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The Stability Properties of Monetary Constitutions

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Abstract: The financial crisis brought about a higher degree of monetary policy unpredictability. To anchor expectations and promote nominal stability, there is a need for predictable monetary rules or stable constitutions. This paper's purpose is to define the general expectational properties that monetary constitutions should possess to work as coordination devices. I use Buchanan's predictability criterion, as well as the expectational monetary transmission mechanism, to propose that monetary constitutions should be considered stable as long as they contain dynamics allowing self-reinforcing expectations of monetary neutrality. Self-reinforcement of expectations is an integral property of monetary constitutions for them to be agents of coordination and therefore stable. I find that these expectational properties are consistent with the stability properties established in the constitutional literature.

Keywords: constitutional political economy, monetary policy, monetary constitution, robust political economy

1 Introduction

The Great Recession has not yet produced a profound questioning of "the rules of the game" in the realm of monetary policy. The lack of zeal for transforming current monetary policy into predictable and enforceable rules translates into an absence of critical evaluation of current monetary frameworks. The status quo of monetary affairs seems to have been reinforced despite the fact that the existent literature attributes a tangible role in the financial crisis to central banks (Beckworth 2012a; Hetzel 2012; Koppl 2014; Sumner 2012). This reality suggests that the constitutional economics of monetary policy and their governing structures have not been revisited with depth. This paper, by contrast, stresses the benefits of understanding money from a constitutional

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perspective.[1] I stress the relevance of understanding monetary policy and its expected path to the concept of constitutions as coordinative devices (Ordeshook 1992).[2] Constitutions as coordinative entities should facilitate mutually advantageous relationships by providing a predictable common set of rules, procedures and expectations by which individuals can plan and collaborate (Hardin 1989). By affecting the behavior of prices, the price level and expectations, the path of monetary policy largely affects economic planning, collaboration and economic calculation. Hence monetary policy could be understood within the constitutional "coordinative device" concept (Kohler, Vanberg, and White 2015). Accordingly, this paper seeks to establish the expectational properties that monetary constitutions should possess to achieve a coordinative role or at best avoid being agents of discoordination.

Furthermore, this paper seeks to establish the expectational goals for which monetary constitutions should aim and the robust institutional way of achieving them. To do so, I use Buchanan's catallactic framework and the literature in monetary policy concerning the role of expectations. Once I define the ideal goals of monetary constitutions, I analyze the best institutional mechanism by which they can retain their constitutional stability and promote the stated goals. I show that Buchanan's concept of the exchange paradigm is incompatible with his own proposed goal of price stability (Buchanan 1962, 2010). Instead, I develop a concept of monetary constitutions' coordination properties based on the predictability of the path of the money supply, which anchors expectations at the "*micro level*" (i. e., at the agent's level) concerning how prices and nominal magnitudes behave. Monetary policy that changes unpredictably (i. e., policy changes unrelated to a given real money demand and changes in velocity) can affect economic exchanges and unanchor expectations, thereby hampering the coordinative properties of the price system (Hetzel 2012; Koppl 2014; Romer and Romer 2013).[3]

1 To see constitutional considerations of monetary affairs, see Buchanan (2010) and Kohler, Vanberg, and White (2015). This paper is unique in applying broader expectational stability properties (Hardin 1989) into monetary constitutions through analyzing the role of expectations and the constitutional process of their formation. This paper contributes through highlighting the strong relationship between monetary policy's expectational stability and the constitutional properties necessary to enhance coordination.

2 The insight that constitutions could reflect ongoing coordination games is also present in Sugden (2005). See also Hardin (1989) and Hadfield and Weingast (2013).

3 Reducing uncertainty about monetary policy does not suggest that the goal is to avoid any disturbances or change in the supply of money. A neutral money supply should also change accordingly to changes in the demand for money. Those changes, however, should be part of a predictable and credible path of monetary policy consistent with the changes of demand (Selgin 1988).

A better expectational-stability goal should be an institutional tendency toward monetary equilibrium that at the same time anchors expectations at the individual level concerning how prices behave under such a regime. In other words, it should stabilize individuals' expectations concerning how nominal magnitudes and prices will actually behave as to be predictable and accurate indicators of relative scarcity. This "micro-level" expectational stability can only be sustained under monetary constitutional orders that promote *tendencies towards monetary neutrality*. I show that this (individual focus) expectational stability is much more consistent with Buchanan's "catallactic" framework. This should generate a common and stable set of expectations concerning how the future path of the money supply will affect relative prices–in other words, it should anchor "micro-level" expectations concerning the relationship between the path of the money supply and the behavior of prices. I will draw upon the constitutional literature to understand the properties by which monetary frameworks can be considered "stable" and therefore resilient to expectational shocks. If constitutions are understood as coordinative devices (Hadfield and Weingast 2013), then the coordinative role of monetary policy should reside in the properties monetary constitutions possess to deal with epistemic and incentive problems and avoid bringing an unpredictable path of policy. These properties guide the changes in the expected future path of monetary policy, with consequences for coordination, prices, and NGDP (Sumner 2012; Woodford 2003).[4] This has implications for understanding how to establish an effective monetary constitution and its minimum requirements for robustness (Ordeshook 1992).[5] This paper claims that the robustness properties of monetary policy in order to avoid discoordination reside in maintaining stable and self-reinforcing expectations as a way to avoid expectational shocks that might destabilize aggregate demand.[6]

4 Research done on the Great Depression validates this insight. Drastic changes in the expected future path of monetary policy, given a sudden and credible institutional shift (e. g., the dollar devaluation against gold in 1933), revived inflation expectations, bringing about the Great Depression's turning point (Romer 1992; Sumner 2012; Temin and Wigmore 1990). This conveys that the expectational transmission mechanism for monetary policy is far more relevant than current money supply policies (Woodford 2003).

5 I use the definition of a monetary constitution found in Schwartz (1987, 391): "by a constitution I mean established rules, whether or not a written instrument embodies the rules." The concept is slightly broader than a constitutional rule in the narrow sense of a written explicit one (see also Brennan and Buchanan 2000 [1985]; Foley 1990).

