter ball to a more preferred location on the table (Wagner 2012b: 11).

Additive political economy seems a reasonable conception of the relationship between economy and polity. It conforms to our intuitions regarding the essential feature of political-economic action—the economy hums along in a steady-state or dynamic equilibrium until acted upon by an outside force, the "shock" from which directs the

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[73] The polity agents could be operating to correct a perceived market failure, consistent with orthodox welfare economics, or they could have decidedly less altruistic motives, as suggested by public choice theory.

Figure 2: Additive Political Economy

economy to a new equilibrium—and is amenable to the modeling techniques of neoclassical economics. However, it overlooks several nontrivial features of the social world in its attempt to extract a maximum amount of insight out of a purposefully simplified formulation. As Wagner (2012b: 12-13) notes,

> An economy is not a single entity but rather is a congeries of entities that are pursuing different plans. And polity is not some unified source of power but rather is a collection of people who interact within some framework of rules because there is no option to such rule-governed interaction once you get beyond a mere handful of people. Polity, moreover, does not truly exist outside of economy, for it draws its support from within economy.

Entangled political economy is an alternate formulation of the relationship between polity and economy that attempts to operationalize these insights. Economy and polity are no longer conceived as unified and separable point-mass entities. There are several nodes of economic activity, since plans are not assumed to be reconciled but rather are unfolding in a continuous process. There are multiple polity nodes as well, since polity is not a monolith of power but rather a loose hierarchy of bureaucracies, each seeking its own goals in ways that are only imperfectly coordinated with those of others. Instead of polity and economy operating separately, with polity occasionally acting on economy in a way characterizable from the perspective of the economic agents as an exogenous shock, polity and economy are instead both imbedded in a network of relationships. This network contains links between various organizations of both types: polity entities are linked with polity entities, economy entities are linked with economy entities, and polity entities are linked with economy entities. Furthermore, the network itself is an unintended consequence of the interrelationships between polity and economy. It is not the result of a plan, but rather is the emergent outcome of the ecology of agents' plans that make up the system (Wagner 2012b). These features are depicted graphically in Figure 3. Circles and squares represent economy and polity nodes, respectively, and the connecting lines represent the links between them.

How Entangled is Entangled?

Entangled political economy is an attempt to understand social organizations and the relationships between them "as they really are." Treating the links between economy-

polity organizations as an object of theorization raises the questions of why the links

matter and how they are generated. Once we attempt to categorize the links, we naturally

arrive at questions regarding how to quantify entanglement. Does it make sense to speak

of the polity-economy order as "more" or "less" entangled, relative to some ideal type?

Certainly some degree of entanglement is omnipresent—a complete separation of
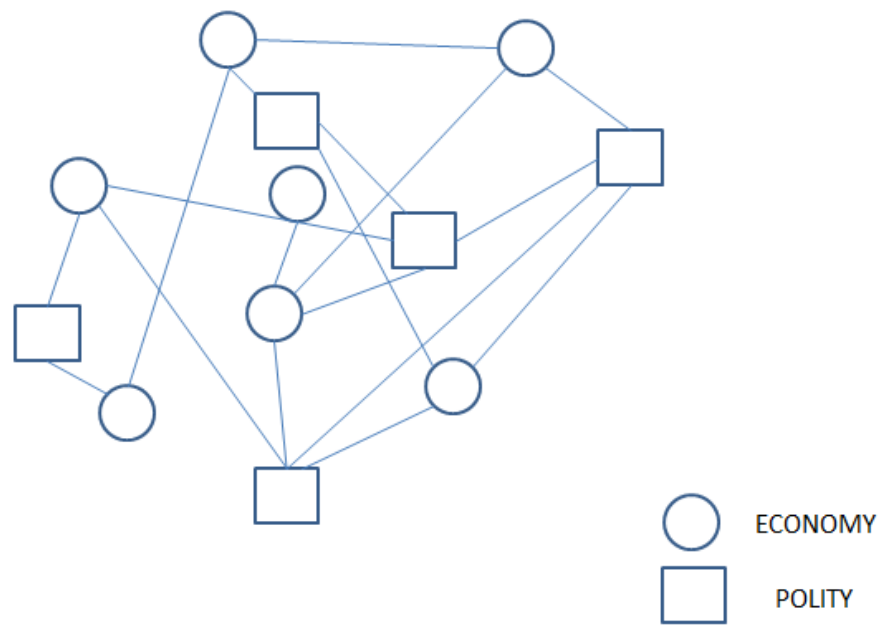

Figure 3: Entangled Political Economy

economy and polity cannot exist if both are endogenous features of the larger social

order—but as we can conceive of the relationships between polity and economy as

varying both qualitatively and quantitatively, it does appear that entanglement is a

continuum. As Podemska-Mikluch and Wagner (2012b: 3) note,

In earlier times it was reasonable to think of "political economy" as additive and separable in character, meaning that political economy denoted the product of adding a small polity to a large economy when each entity acted independently of the other. That addition would show dominance of economy and market theory over polity. The contemporary situation is different. Political economy now denotes an entangled and not an additive relationship between polity and economy. Market entities often participate actively in politics and political entities participate actively in commercial activity.

Thus the ideal type of additive political economy consists of a "night watchman" polity acting strictly as an umpire, interfering (acting on economy) only when the economic agents have violated the rules of the game. Although polity organizations can only exist by attaching themselves to economy organizations (Wagner 2012b: 16), which suggests a parasitical relationship, the "night watchman" order might better be classified as a symbiotic relationship between economy and polity, since polity is using only the amount of economy-generated revenue necessary to provide the institutional bedrock upon which economic activity is built. Perhaps the closest real-world example would be the United States from the end of the Civil War to the beginning of the Progressive Era in the second decade of the twentieth century.

