Blast from the Past: Hayek, Gold, and Money

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Abstract

The resurgence of Austrian economics and the development of market monetarism as a school of thought since the Global Financial Crisis has brought NGDP targeting into the mainstream political economic discourse. This paper will discuss a close cousin of nominal income targeting, Hayek's rule for monetary policy, and explore its relationship with the classical gold standard, as many advocates of a stable nominal income pathway have also expressed support for some form of a gold standard in the past. This paper offers a theoretical and historical exposition of Hayek's rule and the classical gold standard before offering a comparative institutional analysis of these two monetary regimes with special consideration given to political economic considerations.

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Introduction

Since the global financial crisis of 2008, macroeconomists have searched long and hard for answers to the questions that the profession believed it solved in the early half of the 20th century. The orthodox marriage of the New Classicals and the neo-Keynesians found itself in disarray and, as the fundamentals of macroeconomics once again came up to debate, ideas that supposedly lost credence were regaining steam in the mainstream, especially a form of neo-Austrian economics[1] (White 2016) and market monetarism. Followers of both of these traditions have found common ground in an advocacy of some form of nominal income targeting as a rule for central banks to promote broader macroeconomic stability, which has also found supporters among some New Keynesians. It's also true that many advocates of stable NGDP are also notorious gold standard supporters (though there are as many definitions of the gold standard as there are supporters), which makes the relationship between these two monetary policy regimes of interest to monetary economists, particularly of heterodox stripe.

While nominal income targeting is certainly a market-oriented mechanism to promote relative macroeconomic stability, it falls short in some key areas. In this paper, I will analyze the theory of nominal income targeting from the perspective of these different frameworks and offer a broad political economy analysis of nominal income targeting in an effort to guide future discussions in this field. Any rule for monetary policy will necessarily have some ethical implications as well, which I will also briefly cover in the course of this paper. I will first briefly discuss the history of nominal income targeting and then cover its various iterations, including the standard market monetarist rule for a nominal income level target that suggests a 5% growth in nominal income every year and compare it to "Hayek's rule," which advocates for a stable

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[1] Distinct from the monetary theory of Rothbardians

nominal income. As a student of the history and practice of the Austrian tradition, I will specifically focus on the theoretical strengths and weaknesses of Hayek's rule, and offer some modifications that could lead to a market-oriented rule for monetary policy that would better account for those issues that are uniquely important within the Austrian framework of macroeconomic thinking.

Furthermore, to assess the theoretical strengths and weaknesses of nominal income targeting, I will briefly explore its relationship with free banking. The advantages of such an approach stem from the macroeconomic stability associated with free banking (Selgin 1988) and the claims made by some economists that free banking tends to promote a stable nominal income (Ibid; White 1999; Garrison 1996). It is outside of the scope of this paper to conduct a comprehensive analysis of free banking and its associated literature, but its close relationship with nominal income targeting and Hayekian macroeconomic thought make it suitable for this theoretical exposition.

In addition to these considerations of monetary equilibrium and macroeconomic stability, this paper will also address some ethical concerns regarding the relationships of creditors and debtors, which is a debate that has its roots in the debates between Knut Wicksell and David Davidson on price stability and the productivity norm (Thomas 1935).

At the end of Part 1, I will discuss some political economy concerns with the adoption of a nominal income target. The political economy literature pertaining to monetary rules and the development of central banking is rich, and I will draw from some of these conclusions and further explore some specific arguments as they relate to the adoption of a nominal income targeting rule for monetary policy. I will then segue into Part 2 of the paper which will focus on the economics and politics of the classical gold standard. At the end of part 2, I will discuss the

differences between the classical gold standard and a monetary regime that follows Hayek's rule

from the political and economic perspective. Finally I will conclude by considering avenues for

further research and summarizing the analysis in this paper.