6 The idea of constitutions as coordination is drawn from Hardin (1989) and Hayek (1978 [1960]). By establishing a predictable and stable set of rules, constitutional frameworks can be seen as coordinative devices since they allow individuals to formulate plans based on commonly shared procedures and expectations about the behavior of rules and that those rules will be upheld. A stable set of rules enables individuals to share conventions and

The literature has not consistently addressed monetary constitutions' properties concerning self-reinforcing expectations. While Salter (2014) analyzed the enforceability of monetary constitutions, there has not been specific emphasis on expectations and the specific stable set of expectations monetary constitutions should generate, nor the best institutional process to achieve them. Research comparing monetary institutional arrangements has also neglected expectations stability and, furthermore, has mainly focused on central banking and free banking, disregarding NGDP targeting (Paniagua 2015). This article addresses these gaps in the literature and contributes to identifying the expectational properties of monetary constitutions *consistent* with a catallactic order. It then suggests robust institutional mechanisms to uphold stability properties. The paper contributes to: First, identifying the role of monetary policy in anchoring individuals' expectations and the necessary self-reinforcing expectational properties. Second, based on stability properties, this paper unlike Salter (2014), arrives at a more critical position concerning the constitutional robustness of NGDP targeting. This paper argues that reforms are needed to move away from unenforceable rules and discretion, toward robust monetary systems that can provide a predictable path of monetary policy that stabilizes expectations.[7] Monetary policy should be an element that does not hinder coordination, and that capacity largely rests on its constitutional properties and robustness.[8] The intersection between constitutional political economy (CPE) and robust political economy (RPE) suggests the possibility of analyzing and comparing different frameworks' pre- and post constitutional properties while stressing the required incentive and epistemic requirements to achieve expectational goals.[9] Concerns

procedures, which eases cooperation and coordination (Hayek 1978 [1960]). Analogously, monetary constitutions determine the future path of monetary policy and hence guide the expectations of nominal aggregates and how prices behave. Having a common and predictable path of the price level and how prices behave is important for coordination, and rational economic calculation; making it easier to rely on fixed money and debt contracts. A common set of expectations enables firms to coordinate necessary changes in prices, allowing them to separate expected changes in the price level from the behavior of relative prices (Hetzel 2012, 324–327). This *does not suggest* that monetary constitutions always play such a coordinative role. In fact, unenforceable monetary constitutions have often acted as barriers that damage economic coordination by unpredictable and contractionary monetary policy (Friedman 1994).

7 Robustness refers to how well monetary constitutions can deal with epistemic and incentive problems present in their decision-making structures in order to achieve predictability of monetary policy. See more on political economy robustness in Section 3 and footnote 25.

8 The positive role of monetary constitutions for coordination comes from their *not being* agents that disrupt coordination through monetary disequilibrium and expectational unanchoring.

9 RPE allows us to compare monetary policy decisions under different institutional settings. Decision-makers' capacity to achieve "optimal targets" is based on realistic assumptions

of how to reduce monetary policy's unpredictability and institutional mechanisms to anchor expectations has not been addressed in depth in the literature, less so with a political economy and constitutional focus. This is despite the fact that policy-derived expectational shocks and changes in the expected path of monetary policy have been stressed as a key transmission mechanism of policy (Romer and Romer 2013; Woodford 2003).[10] The following section briefly reviews the Great Recession, including the possible role of central banks in causing boom-bust cycles and expectational instabilities. Section 3 establishes a predictability criterion more consistent with Buchanan's catallactic system than Buchanan's own criterion. Section 3 shows that a robust way to achieve the goals of monetary predictability resides in monetary constitutions' self-reinforcing expectational properties.[11] This is also consistent with the properties of stable constitutions (Hardin 1989). Monetary policy therefore has much more in common with constitutional stability than previously understood. I conclude by briefly analyzing free banking and NGDP targeting under these properties.

2 The Great Recession and the Necessity of Robust Constitutions

The Great Recession had major repercussions for the economics profession. Since the crisis's catastrophic events, economists have specifically emphasized analysis of a critical institution: the Federal Reserve System. The rationale behind analyzing the Fed's role lies in the systemic nature of the crisis

concerning less than perfect information and less than perfectly aligned incentives (Pennington 2011).

10 The path of policy can take different explicit forms depending on monetary institutions' policy instruments. In a context of central banking, for example, the path means the path of the Fed funds rate whereas with NGDP targeting, it means the path of nominal income growth. Unless otherwise specified, I consider the path of policy as referring broadly to the path and behavior of the money supply.

11 I take the concept of "self-reinforcing expectations" from Buchanan (1962). These expectations should emerge as the post-constitutional outcome of the ordinary operations of the system. Self-reinforcing implies that "if people are sufficiently sure that a particular result is to be achieved, their own private actions *will tend to guarantee* that their prediction becomes true" (Buchanan 1962, 170, emphasis added). Self-reinforcing expectations are a *particular form of emergent endogenous expectations* since they arise from individuals' own actions, which tend to guarantee that their expectations will prove correct and therefore stable. An example is the process of NGDP futures targeting, which anchors NGDP expectations (Sumner 2012) (see analysis in Section 3.3.).

(Hetzel 2009). Economists have criticized Federal Reserve policies from different points of view. I briefly review the two major critiques: First, the "too loose" aspect of policy during the housing boom; and second, the "too little, too late" policies during the bust. Both critiques will be shown to demonstrate different aspects of monetary disequilibrium and monetary instability, which stem inherently from constitutional fragilities.[12] In the post-crisis literature, there have been critiques concerning the Fed's apparently excessively loose monetary policy. Lower interest rates and loose monetary policy have been pointed out to have interacted with regulated financial systems that stimulated imprudent lending, which then channeled credit into the housing sector (Calomiris and Haber 2014; Taylor 2009). This period of high discretion and loose monetary policy created the special conditions, some economists argued, for lowering the interest rate below its equilibrium level. This influenced creditors to loosen lending conditions in housing, stimulating an unsustainable boom in the housing market and related sectors (Beckworth 2012b; Taylor 2009). Beckworth (2012a) pointed out that the housing boom was partly induced by highly accommodative monetary policy arising because policy makers had misunderstood productivity surges during the 2000s. These policies, Beckworth argued, reflected the Fed's institutional bias to ease monetary policy in response to any form of productivity surge (Beckworth 2012b, 47–50).

On the other hand, economists have criticized the Fed for erring on the "too little, too late" side. Right after the housing bust and at the onset of the financial turmoil, the Fed did not act promptly in stabilizing nominal income, as the velocity of broad money fell while monetary policy was relatively contractionary (Hetzel 2009).[13] This side argues that, regardless of whether the Fed enacted overly loose policies during the 2000s, these alone cannot account for the Great Recession's length and severity (Hetzel 2012). What in reality turned a moderate recession into the Great Recession was that the Fed did not act promptly to

12 Monetary disequilibrium refers to a situation in which the total money supply does not equalize with economic actors' underlying desire to hold real money balances. It is the *opposite* of a "state of affairs that prevails when there is neither an excess demand for money nor an excess supply of it at the existing level of prices" (Selgin 1988, 49). I refer to fragility here as the opposite of institutional robustness.