At the other end of the spectrum would be entanglement so severe that the boundaries between polity and economy have blurred, if not completely evaporated. Real-world examples closer to this ideal type would be the corporate states of Fascist Italy and Germany, the Communist nations of the Soviet Bloc during the Cold War, and

perhaps even some modern-day practitioners of what is coming to be known as "state capitalism" (Aligica and Tarko 2012). Unlike the night watchman order, these relationships are decidedly non-symbiotic.[74] Conditional upon sufficient entanglement, "political enterprises within an entangled system of political economy exist parasitically upon the activities of market enterprises within that system" (Wagner 2012b: 17).

Dynamics of Entanglement

Since it is meaningful to speak of polity-economy orders as more or less entangled, the process by which these orders proceed to more or less entangled states must be elaborated. This necessitates unpacking the links between the various polity and economy organizations that comprise the order. These links are the result of conscious (purposeful) human action, but not necessarily of human design. Perhaps the most common (and innocent) link arises as the natural consequence of economy agents and polity agents interacting in their normal course of engaging in civil society. Polity and economy agents will surely live in similar neighborhoods, attend similar houses of worship, and engage in similar recreational activities, such as intramural athletics. These activities provide a sphere of commonality between economy and polity agents, which facilitate the generation and maintenance of personal relationships.

However, contact between agents may result as a consequence of polity organizations overseeing economic organizations, as required by the polity organizations' mandates. In this "professional" capacity, the relationship between agents can lead to

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[74] Both economy and polity agents at the helms of their respective organizations may benefit, but only through the imposition of costs on some third party. This will be discussed further in the analysis of triadic exchange later in the paper.

situations where both polity and economy organizations can come to have their goals skewed by repeated interaction with each other. This results in the well-known phenomena of regulatory capture and rent seeking. Similarly, the polity organization may come to practice rent extraction.

It bears repeating that, while the individual acts of rent seeking, regulatory capture, and rent extraction may be the intended result of the organization that puts this plan into motion, the overall effects on the polity-economy order are unintended, emergent phenomena. The interaction between polity and economy agents yields effects that spread beyond the boundaries of their respective organizations. To the extent that an economy organization is successful in its attempt to capture a regulatory agency or maintain a rent stream by securing a legal monopoly privilege, it necessarily erodes the discipline required by private orderings, which rely on voluntary consent for their maintenance. Suddenly the profits of the firm (typically an economy organization) are no longer strictly a function of its ability to create value for its consumers. By either altering the *de jure* rules of its activity, or securing a revenue stream which cannot be competed away, the firm *qua* private ordering has seen its boundaries change. Instead of flourishing to the extent that dealings with it are voluntary, the firm has, at least partially, engaged in parasitic behavior with respect to the overall social order. It is no longer purely a private ordering, since the terms on which it operates are now a mixture of the logic of private orderings and common orderings. The possibility of interaction between economy and polity organizations results in the polity organization exporting some of its features to the corresponding economy organization. To the extent that this blurring is visible to others,

85

it encourages other economy organizations to expend resources on capturing their overseers and securing rents, and also encourages polity organizations on the margin to begin extracting rents from economy organizations trying to engage in normal courses of business. Both types of organizations have shifted focus; they now take actions that create commonly appropriable resources out of spheres of activity once considered within the domain of private orderings. This changed focus, along with the new and visible informal rules (themselves also the emergent result of the blurring of orderings), unsurprisingly directs entrepreneurial activities away from productive sources and towards evasive and destructive sources (Baumol 1990; Podemska-Mikluch and Wagner 2012a).

It is thus conceivable that entanglement not only sustains itself, but furthers its own development. This is similar to the dynamics of interventionism outlined by Mises (2008: part 6, especially ch. 36; see also Ikeda 1997). The Misesian story is that polity, in acting upon economy to fix some undesirable outcome, produces unintended and undesirable consequence A. Polity then again acts on economy to counteract A, this time yielding unintended and undesirable outcome B. The process repeats itself without a clear termination point. However, the process developed here takes these insights one step further. Dynamic and progressive entanglement is more than the "whack-a-mole" scenario of Mises. Since entanglement necessarily involves links between the two types of organizations, and these links provide a path for the exporting of ordering rules, the result is not merely a growing regulatory bureaucracy that chokes off productive economy activity. The result is a degradation of the organizations until the boundary

between public and private becomes amorphous. Instead of an expanding bureaucracy existing parasitically off of economic organizations, we have polity and economy organizations existing parasitically off other organizations in society, even as the difference between them (and hence the logic of their orderings) becomes increasingly small.

3.   The Federal Reserve in Crisis

The Fed as a Big Player

We have seen that the degree of entanglement of a political-economic order depends on the repeated interaction stemming from the "oversight" of economy organizations by one or more polity organizations; furthermore, increased entanglement is primarily categorized by the polity organization(s) exporting some of its features to the economy organizations, blurring the distinction between private- and common-property arrangements. In order to apply this analysis to the Fed and the groups of organizations with which it interacts (i.e. the financial sector), we must first explicitly spell out the particular features of the Fed.

The Fed is a quintessential example of a Big Player: "A Big Player has three defining characteristics. He is big in the sense that his actions influence the market under study. He is insensitive to the discipline of profit and loss. He is arbitrary in the sense that his actions are based on discretion rather than any set of rules. Big Players have power and use it" (Koppl 2002: 120). Each of these will be elaborated on in turn.