PART 1: HAYEK'S RULE

History of Nominal Income Targeting

Before discussing the various manifestations of nominal income targeting in the literature, it is beneficial to first briefly consider the development of the foundations of this idea in the history of economic thought. This rule is understood as a contemporary expression of the productivity norm for the price level. The conceptual underpinnings of the productivity norm will be discussed at a greater length later in this essay, withal it should suffice to say here that this framework for monetary policy involves the manipulation of the money supply in such a way that it only allows for changes in the general price level to occur inversely to changes in productivity. In other words, contrary to under a standard price level targeting regime of zero inflation, under a productivity norm, adverse supply shocks would be permitted to increase the general price level and positive supply shocks to decrease it. Practically speaking, this would allow a steadily growing economy to experience a mild, secular deflation.

This idea of the productivity norm was first described by early free banking theorist Samuel Bailey in his *Money and Its Vicissitudes in Value* (Bailey 1837). In this work, Bailey described how changes in the price level that were founded in arbitrary changes in the money supply were unjust, as they shifted productive resources between different groups of people, without any meaningful changes in production by these various groups. He, however, distinguished these monetary disturbances from organic changes in the price level based on the improvement in the conditions of production, which he did not perceive as unjust. To borrow Selgin's (1995a) description of Bailey's exposition:

Suppose, Bailey said, that A lends £l00 to B for one year, and that prices in the meantime fall 50 percent. If the fall in prices is due to an increased demand for money (with constant real income) or to a fall in the money supply, A obtains a real advantage, and B suffers an equivalent loss. But if, instead, the fall in prices is due to a general improvement in productivity, A's gain is not matched by any corresponding loss by B, because the enhanced, real value of B's repayment corresponds with the enhanced ease with which B (and other members of the community) are able to produce a given amount of real wealth (1837, 1 15-

17). Likewise, if the price level rises due to a decline in productivity "both A and B would lose nearly half the efficiency of their incomes" (118). However, "this loss would arise from the diminution of productive power, and not from the transfer of any advantage from one to the other. The fund out of which they both drew would be diminished, and they would both consequently draw less" (118).

Bailey's arguments, however, were not uncontroversial, and sympathies to price stability and a Humean adherence to a rising price level seemed to have won the day. That said, there were still some thinkers who challenged the orthodoxy. Selgin (1995a) also details Alfred Marshall's departure from the stable price doctrine and the defense of the rising purchasing power of gold money in the late 1800s. Sir Robert Giffen also cast his hat into the debate when he posited that the falling prices of the mid 1800s was not consistent with depression, but rather with glowing prosperity based on significant productivity increases. Frances Edgeworth also embraced some form of a productivity norm in 1889, where he specifically endorsed the productivity norm *even* in the face of adverse supply shocks (Edgeworth 1925).

A similar debate raged on in Sweden, as mentioned earlier in the introduction. Swedish economist, editor of the *Ekonomisk Tidskrift*, engaged in a now infamous back and forth with Knut Wicksell on the ideal behavior of the price level in this journal. Though the papers are yet to be translated into English, a sufficient summary is offered by Brinley Thomas (1935). While Wicksell believed that a "neutral" monetary policy, i.e. one consistent with monetary equilibrium, is one that promotes a stable price level, while Davidson argued that aggregate supply shocks can communicate important information through changes in the aggregate price level. This view was shared by his fellow Swedes Eric Lindahl and Gunnar Myrdal[2], whereas Wicksell was joined in his commitment to the price stability norm by Gustav Cassel (Selgin

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[2] Interestingly enough, Myrdal shared the Nobel Prize with F.A. von Hayek in 1974

2018). Myrdal, of course, elaborated on this view much later in 1939 in his work *Monetary Equilibrium* (Myrdal 1939).

The English debate became similarly intense in the 1920s and 1930s as economists struggled to determine the appropriate response to the worldwide economic collapse. Ralph Hawtrey built on his earlier work on money in *Currency and Credit* (1919) and presented a potent defense of the productivity norm in his 1930 work *Money and Index-Numbers* (2012), where he described his view of an ideal monetary policy:

> *Suppose now a change in productivity. The application of effort and the factors of production remaining the same, the physical total of the output is increased or diminished. If the index of the factors of production is to be kept invariable, then the consumers' income and outlay will be unchanged. Demand being unchanged, the price level will fall or rise just in proportion as output is increased or diminished. In fact the elasticity of demand for all products taken together is unity.*

Cambridge economist Dennis Robertson was also an avid opponent of price stabilization policies. In his work *Banking Policy and the Price Level* (1926), embraced an almost Post-Keynesian type of view in arguing that an increase in the money supply to counteract shifts in the aggregate supply distorted the capital structure of the economy, and hence promoted macroeconomic instability, which is a view he famously recapitulated in his *A Memorandum Submitted to the Canadian Royal Commission on Banking and Finance* (1963).