13 For empirical evidence, see Board of Governors (2009). Around June 2008, the FOMC tightened the expected path of monetary policy by changing the expectations of an increasing path of the federal funds rate through their hawkish statements concerning the risk of high inflation. From May to June 2008, federal funds futures increased by 50 basis points despite being in an environment of economic distress (Hetzel 2009). See also the Philadelphia Fed's "Survey of Economic Forecasters," which by late 2008 showed a drastic drop in NGDP growth expectations.

stabilize nominal spending (Woolsey 2012). This allowed NGDP to contract, which magnified the recession into a widespread crisis (Sumner 2012). According to this view, the boom wasn't the crucial element that created the extent and severity of the Great Recession, but rather, a failure to stabilize the expected path of nominal income with credibility exacerbated the financial distresses. Sumner (2012) argues that deviations in NGDP's expected future path from trend reveal changes in monetary policy's expected path; this had large influences on current asset prices and production and therefore aggregate demand (see also Romer and Romer 2013). By mid-2008, markets were expecting a monetary policy path consistent with stable NGDP growth, as during the Great Moderation period. However, the Fed and other central banks allowed inflation expectations and NGDP expectations to drift away from the Great Moderation norm (Gerlach, Hördahl, and Moessner 2011).[14] This created uncertainty about monetary policy's future path and a severe credibility problem for the existent monetary framework. This caused economic discoordination, a fall in aggregate demand and macroeconomic instability, exacerbating the previous housing correction (Sumner 2012). The crisis can be seen as a set of alternative, negative expectations that overcame the existent set of expectations of nominal aggregates. This instability created an environment of uncertainty, hampering the coordinative function of the monetary constitution depressing investment and aggregate demand. This interpretation suggests the necessity of monetary constitutions that maintain the stability of an expected path of monetary policy; which are also analogous to the expectational stabilities of nonmonetary constitutions (Hardin 1989; Ordeshook 1992). The severe macroeconomic instability came from the unanchoring of expectations and instability of NGDP's expected future path, which was generated by unpredictable monetary policy.

What matters, then, is to avoid having monetary policy deviate from what is expected, which generates instability and discoordination. Unanticipated changes to monetary policy that contravene its previous expected path can severely affect coordination in price setting and aggregate demand (Romer and

14 There is circumstantial evidence that indicates this expectational shift. Real interest rates measured by the real yield on five-year constant-maturity TIPS rose rapidly between July 15 and 24 November 2008, from 0.57 % to 4.24 % (FRED Database). Commodity and stock prices fell severely between July and November 2008 and the dollar appreciated rapidly against other major currencies (IMF Commodity price index and FRED Database). Inflation expectations measured as the five-year TIPS spread showed that the market expected rising real rates and falling inflation deviating from the 2 % trend. The TIPS spread fell from 2.72 % on July 3 to 1.50 % by September 12, and arriving at −2.23 % by late November (FRED Database). For other empirical evidence on the fall of inflation expectations, see Gerlach, Hördahl, and Moessner (2011) and Sumner (2012).

Romer 2013; Woodford 2003). The expectational shock in monetary policy at the time of the crisis affected NGDP's expected future path, which had a big effect on debt contracts and business confidence that exacerbated the Great Recession (Hetzel 2012). Predictability and credibility would have stabilized expectations of the future growth path of nominal variables when the housing bust materialized. The Fed's unnecessarily contractionary monetary policy during April and October of 2008 indicated a departure and change in the expected policy path (Hetzel 2009). This allowed inflation and nominal income expectations to drift. The contractionary change in the path of policy created a loss of credibility concerning the Fed's commitment to return to the previous path of nominal income growth. The mistake could be seen as a "*constitutional*" *failure to fully and credibly commit to a predictable and enforceable path of policy*, suggesting the constitutional fragility of central banking (Selgin and White 2005). The failure to credibly commit to a path of monetary policy that stabilizes nominal expectations has profound constitutional implications. These are issues I will explore in the next section.

If constitutional orders are conceptualized as coordinative devices, then monetary policy's expected path (which affects nominal income and prices) can be analyzed broadly within the framework of monetary constitutions. As with other types of constitutions, the constitution of monetary policy therefore should be robust enough to safeguard the framework from endogenous human and political failures to uphold stability of expectations. Robustness implies possessing mechanisms to uphold a fully credible constitutional order so it can avoid monetary unpredictability and unanchoring of expectations. Changes in policy's expected path have far more important consequences than current policy changes (Woodford 2003). Monetary constitutions, based on their pre-constitutional structures, determine the dynamics and incentives of how decision-makers decide on monetary policy through time. Monetary frameworks largely determine the expectations of the path of policy since they bind policy makers with their rules and incentive mechanisms. This extends Woodford's (2003) insight by acknowledging that the expected path of monetary policy is largely determined by the constitutional structure and its properties in avoiding credibility problems. As the Great Recession shows, central banking frameworks do not possess these properties. Therefore, they could be considered an unstable constitution or a *fragile system*.[15] The crisis also indicates that systems that allow

15 This is consistent with the findings of epistemic and incentive fragilities present in central banking arrangements (Beckworth 2012b; Paniagua 2015; White 2013). The boom-bust experience of the Great Recession also shows central banking as a fragile monetary constitution in Taleb's (2012) antifragility framework (see also White 2013). Antifragility is the property of

their nominal anchors and monetary policy to be unpredictable have constitutional properties that make them inherently fragile or prone to expectational unanchoring due to fallible and arbitrarily decision-making. The conclusion is that a lack of an enforceable framework gave decision-makers the freedom to encourage the formation of a housing boom and then allow an unnecessary monetary contraction to develop. The recession suggests that monetary disequilibria and expectational shocks are in reality *inherent outcomes* of post-constitutional dynamics in which errors and unpredictability of policy making are allowed to emerge endogenously from the defective rules and incentive structures. Hence, patterns of macroeconomic outcomes, analogous to political outcomes, are constitutionally dependent. This indicate the need for a monetary "constitutional attitude" (Buchanan 1962).