Big players influence markets because of their disproportionate ability to impact the flow of economic activity, which stems from their ability to engage in practices not

available to ordinary market participants. This ability is the sidestepping of profit and loss. Because Big Players by definition acquire their resources through nonmarket means, they do not face the same set of constraints as market actors. Market actors have to give up something of value in order to gain something of greater value, and they influence the pattern of exchanges in the market as a consequence. Big Players do not; they are able to impact the pattern of exchanges on the market by fiat.[75] When added to the fact that Big Players are not bound by a tight set of predictable rules, but rather may act with discretion based on goals not tempered by market discipline, it is straightforward to see that Big Players can alter significantly market outcomes. The channels through which a Big Player does so are the cognitive expectations of market actors, and the environment in which market actors find themselves.

In terms of cognitive expectations, the actions of Big Players are often hard to predict, but profit-seeking agents have an incentive to attempt to predict a Big Player's actions, because its interventions have the potential to change the profit patterns of various lines of economic activity by intervening in markets. This redirects entrepreneurial efforts away from arbitraging away market inefficiencies (Kirzner 1973) or investing in paradigm-altering technologies and production processes (Schumpeter 1972). The allocation of resources towards enhancing one's ability to predict the actions of Big Players is privately beneficial but socially wasteful.

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[75] This does not mean Big Players (or rather the individuals whose choices determine the actions of Big Players) do not incur opportunity cost, or face other (i.e. political) constraints. It simply highlights the nature of the action differs from those taken by ordinary market actors.

Big Players also influence the market by altering the environment of the market. This is done chiefly through their impact on the filter of profit and loss. Profits and losses are extremely important signals given to firms by the market. Profits are a message that the firm is satisfying consumer value and ought to continue its activities; losses give the opposite message. At least of equal importance, firms that sustain losses will not be able to continue operation. The profit-and-loss system ensures firms that create value grow and thrive, while firms that destroy value are eliminated. However, with a Big Player redirecting the flow of resources, profit is no longer a strong signal of satisfying consumer value, and loss is no longer a strong signal of a failure to create value. By divorcing profits and losses from the economic fundamentals from whence they are generated, Big Players erode the quality of profit and loss as an efficiency-enhancing filter. Traders making profits in an environment impacted by a Big Player are more likely to have made that profit through luck or through successfully predicting the changing pattern in activity brought about by the Big Player's influence; neither is reassuring from the standpoint of the creation of consumer value. Relative to a Big Player–free environment, "[t]he individuals who remain as participants in the market are likely to have, on average, more irregular trading habits, less real understanding of the market, and inferior methods of forecasting" (Koppl 2002: 122).

Does the Fed fit the features outlined above? The Fed obviously can impact the market through its actions, else monetary policy would be impotent and hence useless as a mechanism to change market outcomes. The Fed is also immune from the normal discipline of profit and loss by virtue of its monopoly on the creation and supply of the

monetary base. The Fed also has the ability to impact market expectations and impact the

patterns of activity which are profitable. This is true in the immediate aftermath of a new

monetary policy, and can continue if the Fed attempts to influence expectations via

targeting the expected future path of a nominal variable, such as a short-term interest rate

(Woodford 2003). Lastly, the Fed has the ability to erode the effectiveness of profit and

loss as an effective signal of value creation. The recent bailouts of large financial

organizations are perhaps the best evidence of this.[76] In short, the Fed has all the essential

characteristics of a Big Player.

An Illustration of Increasing Entanglement: Key Historical Periods[77]

The unsettling dynamics outlined above seem to fit the structure of the U.S.

banking and financial sectors. The chief polity organization in this case would be the

Federal Reserve, especially its New York branch. An example of a less important, but

still relevant, polity organization is the FDIC. The economy organizations are the banks

and financial houses. In this conception, the aforementioned polity organizations acted

upon the economy organizations in an attempt to direct those economy organizations

towards a more-preferred equilibrium. In the additive model, this would be the end of the

story: The action either succeeds and no further action is necessary, or the action missed

the target, necessitating a further action. There is no possibility of entanglement

developing as the result of the two orderings coming into contact. However, in our

framework of entangled political economy, the initial contact necessarily creates links

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[76] These bailouts, along with other activities, will be discussed in greater detail later on in the section.
[77] The following accounts are not exhaustive, nor are they intended to be. Instead they are condensed
historical illustrations of the issues directly relevant to the growing entanglement of the financial sector.

between the two types of organizations; these links become the path by which the features making up the logic of orderings can be transmitted from one organization to the other. The nature of entanglement is such that the resulting state of the economy organizations is unsatisfactory to the polity agents. Further action is required, but this time the action takes place amidst the network of established links. This dynamic is depicted in Podemska-Mikluch and Wagner (2012b: 25). Each subsequent action furthers the entanglement and contributes to the blurring of orderings, until (in the limit) the line between polity and economy, between public and private, is indistinguishable.

Historically, the actions on the part of the polity organizations (Federal Reserve and FDIC) that initiated dynamics of entanglement began in the early twentieth century with the creation of deposit insurance, the separation of investment and commercial banking, and the controlling of the number of firms in the banking industry. These controls were an attempt to ensure the stability of the financial sector: By extending deposit insurance coverage to select banks only, and creating artificial scarcity rents, polity agents thought they had created an incentive-compatible set of mechanisms for greatly reducing, if not eliminating, the possibility of a systemic event (banking panic). This group of actions is best conceived not as the polity action that kicks off the dynamics of entanglement, but an "action zero" aimed at credibly committing to a policy of limited response in the event of bank irresponsibility. In other words, it was an attempt to institutionalize a framework of additive political economy.