Perhaps most relevant to this discussion, was Hayek's specific views on a productivity norm. Hayek, especially early in his career, held views on monetary economics that are generally consistent with the "typical" understanding of Austrian Business Cycle Theory, as explained by Rothbard (1962). Such an understanding is characterized by the belief that the creation of credit through both central banks *and* fractional reserve banking is inherently destabilizing, and consequently, advocated for the maintenance of a stable money supply (Hayek 1931; Hayek 1933).

Hayek eventually came to criticize this view, and became an advocate of a stable MV policy, i.e. a productivity norm, which he explains in the preface to the second edition of *Prices and Production* (1935), where he recognized that the problem of his former: "assumption of separate 'stages' of production of equal length was that it imposed upon me a somewhat one-sided treatment of the problem of the velocity of circulation of money." He elaborated upon this change in his view in a footnote in Lecture IV, 'The Case for and Against an Elastic Currency,' where he specifically notes, "That there is no harm in prices falling as productivity increases has been pointed out again and again."

To very quickly summarize some of the primary reasons for the change in Hayek's thought, his initial understanding led him to believe that changes in the money stock created artificial changes in the relative prices of goods and capital, and consequently caused intertemporal disequilibrium. Later, however, he began to acknowledge that changes in *velocity* also had this impact, and consequently the money supply should act to maintain a constant MV, rather than a constant M, to borrow the variables from the equation of exchange. This particular understanding of the productivity norm will largely serve as the underpinning of the theoretical exposition of this paper, and manifests as a stable nominal income, hence the title "Hayek's Rule."

It is also briefly worth mentioning the role of the productivity norm in Austrian thought, more broadly. The monetary thought of Ludwig von Mises is a contentious topic, and attempts to address his views on "free banking" often lead to more questions than answers (Selgin and White 1996; Herbener 2002; White 1992; Hülsmann 2014), but Selgin (1999) makes a strong case that, in the second edition of *The Theory of Money and Credit* (1924), Mises expressed some concern of deflation, and his commitment to a constant inner objective exchange value of money, to use the Misesian lexicon, is really a commitment to a stable nominal income. Selgin (1995a) also

points out that Gottfried Haberler more directly addressed the question of a declining price level in his works on monetary indexation and came out staunchly in favor of a productivity norm (1927; 1931; 1932).

In recent years however, the productivity norm has reemerged in the mainstream as some economists have come out in favor of targeting a stable path for nominal income growth. Some notable New Keynesian economists such as Bennett McCallum (1987), Jeffrey Frankel (1995), and Robert Hall and Greg Mankiw (1994) began to express interest in nominal income targeting, as their models suggested that a stable path for nominal income growth not only reacts to adverse demand shocks and stabilizes the economy in times of recession, but can also assist central banks in targeting both the price level *and* unemployment in one variable.

Equally important to mention is the rise of "market monetarism," which is a relatively new school of (admittedly heterodox) thought in economics. Market monetarists advocate for a stable path for nominal income growth as well, but offer a slightly different justification. Much like the monetarists they are named for, market monetarists reject the value of interest rates in determining the tightness of monetary policy, but also embrace rational expectations and reject the "lag" arguments that were central to some early monetarist proposals. The "market" in market monetarists stems from their view towards markets, in this case nominal income, to determine the demand for money, that the central bank should meet in order to ensure the smooth functioning of markets.

It's clear that the history of thought is rife with various justifications for a very simple rule for monetary policy, but the next section will discuss those justifications for a stable nominal income that are most popular and convincing in more detail, so these explanations should suffice.