3 The Constitutional Political Economy of Monetary Frameworks

Buchanan's constitutional research program, situated within the exchange paradigm, tries to understand the properties of the "rules of the game" and the mechanisms through which they affect individuals' actions and sustain the exhaustion of gains from trade (Buchanan 1990; Congleton 2014). Constitutional political economy discusses how the rules will work within real settings and how the frameworks, rules and their properties will affect and guide interactions among fallible individuals at the post-constitutional level, as well as their implications for coordination and welfare (Brennan and Buchanan 2000 [1985]).[16] In addition, CPE studies how to choose mechanisms that set a framework in which individuals have rewards and incentives in order to direct their activities into unintended or deliberate wealth-enhancing activities (Buchanan 2008). This opens the field of inquiry, including for monetary policy, to the rational choices societies can make about selecting constraints and rules that may bind individuals' behavior (Congleton 2014). Buchanan's work emphasized

systems that can potentially gain strength from stressors and learn from failure. Under this view, central banking monetary policy has been far from showing gains from economic stressors. Moreover, recent policy making, both in exacerbating the boom and allowing a bust, has proved to be particularly faulty at learning from past related experiences (Beckworth 2012b; Friedman 1994).

16 Constitutional political economy is concerned with a broader concept of rules. Rules are to be seen not only as written, enforceable rules, but also as institutional frameworks of unwritten but enforceable rules and procedures (Foley 1990).

that "we must distinguish between pre- and post- constitutional levels of analysis. Pre-constitutional analysis opens up the discourse over the rules of the game, while post-constitutional analysis reflects an examination of the strategies players adopt within the defined rules" (Boettke 1998, 23). It is precisely the emphasis on the back and forth between these analytical levels that must direct focus on monetary affairs.

Pre-constitutional analysis should search for robust reforms for monetary procedures and frameworks, and thereafter determine the monetary policy strategies policy makers can follow within that framework. Reforms must consider that each monetary rule generates different post-constitutional monetary dynamics, so they will deal differently with potential deviations from a monetary-predictability criterion. Buchanan's exchange paradigm (or catallactic-order paradigm) aims at allowing individuals to seek to exhaust the gains from trade and collaborate in the economic order (Buchanan [1978] 1964). Since most economic transactions in the catallactic order are performed through the medium of exchange, this implicitly requires a constitutional understanding of how monetary policy could affect that order. A stable monetary constitution should thus play a crucial role in Buchanan's concept of economics as the science of exchange and therefore falls within the CPE research project. In addition, how monetary constitutions affect human behavior and expectations is dependent on how the post-constitutional dynamics generate deviation from monetary neutrality and unpredictability of the money supply's path, which could affect what Buchanan calls "sophisticated catallactics" (Buchanan 1978 [1964]). To function most effectively, the catallactic system of exchanges requires that monetary policy should not disturb relative prices and individuals' expectations concerning how prices and the price level will behave (Friedman 1994; Lucas 1972). In this sense, money should aim toward being *as neutral as possible* for current exchanges and prices and also to stabilize nominal expectations of the future behavior of income and the price level.[17] In the previous section, I reviewed how changes to policies' expected future path can severely affect current economic conditions and coordination. The Great Recession and the Great Depression are historical examples of these expectational shifts due to sudden changes in the

17 Monetary equilibrium is a theoretical state in which *actual* money balances are exactly equal to economic actors' *desired* real money balances at any given time at the existent price level. Monetary disequilibrium is the situation in which there are incongruences between the actual money balances and individuals' desired balances, which brings outcomes adverse to market coordination (Horwitz 2000; Yeager 1986). I *do not* suggest that a state of full money neutrality is attainable in the real world. The concern should be in fostering monetary institutions that can promote *tendencies to diminish the likelihood* of severe and persistent monetary disequilibrium and expectational unanchoring.

monetary-policy path.[18] This suggests that the greatest source of macroeconomic instability comes from unpredictability of monetary policy and radical expectational shifts that stem from unwarranted changes in policy making. Post-constitutional dynamics can severely affect expectations by unanchoring them, depressing aggregate demand. Societies should implement monetary constitutions so that their pre-constitutional structures bind decision-makers' actions, allowing dynamics to emerge that generate a credible path of expected monetary policy. The focus should be on comparing monetary constitutions' incentive and epistemic structures so the post-constitutional dynamics that arise from them stabilize expectations of monetary policy in a credible way and *consistent with a path of the money supply that promotes (albeit less than perfectly) money neutrality*.

Buchanan's concept of the complex network of exchange and its working implicitly depends on a robust monetary constitution that anchors expectations and is neutral to the allocative signals of the price system. Monetary constitutions that maintain stability properties (a stable set of expectations consistent with tendencies toward monetary equilibrium) could improve coordination. They do so by anchoring individuals' expectations that prices and the price level *will not be affected* by money imbalances and policy shocks. Individuals' capacities to cooperate and sustainably exhaust the gains from trade within a catallactic order depends on anchoring their expectations that prices will accurately convey information of the real economy and relative scarcity. Individuals can coordinate their plans by relying on the predictability of the price system and nominal magnitudes *as accurate and prompt conveyors* of underlying decentralized market knowledge. This expectational stability environment fully enhances economic planning and rational economic calculation (Yeager 1986).

18 For evidence concerning shifts in expectations during the Great Depression, see Hetzel (2012, chapters 4 and 5), Romer (1992) and Romer and Romer (2013). Contractionary monetary policy in the form of inaction or ceasing to lower the federal funds rate during the Great Recession, under the context of a severe housing correction and economic weakening, led to a contractionary change in the expected path of policy, worsening conditions regarding present aggregate demand. The Fed lowered the funds rate only by one-quarter of a percentage point between 18 March and 8 October 2008, while economic conditions worsened and real consumption and non-farm payroll employment fell drastically (Hetzel 2012, 208–214). The Fed's hawkish rhetoric about inflation and its overemphasis on headline inflation during the first half of 2008 started shifting expectations toward a path of contractionary policy, as reflected in the increase of six-month federal funds futures between April and August (Federal Reserve Bank of St. Louis, *U.S. Financial Data*). This contractionary expected path intensified further by the September 16th meeting, in which, despite Lehman's bankruptcy, the Fed kept the target rate at 2 %, causing inflation expectations measured by the five-year TIPS spread to fall to 1.04 %the next day (FRED Database).

They do so, by promoting tendencies toward monetary neutrality, allowing the price system to achieve its full epistemic role (Horwitz 2000). A lack of enforceable commitment in monetary policy opens the possibility that policy makers can deviate from the expected path of policy, allowing expectations of nominal income and prices to become unanchored. Monetary constitutions can be considered stable *if they diminish monetary and expectational disruptions* enabling the exchange network to allocate resources to their highest-valued uses. At the post-constitutional level, this lets actors exhaust the gains from trade by predictably relying on money neutrality in the network of the price system. The framework outlined here provides us with two fundamental elements. First, it provides the predictability criterion (Buchanan 1962) by which rules can be compared. Second, it offers a way to evaluate the rules' post-constitutional robustness and how they can promote emergent properties of the predictability criterion even when political pressure and human fragility are present.