As it turns out, these commitments were not credible. As Hetzel (2012: 153) notes, "Since the Depression, regulators and especially the Fed have not been willing for

any financial institutions beyond small community banks to fail with losses to creditors (uninsured depositors and debt holders). The fear of regulators has always been that if a debt holder suffers a loss, a general financial panic will ensue." Starting with the 1974 bailout of Franklin National, the Federal Reserve signaled it was unwilling to allow even the possibility of a systemic event, even if it meant coming to the rescue of financial institutions that had irresponsibly leveraged portfolios. Franklin National (for a time the nation's 20th largest bank, with deposits of $1.45 billion [Sinkey 1977: 80]) was in an untenable position financially due to "troubled loans in its portfolio and significant losses in foreign exchange trading (Hetzel 2012: 154). It was given access to the Fed's discount window, but contrary to the accepted wisdom of central bank lending, was not charged a penalty rate (Bordo 1990: 26). Hetzel (2012: 154) argues this event "set the standard for TBTF [Too Big To Fail]". In 1980, First Pennsylvania Bank ($9 billion in assets) also received a bailout. These policies continued into the 1980s, when the debt crises in Argentina, Brazil, and Mexico put several U.S. banks in a precarious position. The LDC (less developed countries) debt crisis saw these countries effectively default on their debt, leading a significant number of large U.S. financial organizations to become insolvent (Hetzel 2012: 156; Hetzel 2008). In 1984, Continental Illinois, a bank that used "short-term funding to leverage portfolios of long-term risky assets" also received a bailout, even though 90 percent of its $30 billion in deposits were uninsured (Hetzel 2012: 156).

TBTF policies were also extended to nonbank financial institutions. In May 1982 Drysdale Securities, a small dealer in government securities (capitalization: $20 million), "became insolvent when an increase in interest rates lowered the value of its unhedged

long position in long-term government securities" (Hetzel 2012: 158). This bailout was significant "in that it established the precedent of not allowing creditors of nonbank financial institutions to incur losses (Hetzel 2012: 158). More than a decade later, in 1998, this pattern continued with the bailout of Long-Term Capital Management (LTCM). The following account by Hetzel (2008: 220) is especially useful in seeing how the interaction between public and private actors during times of crisis help facilitate the dynamics of entanglement:

> In late September, the New York Fed helped facilitate a bailout to keep LTCM afloat. On September 22, Peter Fisher, senior vice president at the New York Fed, called a meeting at the Fed with Goldman Sachs, J. P. Morgan, the Swiss bank UBS, and Merrill Lynch. That group then held a meeting with LTCM's other large creditors.… The next day New York Fed President William McDonough adjourned the meeting to consider a bid to buy LTCM by Warren Buffet…However, [John] Merriwether [a founder of LTCM] turned down the offer. McDonough then returned to the group, which organized a consortium to keep LTCM afloat. Its members agreed to inject $3.6 billion in capital.

In testimony before Congress, Fed Chairman Alan Greenspan asserted that the LTCM intervention was necessary due to the fragile state of the financial industry as a whole, itself a result of previous interventions that muted market discipline (Hetzel 2012: 159).

These actions are the true "action one" of the polity-economy interaction. Polity agents believed they could direct the economy to a preferred outcome (zero likelihood of a systemic event) in the style of additive political economy. Instead, because this clearly

93

violated the commitment made years earlier, the private financial institutions that made

up the economy organizations received the message that any harm incurred by

irresponsible portfolio structuring would be overlooked, and even be undone, if the

failure of that financial institution meant a possibility of a financial panic. This moral

hazard theory has already been developed (Goodfriend and Lacker 1999; Hetzel 2008, ch.

16; 2012, chs. 9 and 14) and it explains the actions of U.S. financial institutions that, in

part, resulted in the crises in the first place. Ultimately the interventions of the Federal

Reserve and subsequent interaction between economy and polity agents reinforced the

implicit message of TBTF due to the fear of even a possibility of a systemic event. It also

furthered the entanglement of the financial sector.

The actions of the Fed in the most recent financial crisis, often in cooperation

with other polity organizations such as the Treasury, further exacerbated the

entanglement of the financial sector. Chairman Bernanke's (1983) views on the

disruption of interbank intermediation provided the theoretical justification for the Fed

going far beyond providing liquidity to the market, which liquidity market forces would

then price and allocate. The justification for such an unprecedented response to the crisis

was a sharp asymmetry in the costs of intervening too much vs. intervening too little:

> History teaches us that government engagement in times of severe financial crisis
>
> often arrives late, usually at a point at which most financial institutions are
>
> insolvent or nearly so. Waiting too long to act has usually led to much greater
>
> direct costs of the intervention itself and, more importantly, magnified the painful
>
> effects of financial turmoil on households and businesses. (Bernanke 2008)

On September 15, 2008, Lehman Brothers went bankrupt, creating the fear that the breakdown in financial intermediation would result in a system-wide collapse. Policy responses were aimed directly at preserving the health of banks' balance sheets. Phillip Swagel, the Treasury Assistant Secretary for Economic Policy, outlined the planned response: The toxic assets of banks would be purchased by the government, which would shore up banks' balance sheets, and this would revive the intermediation channel and get credit flowing once more (Swagel 2009). Political constraints initially held up plans to provide relief, and a solution was unable to be brokered in time to prevent the collapse of Lehman. After the Lehman bankruptcy, Secretary of the Treasury Henry Paulson and Bernanke both testified before Congress, warning that the financial system was close to freezing up completely (Hetzel 2012: 287). Congress responded by passing the Troubled Asset Relief Program (TARP) which, although implemented by the Treasury, the Fed had a significant role in designing and executing.[78,79]