Theoretical Foundations of Hayek's Rule

Before engaging more deeply with the relevant theory, it is important to emphasize the distinction between Hayek's rule and nominal income targeting as it is popularly understood in the literature. Contrary to the market monetarist and New Keynesian proposals, Hayek's rule is much more a direct manifestation of the productivity norm in that it is a rule for a *stable nominal income*, rather than a stable path for the *growth* of nominal income. Advocates of the latter often see nominal income targeting as consistent with central banks' mandates for inflation targeting and, as noted earlier, helps central banks bundle together unemployment and inflation into one variable, which is much more possible to target. Mankiw and Hall (1994) specifically mention nominal income targets as a sort of intermediate position on how monetary policy should react to price level shocks, making it a relatively "elastic" target in Hall's terminology (1984). Mankiw and Hall (1994) also find in their simulations that NGDP growth rate targeting promotes relatively stable prices and lower inflation than proposed alternatives.

Sumner (2012) aptly describes the sentiment behind this perspective: "First, NGDP targeting is not a way to boost growth or to generate a higher inflation rate in the economy. If the long-run trend rate of growth in the economy is X percent, then an NGDP growth target of X percent plus 2 percent will deliver the same long-run rates of inflation as a 2 percent inflation target." Furthermore, advocates of this type of NGDP targeting see the countercyclical effects of NGDP targeting as responding adequately to demand shocks better than inflation targeting regimes, as the central bank acts to offset changes in the aggregate velocity of money, thus preventing (and reacting well to) deep recessions. The literature generally points to NGDP target growth rates between 3.5% and 5%.

Hayek's rule certainly builds on some of these theoretical insights, but avoids many of the shortfalls that some of these proposals suffer from. To begin our theoretical analysis, let us start with the standard equation of exchange and show how Hayek's rule is consistent with monetary equilibrium:

$$PY = MV$$

Where P is the price level, Y is total real output, M is the money supply, and V is the velocity of money. Monetary equilibrium theorists suggest that, to promote macroeconomic stability, the quantity of money demanded should be equal to the quantity of money supplied, which is expressed in this equation, thus to maintain equilibrium, changes in money demand should be met with changes in money supply. Price level stability advocates argue that aggregate changes in the price level are necessarily indicative of monetary disequilibrium, since a rise in prices indicates an oversupply of money and vice versa. Thus, positive supply shocks that raise Y and reduce P, should be, in their view, offset by increases in M to prevent disequilibrium. This is graphically represented in the figure below:
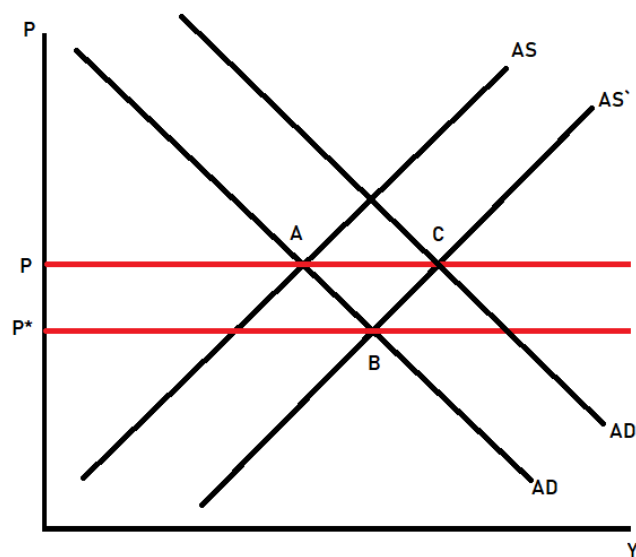
As aggregate supply shifts right from AS to AS`, shifting the equilibrium from A to B, as the price level falls from P to P*. At this point, the central banks reacts to stabilize the price level by increasing the money supply to return the price level from P* to P, and consequently shifts aggregate demand right from AD to AD*, leading to a new equilibrium at C.