3.1 Buchanan's Predictability Criterion Reconsidered

The key lesson from the Great Recession is that a crucial property of monetary constitutions is the predictability of the future path of monetary policy and the expectations it generates for economic actors (Beckworth 2012b; Hetzel 2009; Koppl 2014; Romer and Romer 2013). Monetary-policy predictability, Buchanan argued, is desirable because it improves forward-looking coordination in economic exchanges. Credibly stabilizing the path of a nominal variable helps to provide a common anchor on which individuals can coordinate and compare their alternative future plans and price-setting strategies based on common expectations. Coordinating individuals' expectations of nominal variables promotes coordination by organizing the future setting of prices and debt and labor contracts in a way that allows economic actors to separate fluctuations of the known path of the price level from the normal behavior of relative prices (Hetzel 2009). Fully credible predictability makes money a less disturbing element in the workings of the price system (Lucas 1972; 1996).[19] This suggests that what is institutionally needed might lie beyond some specific formula or simple rules for

19 If monetary policy is conducted in a way that causes the money supply to fluctuate unpredictably and unrelated to the demand for money, the price level and relative prices will move in an unpredictable fashion. This nominal unpredictability, which stems from monetary policy disassociated from the demand for money, damages the ability of the price system to work as numeraire, undermining its epistemic role in price setting and economic coordination (Yeager 1986).

conducting policy (Friedman 2014 [1960]; Taylor 1999). There is the need instead for richer constitutional structures that generate post-constitutional dynamics that maintain the stability properties of expectations within a fully credible, enforceable system.[20] I first define a meaningful criterion for predictability that enhances market exchanges. Just because a given monetary-policy outcome is predictable at the aggregated level *does not make it necessarily desirable* as coordinative and wealth-enhancing to economic actors in the network at the microeconomic level. After all, what Buchanan's catallactics seek to achieve is facilitating exchanges and coordination among entities *at the individual level* (Horwitz 2011). Hence, societies should aim for a predictable monetary constitution that is fully compatible with Buchanan's catallactics.

Buchanan (1962, 2010) advocated an explicit constitutionalization in order to achieve predictability in the value of money, since it would remove uncertainty about the future movements of the general price level. Stability of the price level could, Buchanan argued, lead to "greater economic efficiency" since money can act as a stable and predictable measure of value, useful for intertemporal assessment of comparative economic value (Buchanan 1962). This enables economic evaluations and rational comparisons based on the stability of money's purchasing power. Money, he believed, in its role as a unit of account, much like weights and measures, should have a stable and defined value so that economic activities can thrive upon the confidence in the accuracy of the monetary "scale." Buchanan, however, disregarded the incompatibility between a stable price level and monetary neutrality.[21] Stability of expectations is important, *but expectational stability must be compatible with a framework that*

20 There are several problems with both the Friedman and Taylor rule. The Friedman *k*-rule is unable to maintain monetary equilibrium in the face of sudden fluctuations in velocity and demand for money. Hence, it does not produce money neutrality. A Taylor rule has been proven quite successful in helping central banks to stabilize expectations and is considered to have played a stabilizing role during the Great Moderation (Taylor 2009, 2012). However, the Taylor rule has only been implemented "implicitly" by the Fed, and therefore there is no binding rule or explicit constitutional mechanism that enforces it. In fact, the several deviations of the Fed's procedures during the 2000s are evidence of its lack of constitutional robustness and enforceability (Hetzel 2012). Furthermore, the specificity and estimation of its parameters imply a severe epistemic burden on policy makers, making the rule extremely fragile to epistemic and information imperfections. The Taylor rule, due to its lack of enforceability and strong epistemic assumptions, can deviate from the expected path of policy and therefore promote non-neutrality and expectational instability.

21 The incompatibility between a stable price level and money neutrality was pointed out by Hayek as early as 1925 (Hayek 1999 [1925]). Hayek argued that stabilizing the price level in the face of a growing economy implies stabilizing an aggregated nominal magnitude at the cost of monetary injections that distort interest rates and relative prices. Hence price level stability in a

promotes money neutrality. This has deep implications when evaluating monetary constitutions such as NGDP futures targeting (see Section 3.3.). Monetary frameworks should provide a stable setting in which actors can trade in and fully rely on prices as epistemic market signals, in such an environment, they can credibly expect that money supply changes will not drastically distort relative prices, hence nor their transactions and economic plans (Brennan and Buchanan 1981). A predictability criterion allows us then, to compare how alternative constitutions might seek to achieve or move toward it. Unlike Buchanan, I argue that a superior criterion is for *monetary policy to seek to minimize nominal distortions*, and for money to be as neutral as possible with respect to relative prices. This allows avoiding expectational instabilities concerning how nominal aggregates and prices will behave under a neutrality environment.[22]

The market's emergent competitive solution and its allocative efficiency depend on money prices accurately communicating underlying fundamentals by having monetary institutions not introduce nominal and expectational distortions. How efficient the network of exchanges develops depends on the price system's predictability of working properly under monetary neutrality rather than a general stability of the price level. Anchoring expectations should focus on stabilizing the price system's behavior and working properties concomitant with money neutrality, which allows "micro-level" coordination and expectational stability of the role of prices as accurate market signals. Under those conditions, firms and individuals can rely on intertemporal prices to accordingly and smoothly coordinate and timely adjust their economic actions (Horwitz 2000). This enlarges the possibilities to gain from trade and cooperation. Instead, if the general price level is stabilized, this will not minimize monetary-induced price changes when the economy experiences gains in productivity since the general price level should tend to fall to reflect falling prices (Selgin 1997). Allowing monetary distortions necessary to keep the general price level stable, stabilizes expectations of the general price level *at the expense of* not

growing economy generates "implicit inflation" (Selgin 1997). I am indebted to an anonymous referee for pointing out this relationship.