TARP ultimately failed to jumpstart interbank lending. By October, public opinion had also turned against TARP. In light of this, "the Treasury turned to the Fed's balance sheet to finance the fiscal transfers required to aid banks…The Fed took on the character of a GSE set up by Congress to allocate credit to particular sectors of the economy, especially troubled banks and housing" (Hetzel 2012: 289–90). On November 25, 2008, the Fed Board of Governors created the Term Asset-Backed Securities Lending

[78] Smith et al (2012) have already provided an account of TARP from the perspective of entangled political economy. As such, the following will focus on the Fed's role, rather than the program as a whole.
[79] For example Steward (2009) provides a journalistic account of the crisis period in 2008, including the Lehman collapse, the formulation of TARP, and the subsequent bailout of AIG. Meetings during which the outlines of a policy response were formulated were held at the New York Fed, with representatives of the Treasury and the C.E.O.s of major financial firms in attendance. Timothy Geithner, then the President of the New York Fed, was also heavily involved with the formulations of these policy responses.

Facility, which arranged to buy $200 billion in asset-backed securities and consumer loans (Hetzel 2012: 290). On February 10, 2009, plans were announced to expand the program to $1 trillion. In late 2008 the Fed also launched the first round of its quantitative easing program, in which it purchases unconventional assets in an attempt to stabilize the economy. The Fed initially purchased $400 million in mortgage-backed securities and $250 million in commercial paper and toxic assets from AIG and Bear Sterns (Selgin 2012: 311). These efforts to restore health to the banking industry involved the Fed "giving up completely on its constitutional structure" and abandoning "any attempt to limit the moral hazard created by the bailouts (Hetzel 2012: 290; see also Swagel 2009: 48).

Although tranquility would eventually return to the financial sector, the Fed has yet to cease its credit policies. In September 2012, the Fed announced plans to engage in a third round of quantitative easing, purchasing an additional $40 billion per month in mortgage-backed securities, increasing its holdings of long-term securities by approximately $85 billion per month. Worryingly, the Fed announced no clear end to this program. The open-endedness of the program was solidified in December 2012, when the Fed announced operations would continue contingent on a joint target of 2.5 percent inflation and 6.5 percent unemployment. As of this writing, the Fed's balance sheet is in excess of $3 trillion, up from approximately $870 billion in August 2007.

Consequences

The consequences of Fed bailouts of the banking sector can be seen with reference to the Fed's status as a Big Player. As mentioned before, in acting on the

market, Big Players both alter the cognitive expectations of market actors and distort the feedback process by which certain market actors success and others flounder. The initial round of bailouts, those occurring before the 2007-2008 crisis, showed the attempts to institutionalize politically an environment of additive political economy were not credible. These actions strongly suggested to market actors—individuals comprising economy organizations—that the Fed would be unwilling to let uninsured depositors, and even nonbank financial organizations deemed to be sufficiently important, take losses if it meant a nontrivial possibility of a systemic event. These actions impacted the market environment by changing the traits that would be selected for in terms of perseverance. All competitive processes select for certain traits over others; which traits are selected is ultimately a function of the nature of the competitive process in question (Wagner and Yazigi 2012). The Fed's actions changed the environment not by dispelling competition, but by altering the margins on which players competed, and thus the traits the competitive process selects. While profitability is still the underlying selection mechanism, the method by which profits are accrued in the financial sector has changed; the possibility of bailouts, especially for firms deemed by polity organizations to be too big to fail, introduces a political element into the exchange calculations of the actors at the helm of economy organizations.

The Fed's response to the 2007-2008 crisis further confirmed the hypothesis that large financial organizations would be rescued in the event of a possible panic, thus further entrenching the institutionalization of moral hazard. It also exacerbated the environment described above: Further bailouts subsequently altered the environment in

which market participants acted by further elevating the importance of political calculus vis-à-vis economic calculus. The nature of exchange, itself a function of the environment, changes accordingly.

Market exchange, or rather the ideal type of market exchange portrayed in economic models such as the Edgeworth box, is dyadic. The exchanges are mutually beneficial, generating surplus for both parties involved. Dyadic exchanges can take place in an environment of separable political economy, where polity agents restrict their actions to providing the fundamental infrastructure necessary for market actors to extend social cooperation under the division of labor and reap gains from trade. The introduction of a political element to the exchange as a result of an entanglement of the political-economic order results in triadic exchange. Triadic exchange exhibits two chief differences from dyadic exchange. First, the introduction of a political element into economic calculation eliminates the commonality of mutual residual claimancy, since at least one party to the exchange (the polity organization) does not and cannot make decisions on the basis of residual claimancy (Smith et al. 2011: 50). Second, there are often third parties to any given exchange who participate involuntarily, which means exchange no longer purely creates surplus, but also involves the transferring of surplus between parties (Podemska-Mikluch and Wagner 2012a). In the context of the Fed and the financial sector, the Fed is the organization whose decision calculus is not a function of residual claimancy, and the involuntary parties to the exchange are those who will bear the costs of the bailouts, either in the form of future inflation or future taxes, i.e. the general public.