However, within the framework of Hayek's rule of a stable MV, if the demand for money falls (a rise in *V*), the supply of money should be adjusted accordingly in order to maintain equilibrium (a fall in *M*). As Cachanosky (2014) describes, changes in productivity are not necessarily indicative of changes in the supply of money, and consequently, the fall in *P* due to the rise in *Y* from the positive supply shock of a rise in productivity should not be offset by a rise in *M*, and in fact doing so will create an oversupply of money and thus disequilibrium. The money markets must then clear, which can be a painful process, but its also the case that the temporary excess of credit can trigger wider distortions in the capital structure of the economy, and thus promote intertemporal disequilibrium, as Hayek argued in the second edition of *Prices and Production* (1935). This is graphically represented below:
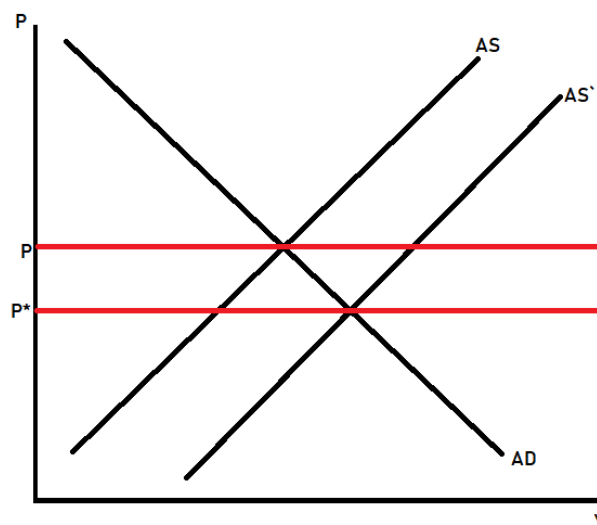
When productivity increases, aggregate supply shifts to the right from AS to AS`, which moves

the price level down from P to P*, but since there is no shift in the nominal income of the

economy, the central bank doesn't react, leaving the final equilibrium at price P*.

Realistically speaking, however, aggregate supply shocks in the form of productivity changes

have other impacts on the demand for money, and its rarely the case that productivity shocks do

not result in a change in M. If you assume a relatively elastic supply of the factors of production,

increases in productivity are typically accompanied by a concurrent rise in the aggregate number

of factors of production, which consequently leads to a rise in the demand for money and a fall in

V. Hence, a positive supply shock that raises Y, will simultaneously reduce P and V and

consequently would require an increase in M to maintain monetary equilibrium. Essentially, the

aggregate demand curve shifts to the left after the aggregate supply curve shifts right, and then

the central bank takes appropriate action to bring the aggregate demand back to its original

position.

It is once again worth emphasizing the distinction between Hayek's rule and market monetarist

proposals for NGDP targeting. Whereas Hayek's rule promotes monetary equilibrium in the

framework of the equation of exchange, NGDP targeting typically involves an oversupply of

money. To build on the earlier quote from Scott Sumner, NGDP targeting is essentially a

manifestation of Hayek's rule that includes a desired level of inflation for the economy. This

distinction is key, not only because it leads to a higher inflation rate, but more fundamentally, the

excess money works to depress the rate of interest below the natural rate, leading to Garrisonian

business cycles by distorting the temporal structure of the economy (Garrison 2000).

Regardless, Hayek's rule is certainly more consistent with monetary equilibrium than a price

stability or traditional inflation targeting regime for similar reasons. Increases in the money

supply to unnecessarily stabilize the price level have similar effects in terms of creating otherwise avoidable business cycles. Particularly when one is considering the capital structure of the economy, a price stability rule shifts much of the inflationary pressures into the capital goods sector, which stimulates large malinvestments that much eventually bust.