22 I implicitly assume in the arguments concerning the behavior of nominal magnitudes a system that seeks to promote money neutrality as if following a "productivity norm" (Selgin 1997). The expectational properties in an environment that promotes nominal neutrality refers to the stability of expectations that prices will have a downward tendency in the face of specific growing productivities; the expectations that the general price level will accurately vary and change downwards in order to reflect permanent changes in the costs of production. Expectations that nominal income will vary and grow at a rate equal to the growth rate of real factor inputs (Selgin 1997).

allowing different sets of prices and the price level to reflect underlying changes in productivity. This potentially increases signal-extraction costs for economic actors – that is, the cost to disentangle real productivity effects from monetary effects (Lucas 1972; 1996). Stabilizing an aggregated nominal magnitude might in fact be predictable at a "macro-level" but at the cost of potentially producing unpredictability within the real network of exchanges at the microeconomic or individual level. In other words, *not all macroeconomic nominal stability of expectations is consistent with expectations of neutrality at the individual level*. Stability of expectations of the general price level might be unable to underpin the stability of the behavior of disaggregated prices that are concomitant with money neutrality.[23] To be consistent with neutrality, constitutions that aim at anchoring the expectations of the future path of the money supply have a very advantageous characteristic since the price level and nominal aggregate magnitudes remain *predictably flexible* in the eventuality of aggregate supply shocks and productivity enhancements (Selgin 1997). Hence the price level will be expected to rise in the event of a negative supply shock and expected to fall if productivity surges. Such a form of predictability of nominal variables is "epistemologically superior" as precise market signals that accurately reflect underlying productivity enhancements and scarcity conditions within the catallactic system (Selgin 1997, 22–23).

Under a robust constitution, individuals find market prices, interest rates, and nominal magnitudes to be more reliable market signals of underlying productivity changes and better guides to sustainable intertemporal allocation of resources. In other words, individuals will find that market prices and interest rates are more credible and reliable guides towards a sustainable intertemporal allocation of resources. Robust systems could, instead of relying on an external or top-down decision-maker to stabilize expectations, potentially rely on decentralized individuals' actions at the post-constitutional level to maintain the

23 For a detailed exposition of the difference between the predictability of the general price level and the predictability of monetary neutrality, see Selgin (1997). Horwitz (2011) argues that the predictability of the general price level is a *'crude' form of macro-predictability* since, although predictable in the aggregate, it might hide microeconomic uncertainty and does not minimize monetary disequilibrium. In cases of growing economies, productivity causes prices of final goods to fall, and stability of the general price level requires unnecessary monetary injections, causing micro unpredictability to sustain it. This creates uncertainty about how monetary policy will in fact affect relative prices in specific sectors that are becoming more productive, affecting resource allocation. Macro-predictability in the form of price level stability could then come at the cost of lacking predictability and non-neutrality in individual markets. Hence it is not because the general price level is predictable that *makes it necessarily desirable* if money is to remain neutral to the allocative processes of the catallactic order.

system's endogenous expectational stability (Selgin and White 2005). The self-reinforcement of expectations can potentially eliminate the risk of having a decision-maker who allows for expectational shocks due to incentive misalignments or political pressures.

3.2 Self-reinforcing Expectations as Robustness

I will focus on determining the institutional means of how to maintain the aforementioned stability properties. In order to achieve predictability, monetary constitutions should seek consistent and credible rules (Sutter 1997). Participants in the post-constitutional "monetary game" should form expectations in a way that is consistent with the framework's systematic behavior and its expected behavior given its constraints and the decision-makers involved. If the framework's operation is analyzed under political economy considerations, then its procedures depends on possibly fallible decision-makers prone to political pressures and epistemic limitations (Pennington 2011). Hence, given this reality, how can the appropriate predictability criterion be fully upheld? Monetary arrangements that transfer the responsibility of policy to public authorities or bureaucratic decision-makers who are immune to legal and reputational penalties are prone to generate credibility crises (Selgin and White 2005). The constitutional stability properties of expectations should be analyzed with RPE considerations. Robust political economy allows us to evaluate and compare institutional arrangements under more realistic assumptions concerning human (epistemic) capabilities and incentives. Robustness refers to "a political economic arrangement's ability to produce social welfare-enhancing outcomes in the face of deviations from ideal assumptions about individuals' motivations and information" (Leeson and Subrick 2006, 107).[24] The degree to which constitutional frameworks could be considered robust or fragile depend, first, on whether they possess *institutional tendencies* to move toward the benchmark of the predictability criterion and expectational stability explored. Second, robustness depends on how the tendencies toward predictability can emerge given worst-case-scenario assumptions concerning decision-makers' motivations and information. Fragile institutions, then, are ones that are unable to promote the

24 A key aspect of the RPE literature is its application to evaluating alternative institutional arrangements while discarding unrealistic assumptions. This enables comparing institutions according to their robustness in achieving a certain benchmark. The scope of this paper is largely to use CPE and RPE to show that a crucial stability property of expectations can only be achieved through self-reinforcing processes.

objectives of neutral monetary policy and stability of expectations when imperfect knowledge and imperfect benevolence are present.

Under reasonable assumptions of human endowments, the analysis should focus on understanding how monetary constitutions can achieve stability of expectations based on that imperfect reality. Buchanan suggested that, to robustly maintain the predictability of a stable price level, institutions should aim to uphold it endogenously through the normal functioning of the system – or in other words, by relying on post-constitutional dynamics in the form of endogenous expectational anchoring as an attempt to sidestep informational and incentive problems (Buchanan 1962, 163–165). The endogenous aspect of expectations that emerges from the decentralized decisions of economic actors not only could avoid epistemic and public choice problems, but would also be consistent with the required properties of "stable constitutions" when seen as coordinative devices (Hardin 1989). This requires that stable constitutions *avoid seeking enforcement properties* and instead establish conventions and procedures so that stability arises from and is maintained by the self-reinforcing expectations about people's actions at the post-constitutional level (Ordeshook 1992). This requires an endogenous set of expectations that is able to overcome alternative destabilizing sets. Monetary policy's capacity to act as a coordinative device depends on a set of credible conventions that can stabilize expectations concerning the behavior of nominal aggregates, and of how prices will behave given a credible path of the money supply. Buchanan (1962) therefore established that the normative criterion can most effectively be achieved through rules allowing predictability to emerge – through the "normal ordinary operations of private decision-making at the post-constitutional level" (Buchanan 1962, 164).[25] This endogenous predictability is consistent with Buchanan's suggestion of "self-reinforcing expectations" (Buchanan 1962, 170) as a way to sidestep credibility problems. Systems in which money neutrality's predictability emerges as a post-constitutional process generate a set of stable expectations about how nominal magnitudes and prices will behave.[26] When expectations are anchored in an environment that promotes

25 This relates to institutional robustness as the capacity of a constitutional framework to be able to thrive or at least perform relatively well in situations of stress (Leeson and Subrick 2006). Institutions' robustness relates to their capacity to promote wealth-enhancing goals, with the constitutions' capacity to uphold the predictability criterion arising from the system's normal functioning even with severe deviations from ideal assumptions.