The characteristics associated with the Fed's Big Player status, especially the lack of a hard budget constraint, also merit attention because the changing nature of exchange outlined above implies this characteristic impacts economy organizations. Bailouts and other political stabilization policies do not take place in a vacuum, nor are they carried out impersonally without reference to the individuals at the helm of the polity and economy organizations in question. Journalistic accounts of the recent financial crisis (e.g. Stewart 2009) especially show that rather than being decisions made by polity agents that are then later imposed on economy agents and their respective organizations, polity and economy agents often work closely in the formulation of these policies. Policies such as TARP are not best understood as direct consequences of individual choice, but the result of an interactive bargaining process between economy agents and polity agents. The policy itself is an emergent phenomenon of the partly cooperative, partly competitive environment in which polity and economy agents interact (Wagner 2007). Journalistic accounts of the economy and polity agents often portray their actions in these sorts of environments as guided by realism and a desire to do what is necessary. For example, Stewart (2009) details the actions of Bernanke, Geithner, and Paulson, the relationships between them and the C.E.O.s of the largest financial houses in the country, and their working together to look for a solution to avert short-term financial Armageddon; Grunwald (2009) extols Bernanke's pragmatism and willingness to act in order to contain the crisis. Pragmatism and a willingness to make tough decisions are obviously desirable traits for economy and polity agents respectively, within the spheres of their own activities. However, this same spirit of pragmatism, when applied by

99

economy and polity agents when the spheres of polity and economy overlap, has adverse consequences. The commingling of economy and polity agents in a common sphere has been described by Jane Jacobs (1992: 92-111) as a worrisome interaction of carriers of commercial and guardian syndromes. Commercial and guardian entities are both vital to the flourishing of a society; each entity has its role to play in securing and producing the means that result in widespread prosperity. But when carriers of their respective syndromes interact outside their respective spheres—when the boundaries between the two are ignored in the interest of securing a short-term solution to an impending problem—the result is the creation of "monstrous moral hybrids" that feature the worst aspects of each syndrome, manifested outside the sphere in which those aspects are socially productive. It is this interaction, facilitated by the altering of the selection mechanism of the underlying environment, which can lead polity organizations to export some of their features to economy organizations. For the Fed and the financial sector, the refusal of polity agents to tolerate even the possibility of a system-wide collapse results in the erosion of the hard budget constraint that previously was a chief characteristic of a pure economy organization. As polity and economy became increasingly entangled—as repeated bailouts necessitated interaction between polity agents at the Fed and economy agents at large financial houses—the links entangling these organizations became increasingly strong, allowing the Fed to pass on to the financial houses some of its own characteristics.

The result is displayed in Figure 4, which depicts the Fed (polity organization, represented by a square) and the financial houses (economy organizations, represented by circles). The first action, the series of bailouts that occurred in the 1970s and 1980s, starts the process of entanglement. The polity organization attempts to act on the economy organization in the method of additive political economy; instead of directing these organizations to a more desired state, the action creates links between polity and economy in the form of expectations of future actions and regulatory-regulated relationships. Further action, such as the intervention in the most recent financial crisis, similarly fails to bring about the additive political economy outcome. The private organizations making up the social order, due to their links to the polity organizations, begin a transformation. Their profits are retained by the residual claimants, but their losses are socialized. This is indicative of a blurring of orderings; the polity organization has exported some of its features to the economy organizations. In this sense, the
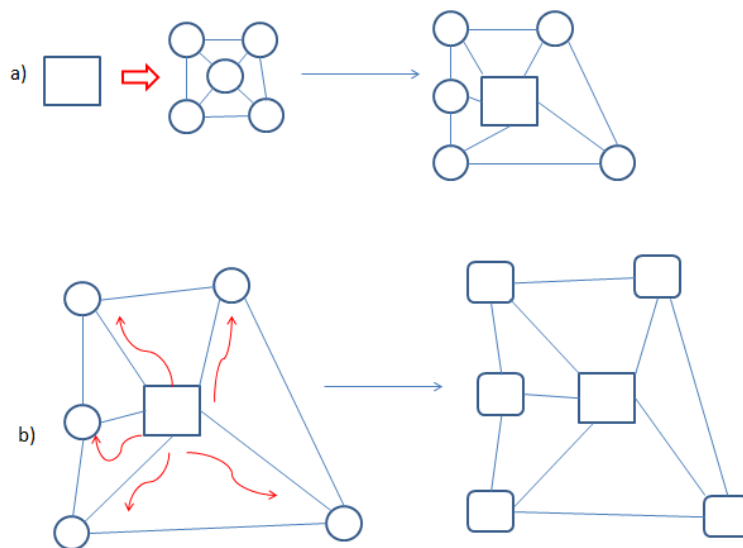

Figure 4: Dynamics of Entanglement

financial houses have taken on Big Player characteristics of their own, but still retain some characteristics of a pure economy organization. These are precisely the "monstrous moral hybrids" alluded to by Jacobs.

4.   Cutting the Gordian Knot

An increasingly entangled political-economic order comes with undesirable consequences. The most obvious of these is the erosion of exchange as a method for mutual welfare enhancement across individuals, since exchange is now triadic rather than dyadic. The hybrid of private and common orderings that feature previously pure-economy organizations also institutionalizes a system of privatized profits and socialized losses. In these circumstances, the pursuit of private interest is no longer reconcilable with beneficial social outcomes. In addition to eliminating the tendency towards exhausting gains from trade, this also will likely result in social conflict; individuals should not be expected to consent to a political-economic order where gains for the heads of polity organizations, and hybrid organizations, accrue at their expense. The undesirability of these consequences necessitates an examination as to how the dynamics of entanglement can be forestalled. Are there solutions that can institutionalize a political-economic framework where win-win relationships are the norm?

This question is the raison *raison d'être* of constitutional political economy (Brennan and Buchanan 2000: 3). The analysis of entanglement presented above proceeded under the assumption that a general rule that would prevent the Big Player polity organization from enabling the morphing of exchange relationships from dyadic to triadic (or, alternatively, prevent the economy organizations from treating the social

102

product as a common-pool resource) did not exist, or existed without sufficient force to prevent increased entanglement. Since constitutional craftsmanship involves the construction of general rules which frame the interaction of society's inhabitants in such a way as to institutionalize win-win relationships, and attempts to do so in a way that the emergent outcomes of these individuals' interactions do not impinge upon the general rules (Buchanan and Tullock 2000), it seems that the issue of preventing entanglement is fundamentally a constitutional issue.