26 The expected future path of nominal variables in a system that seeks monetary equilibrium will depend specifically on which monetary standard the economy is operating under. For simplicity, I consider the expected path of nominal variables as if under a free banking arrangement or a "productivity norm" rule in a small, open economy under a commodity standard growing faster than the rest of the world. Aiming at maintaining monetary equilibrium

tendencies toward neutrality, individuals expect nominal variables such as prices and nominal aggregates to behave in an associated way that they accurately reflect signals of real factor inputs' growth and productivity enhancements. Robust constitutions' properties of self-reinforcing expectations bolster rather than undermine the monetary policy's expected path, reinforcing macroeconomic stability. By promoting error corrections, robust monetary constitutions could therefore be seen as "antifragile institutions" (Taleb 2012).[27] Under self-reinforcing expectations, the post-constitutional interactions of decision-makers should define monetary policy's guidelines: they respond in such a way that their actions and expectations reinforce the expected policy path rather than undermine it, isolating the economy from expectational shocks (Sumner 2012). Monetary constitutions that promote these sets of emergent antifragile properties should be encouraged (Taleb 2012; White 2013).

Systems that try to stabilize and anchor market expectations from the outside (top-down policy approach) dissociate policy from the emergence of expectations. They are also subject to public choice considerations and fallibility problems when decision-makers are not omniscient or benevolent (like in the case of the Great Recession). Credibility is fundamental in guiding market expectations, but as Buchanan pointed out, the best way to fully solve the problem of expectational anchoring is through sidestepping it by stabilizing expectations through their own endogenous formation. This stability of expectations seems to be far more fundamental for constitutional robustness than what has been stressed in the monetary constitution literature (Kohler, Vanberg, and White 2015; Salter 2014). The self-reinforcement of expectations allows sidestepping public choice problems related to political pressure and also imperfect knowledge that might plague policy makers in top-down monetary arrangements. In addition, self-reinforcing expectations concerning a path of the money supply concomitant with money neutrality (or a path that seeks to minimize monetary disequilibria) can provide a common set of expectations concerning how disaggregated prices will behave *given* that credible path of

through, for example, free banking implies (as an unintended outcome), a growth path of nominal income equal to real factor growth (Selgin, 1997, 64).

27 Robust monetary frameworks can also be considered *antifragile* in Taleb's (2012) framework. Robust constitutions are antifragile since they obtain their stability and anchoring of expectations as an unintentional outcome of decentralized decision-making, despite the randomness and limitations of the actors involved. Hence they "gain from disorder" and decentralized decision-making tinkering. Antifragile institutions "thrive and grow when exposed to volatility, randomness, [and] disorder" (Taleb 2012, 3). Hence, systems should gain macroeconomic stability from decentralized changes in decision-making. On the antifragility of banking, see White (2013).

the money supply. The endogenous stability concerning how prices and aggregates behave under a framework that promotes strong tendencies towards money neutrality potentially avoids trying to stabilize expectations of the general price level or other nominal aggregates that might prove *inconsistent* with individuals' heterogeneous expectations concerning the behavior of relative prices at the local level (Horwitz 2011).[28]

In sum, robust constitutions are the ones that can generate tendencies to uphold the expectational stability property and that could maintain those tendencies despite imperfect benevolence and imperfect information of the decision-makers involved. A fundamental insight from this perspective is that robust monetary frameworks *do not necessarily depend on explicit constitutional provisos* or explicit rules (Buchanan 1962, 2010). Instead, they depend on specific post-constitutional dynamics that are guided by contextual knowledge and incentive structures, which lead to self-reinforcing expectational anchoring. This is consistent with seeking to turn monetary policy into a stable (not necessarily explicit) constitutional order that regulates long-term patterns of socio-economic interactions (Hardin 1989). This indicates that "unwritten" (implicit) monetary constitutions can provide stronger long-term stability of expectations than written ones, as long as they possess the expectational stability properties through self-reinforcement (Foley 1990). Counterintuitively, this suggests that unwritten monetary constitutions might be more stable and robust than previously recognized. This validates Horwitz's (2011) proposition about the benefits of an unwritten or implicit monetary constitution: instead of articulating a specific written rule concerning money, it simply promotes competition and "protects rights to property, contract, and exchange and sets limits on democratic process" (Horwitz 2011, 331).

3.3 A Brief Constitutional Analysis

Monetary frameworks should recognize the constitutional stability challenges. They should promote post-constitutional dynamics that ensure predictability of monetary policy and the self-reinforcement of expectations. Given the stability properties established, I will now briefly develop a comparative examination. I analyze how free banking and NGDP targeting could possess the outlined

28 The emergence of stable expectations of money neutrality as an emergent property from post-constitutional dynamics also bypasses the "circularity problem" that affects different forms of monetary policy aiming to stabilize expectations through exogenous top-down forms of policy targeting (Bernanke and Woodford 1997).

properties to see whether they can be considered stable monetary constitutions.[29] Regarding a market-based form of NGDP futures targeting as proposed by Sumner (1989, 2012), it is not altogether clear whether the expectational nominal anchoring of this system really anchors expectations consistent with monetary policy neutrality. The self-reinforcing expectations around a defined, stable future path of the price level, or NGDP growth in this case decided *ex ante* by an authority, is exogenous and different in nature and outcome to the catallactic order and disassociated from the actual expectations that would have emerged post-constitutionally *ex post*. These a priori defined "macro-level" expectations are not homologous in nature and process to the post-constitutional emergence of expectations concerning the path of a flexible price level and NGDP growth *consistent* with a monetary policy seeking to uphold neutrality (see footnote 26). Furthermore, since nominal aggregates are the emergent consequence of the catallactic order, their specific values and growth paths will remain unknown prior to the process of unfolding exchanges. NGDP targeting stabilizes expectations of a fix growth path of nominal income defined and known *arbitrarily ex ante* (Sumner 2012); this is entirely different to the development of a predictable path of growth of nominal income *a priori unknown* that emerges endogenously but unintendedly from the workings of a system that seeks to correct individuals' money imbalances (Selgin 1988; 1997). Free banking, by contrast, stabilizes expectations of a growth path of nominal income and stabilizes expectations of how prices behave under productivity surges ex post (Selgin, 1997). In other words, by promptly correcting monetary disequilibria, free banking promotes tendencies toward money neutrality.[30] This self-enforcing credible process allows the post-constitutional emergence of a common set of expectations concerning how disaggregated prices and NGDP will behave *given* this credible (self-enforceable) environment of how the money supply works.[31] By relying on individuals' capacities to hold and redeem notes, free banking achieves self-reinforcing "micro-level" expectations about the

29 I analyze solely these two systems since they are the ones that rely on post-constitutional dynamics to uphold their policy objectives. For a thorough review of the properties of free banking and NGDP targeting, see Selgin (1988) and Sumner (1989, 2012).