However, the issue is almost certainly more complex than finding the "correct" set of rules to enshrine in a social contract. Despite taking place within society's general rules, rather than at the level of those rules themselves, entanglement is fundamentally an issue pertaining to the open-ended nature of choice and the consequences that emerge therefrom. Presupposing that clever constitutional craftsmanship will be sufficient to solve the problem once and for all amounts to looking for closed-form solutions to open-ended questions. Ostrom (1997) can be seen as a warning that this open-endedness means the line dividing pre- and post-constitutional action is not as clear as it may appear; the emergent consequences of individuals' behavior may erode the degree to which society's general rules, which enabled such behavior in the first place, are binding. Further complicating the issue is the insight that constitutional craftsmanship, while itself often an act of rational constructivism, makes use of principles which themselves are emergent (Hayek 2011; Runst and Wagner 2011). As such, the "right" set of rules may not be as easily accessible as one might hope.

These difficulties prevent the provision of a definitive solution, but they do not prevent the provision of preliminary suggestions regarding how to contain the entanglement described above. Since this chapter is focused on the Fed's facilitation of entanglement, solutions should take the form of suggesting specific rules for the monetary framework that, at a minimum, raise the costs of individuals engaging in the kinds of behavior that results in entanglement. The key feature of the Fed that allows it to erode the market discipline of the organizations with which it deals is its ability to create high-powered money at near-zero cost, which ultimately poses a credible commitment problem (Selgin and White 2005). This ability, well-known to the financial organizations which individuals at the helm of the Fed have felt compelled to bail out, is the source of the moral hazard that plagues the financial system. What is needed is a general rule that places parameters on this ability.

Initial research into the foundations for a monetary constitution (e.g. Yeager 1962) was aimed at doing exactly this. The call for a monetary constitution has been taken up by Buchanan (2010) in the aftermath of the financial crisis as a mechanism for curbing the undesirable outcomes of an entangled financial sector discussed in this chapter. Possible constitutional foundations for a monetary framework include a gold standard (White 2012a), a nominal income target (Sumner 2011, 2012), or even a complete separation of polity from the monetary framework, leaving the provision of money to whatever emerges out of voluntary contract (Selgin and White 1994; Horwitz 2011). This rule may or may not make use of the current infrastructure in money provision. Whether it does or not depends heavily on the assessment of the relative costs

104

involved. For example, keeping much of the current Fed infrastructure to implement a

nominal income target is among the less costly solutions in the short-run, but it is

precisely this low transition cost that may result in an erosion of the rule over time,

drifting back to the unconstrained setting that set forth entanglement in the first place. A

complete dismantling of the Fed and the relegation of money provision to the market

would make this reversion more costly, but even this may not be sufficient to prevent the

subversive interaction of guardian and commercial entities at a later date. Whatever the

specific rule chosen, it is certain it must have the following features: It must be clear

enough that ascertaining whether the organization that carries out the rule is adhering to

the rule is not prohibitively costly; it must be compatible with whatever information and

incentive frictions can be expected to impinge on the relevant agents in the course of the

rule's maintenance; and it must be conducive to promoting exchange relationships in

general, rather than for only a privileged subset of the agents whom the rule will bind.[80]

5.   Conclusion

This chapter has outlined a theory of the dynamics of entangled political

economy. According to the theory, a political-economic order can become increasingly

entangled when a Big Player polity organization, in the course of carrying out its

mandate, exports some of the features of its common-property orderings to the economy

organizations that it oversees. It is able to do so because of the nature of the relationships

existing among the agents at the helm of their respective polity and economy

organizations. This theory sheds light on the increasingly entangled nature of the U.S.

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[80] Detailing monetary rules consistent with these requirements is beyond the scope of this paper. See Salter (2013a) for two alternatives to the current monetary system that meet this challenge.

financial sector due to the actions of the Fed. Repeated bailouts, facilitated by cooperation between economy and polity agents, showed that an attempt to institutionalize a framework of additive and separable political economy was not credible; moral hazard, along with the erosion of exchange as a mechanism for mutual welfare enhancements among consenting individuals, was the result. While this framework offers insights similar to those obtainable through familiar regulatory capture, rent seeking, and rent extraction models, the fundamentally open-ended nature of the process emphasized the importance of constitutional craftsmanship as a necessary, *but not sufficient*, safeguard against the mingling of economy and polity agents outside their respective spheres.

Despite the advances this framework offers to the literature on entangled political economy, several questions remain. The first concerns the generality of the theory outlined. The application of this theory depended heavily on the idea of crisis as the facilitator of entanglement. To what extent is this theory applicable to understanding the entangled nature of the political-economic order in absence of crisis situations? The theory sheds light on outcomes during times of turbulence, but whether it is equally applicable to times of tranquility remains a question for future research.[81]

In addition, it seems reasonable to wonder why it is that orders are exported in one direction only. Why do private orderings acquire features of common orderings, but not vice versa? The answer probably lies in the fundamental incompatibility of polity

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[81] Future research must also take into account the endogeneity of crisis to entanglement.

organizations and residual claimancy, which is the hallmark of private organizations. This must be explored further before a fully satisfactory answer can be offered.

There is also the consideration of how the type of dynamic entanglement/order exporting explored in this chapter, which is isolated in nature, affects the social order as a whole. As mentioned earlier, the blurring of logics of ordering is observable, and would obviously be a source of concern to those citizens who will be liable for funding the bailouts of irresponsible financial institutions. There is likely a significant relationship between this kind of entanglement and social conflict, as exhibited by the Occupy movement. These investigations would fall within the scope of the political externalities of macroeconomic policy.

Ultimately an understanding of the entanglement process is both useful as a contribution to social ontology and as an input into the construction of safeguards, the effectiveness of which is a function of our understanding of how the process unfolds. The erosion of the filtering mechanism of the market process, the introduction of triadic exchange, and the growing illegitimacy of the political-economic order in the eyes of the individuals who comprise it are all causes for concern that an open-ended view of political economy is in a unique position to render intelligible.

APPENDIX

The two self-enforcing monetary constitutions discussed here do not necessarily represent

the only self-enforcing monetary constitutions. But it is important to understand that

variations on these arrangements, such as other versions of NGDP targeting or laissez-

faire plans for money provision, are not self-enforcing. Here I undertake a brief

discussion of similar but ultimately unsuitable proposals for illustrative purposes.

A version of NGDP targeting not consistent with the requirements of a self-

enforcing monetary constitution is one where the central bank voluntarily adopts an

NGDP target as its preferred rule. This has been recently advocated by Marcus Nunes

and Benjamin Cole (2013). Building off of how the Fed has responded to the financial

crisis, these authors insist the Fed (and all central banks) ought to target NGDP "with but

one major stimulus weapon, and that is quantitative easing" (111). Such an institutional

change requires only that the implementers of monetary policy either voluntarily adopt an

NGDP target or have such a requirement enshrined in some sort of charter. While this in

theory fulfills the demands of maintaining monetary equilibrium, this version of an

NGDP target falls short on the information and incentive margins.

In order for a central bank to reliably target nominal expenditures, its

administrators must have some idea of the functional relationship between (changes in)

the monetary base and (changes in) nominal income. This imposes a significant

knowledge burden, even if such a relationship appears empirically stable in the short run. One is reminded of Milton Friedman's advocacy of the k-percent rule, and how quickly that rule became an inadequate guide for monetary policy once V2 deviated from historical trends.

However, the incentive problem is still more worrying. Europe's experience with an explicit constitution enshrining the ECB's policy rule of price stability shows that writing a rule down on a piece of paper is not a sufficient condition to binding the monetary authority's hands. As the financial crisis has shown, the short-run political payoffs from deviating from this rule can prove sufficiently high to justify a tacit abandonment. In addition, even if a method to bind the monetary authority's hands were discovered, there is no guarantee such a method would also bind the *method* by which the monetary authority pursued its end. For a given change in the monetary base that would result in the desired level of NGDP, there are many ways through which the change can be implemented. Binding the monetary authority to a given NGDP target would not ensure that the implementation of the target did not involve differential treatment of financial institutions perceived to be crucial for the short-term stability of the financial system. In other words, an NGDP target is not inconsistent with Too Big to Fail. For example, the "top-heaviness" of the Fed's current implementation strategy for monetary policy has been criticized for benefiting too narrow a subset of connected banks and financial houses (Selgin 2012). Others (e.g. Hummel 2012, 2013) note that the nature of monetary policy in the post-crisis environment has become less about providing liquidity and more about the allocation of credit, continuing what former Fed chairman Paul

Volcker noted was "transcending certain long-embedded central banking principles and practices," and approaching a "point of no return" (Volcker 2008: 2, quoted in Selgin 2012: 311). There is no reason to suppose giving the Fed—or any central bank—an explicit rule to follow would alter these kinds of practices.

Whereas versions of NGDP targeting other than the one presented above are hamstrung primarily by incentive problems, other quasi-*laissez-faire* proposals for monetary reform primarily suffer from information incompatibilities. The most famous of these proposals involves a separation of the medium of redemption (MOR) from the medium of account (MOA) for the purpose of achieving a stable price level *and* monetary equilibrium (Greenfield and Yeager 1983; see also Dowd 1996). This entails establishing a multi-commodity MOA (a basket of goods whose prices are to be stabilized), in which bank debt is denominated; but the actual redemption of these claims would be in some other object (one more convenient to acquire and keep track of than a basket of several commodities) of equivalent MOA value. Following White (1999: 242), call the hypothetical unit of account the "valun," short for "value-unit," denominated V̵. If the MOR is a precious metal, then a V̵-denominated bank note is redeemable in however much of the precious metal would purchase the index basket of goods that is the MOA. The amount of the precious metal required to purchase the index basket would be determined by market forces. These kinds of proposals, in addition to stabilizing the price level, also result in monetary equilibrium. This is because, by construction, there is no longer any base money, so excess demands or supplies of base money, which would result in demand-side downturns or unexpected inflation, cannot exist.

These proposals envision the private sector implementing these sorts of reforms; as such, they are of a separate kind of *laissez-faire* approach to monetary institutions. But the historical record on the development of monetary systems is clear: the MOA and MOR co-evolve and are denominated in the same units. Of course, this by itself does not suggest there are no gains to be had from an arrangement that separates these functions. But it does necessitate an examination of why this has always been the case. The issue is one of information: An established currency with MOA and MOR harmonization "provides the public a default risk-free asset with defined UOA [unit of account] value that can be used as currency" (White 1999: 244). If this were not the case, the public would have to engage in a costly search for information pertaining to how sensitive their currency was to suddenly and unexpectedly losing its value. Voluntarily established monetary orders have never exhibited the separation of MOA from MOR, suggesting this particular proposal would entail information frictions associated with maintenance of desired money balances and engaging economic calculation that render it prohibitively costly. As such, it cannot be said to be robust and hence is not a self-enforcing monetary constitution.

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IS THERE A SELF-ENFORCING MONETARY CONSTITUTION?

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