30 This *does not* suggest that free banking actually achieves perfect monetary equilibrium. What it does is provide a self-enforceable system that seeks to correct monetary disequilibrium when it arises. To see in detail the robust properties of free banking in promoting tendencies toward money neutrality, see Selgin (1988) and Paniagua (2015). In brief, individuals' and competitive banks' capacities to redeem banknotes in circulation allows free banking to rely on a system of adverse clearings, which provides useful and timely information concerning note fluctuations and their demand (Selgin 1988, chapter 3 and 4).

31 On the self-enforceability properties of free banking, see Salter (2014).

flexible path of relative prices and nominal income consistent with money neutrality. Free banking unintendedly obtains "macro-level" expectational stability of nominal aggregates with their values *determined ex post* and as a by-product of the workings of the system. Instead, NGDP targeting prioritizes "macro-level" stability of nominal income growth established arbitrarely outside of the normal workings of the system, which might reveal to be inconsistent with money neutrality at the microeconomic level.

Just as Hayek (1999 [1925]) emphasized the role of the money supply in potentially altering the structure of production and relative prices under price-level stabilization, we should be equally cautious about stabilizing expectations concerning the growth of nominal aggregates defined ex ante and outside the constitutional order. This holds especially true when the expectational targets are decided by an authority a priori, rather than coming from a self-reinforcing process that emerges post-constitutionally. The properties outlined in the previous sections suggest that stabilizing expectations of statically constructed aggregates *should not be of primary importance* to promote coordination in a catallactic order (although we have also seen that they could improve coordination; see footnote 6). The focus should be on anchoring individuals' expectations of how prices and income behave in a context of a credible path of the money supply that diminishes monetary disequilibrium. As shown, "macro-level" (aggregated), expectational stability *does not* necessary translate into microeconomic stability. Having stable expectations of nominal income growth (decided by an external authority) does not translate into stability of expectations at the individual level concerning how the path of monetary policy will affect relative prices in the face of heterogeneous and unanticipated changes in productivity. NGDP targeting promotes "macro-level" stability decided outside the post-constitutional order, disregarding individuals' expectations concerning prices and their local market conditions. This anchors expectations of aggregated statistics but unanchor expectations of how specific prices will behave in that environment of arbitrarely defined nominal income growth. Stabilizing expectations ex ante by fiat might actually be a misleading, uninformative indicator regarding potential long-term effects of monetary policy on the structure of production and a poor means of promoting non-neutrality regarding relative prices. NGDP targeting, however, *does* stabilize expectations through a futures-market process that is self-reinforcing (Sumner 2012); as such, this makes it far superior to current central banking arrangements, suggesting the medium term desirability of such an institutional progression. NGDP targeting promotes a "crude" form of expectational stability, treating nominal income growth as the *explicit goal* rather than the unintended outcome of a post-constitutional order that primarily aims to promptly remove money imbalances at the individual level. This "crude"

stability might hide "micro-level" uncertainty and relative distortions, not necessarily minimizing monetary disequilibrium and quite possibly even exacerbating it through time.[32] This at least calls into question the properties of NGDP targeting as a fully stable constitution, favoring instead a free-banking regime that promotes a "productivity norm" (Selgin 1997). More thorough explorations of the robustness of NGDP targeting are warranted before making definitive conclusions. What is conclusive, however, is that stable monetary constitutions are the only feasible mechanism to convert monetary policy – as Friedman (2014 [1960]) had hoped – from an engine of discoordination to one of prosperity and human cooperation.

4 Conclusions

The Great Recession has demonstrated the necessity for robust frameworks that will avoid the recurrence of these catastrophic events. The crisis demonstrated the importance of money in enhancing society's rational allocation of resources and the need to robustly constitutionalize it (Buchanan 2010). A constitutional system should possess a structure that provides the right incentives and appropriate epistemic mechanisms to provide a common nominal anchor and stabilize expectations. Under robust rules, a post-constitutional environment guides fallible decision-makers' actions and expectations to create a self-reinforcing type of system. Even with deviations from idealistic assumptions, self-reinforcing expectations could still meet the predictability criterion. To encourage society's coordination, there is a need to promote reforms to enact monetary constitutions with the emergent and self-reinforcing stability properties that take into account political-economic robustness. Promoting reforms in this direction could potentially reduce societies' exposure to unsustainable booms and economic crises.

The supposed fact that crises are evidence of the inherent instability of capitalism rather than the recognizable outcome of constitutional failures should be scrutinized (Calomiris and Haber 2014; Friedman 1994; Hetzel 2012). Existing arguments about economic crises have not emphasized constitutional fragilities and the necessary stability properties to avoid them. This is a severe

32 The fact that the housing boom and the misallocation of resources that entailed occurred in an environment of stable nominal income growth and low stable inflation, should be prima facie evidence to be skeptical about defining a nominal income growth target disassociated from the catallactic order (Beckworth 2012a). For more details on the potential misallocation of resources and the problems and dangers with defining a path of NGDP growth that reveals higher than under a "produtivity norm," see Cachanosky (2015).

gap that this paper has sought to address. I have suggested that crises are not an inherent malady of the market order. Rather, sharp economic fluctuations are deeply conditioned by the degree of constitutional robustness of monetary frameworks and how well they maintain stable expectations. Institutions allowing expectational shocks lead to credibility problems, aggregate demand instability and likely to recessions. Having money exist within a fragile constitution severely weakens the capacity of the network of exchanges to continue to extend the division of labor and enhance social cooperation. Money is too important to be exposed to the post-constitutional dynamics of political bargains and human fallibility. The key to isolate the economic system is to ensure a predictable path of monetary policy associated with tendencies towards monetary equilibrium. This ensures that the monetary constitution will be effective in regulating sustainable long-term patterns of economic interactions, by *guaranteeing* stability of prices being accurate conveyors of crucial market information that would not be accessible otherwise. I conclude that NGDP targeting, despite its self-reinforcing properties, falls short of fully achieving the desired properties of a robust monetary constitution. NGDP targeting maintains a "crude" aggregated form of expectational stability at the cost of potentially concealing distortions at the "micro-level." On the other hand, free banking seems to promote better "micro" expectational stability through an endogenous, decentralized process of self-reinforcing expectations. Critical thinking on monetary issues should be considered within broader political economy and constitutional concerns. When disregarding political economy, societies are not able to discern which rules are appropriate to the catallactic order. Disregard for constitutional considerations allows macroeconomic instabilities and boom-bust cycles to keep occurring as institutionally endemic forms. Broader considerations in monetary constitutions in the spirit of James Buchanan should contribute to reduce potential endemic failures.

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