Now that we have considered the reaction of Hayek's rule to aggregate supply shocks, let us consider how a central bank following Hayek's rule would respond to adverse demand shocks. A fall in the aggregate demand of the economy is commensurate with a decrease in *MV*, i.e. aggregate demand, and since the central bank's mandate is to stabilize MV, it would act to increase the money supply until the demand shock is offset. Assuming a constant aggregate supply, a nominal income stabilizing regime would not behave much differently from a regime of price stabilization:
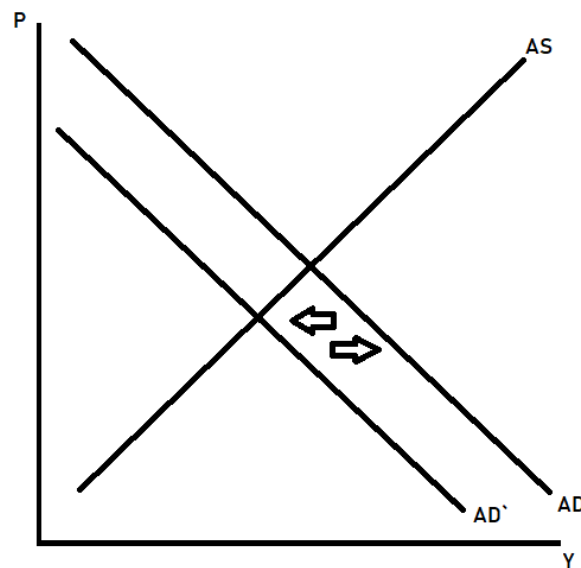
There exists a large body of literature attempting to compare various forms of nominal income targeting with other potential policy regimes, however, such an approach is largely outside the scope of this investigation. Presently, it would be profitable to consider some of the stronger

drawbacks to the adoption of Hayek's rule, or, practically speaking, a rule for monetary policy that seeks to stabilize the level of nominal income.

In order to best understand Hayek's rule, it is important to compare its practice with that of so-called "free banking," properly understood as the private provision of currency by largely unregulated financial institutions. The value from such an approach stems from the consistency of free banking with widespread macroeconomic stability on theoretical and historical grounds. Unsurprisingly, this is due to the dynamic responses to money demand that private institutions are able to respond to through unfettered price signals. There is a wide consensus among members of the Modern Free Banking school that free banking tends to promote a stable nominal income (White 1989), but what this means for Hayek's rule is more complicated than simply that.

In a system of free banking on a commodity standard, the money supply is still determined by the formula $M = Bm$, where M is the broad money supply, B is the base money supply, and m is the money multiplier. However, the formula for the money multiplier is slightly different. Rather than the standard $m = \frac{1+c}{c+r}$, where c is the currency ratio and r is the reserve ratio, the money multiplier becomes $m = \frac{1}{r}$, because the currency ratio no longer plays a role when the banks produce their own notes. Consequently, the money supply is: $M = B\left(\frac{1}{r}\right)$. Furthermore, all the base money (physical commodity currency) is held by the banks, the base money supply becomes equal to the amount of reserves, hence: $M = \frac{R}{r}$, where R is the quantity of bank reserves. The reserve ratio roughly increases alongside increases in the volume of clearings (payments), which is in turn is determined by the velocity of money, thus increases in r, due to increases in V, lead to decreases in M, promoting some degree of broad MV stability. In simple

terms, as the payments in an economy increases, the demand for bank reserves increases, which leads to the contraction of the money supply by the banks to meet the demand for reserves, hence promoting some nominal income stability. More mathematically inclined readers might be interested in George Selgin's more formal argument for the relationship between a stable nominal income and free banking (Selgin 1994).

While it certainly appears to be the case that free banking *tends* to promote a stable nominal income, it's not the case that it leads to a perfectly stable nominal income. This could either be attributed to and understanding of the market process that suggests that markets, including money markets, are constantly in disequilibrium and are seeking equilibrium, which, in this case is supposed to produce a stable nominal income, or it is the case that equilibrium is *not* at a stable nominal income, given the tendency of markets to find equilibrium. Given some of the reasoning constructed earlier in this essay, I am inclined to accept parts of both arguments, in some part because of some relatively recent research by Alexander Salter and Andrew Young (2017) that suggests that free banking doesn't entirely stabilize nominal income in response to supply shocks. Quite simply, they hypothesize that if there is an increase in the aggregate supply, the aggregate price level falls, but there is also an increase in the number of transactions in the economy that are to be carried out. Profit-seeking banks meet the demand for the increased transactions by increasing the money supply, which would, in turn, raise the price level closer to its previous level.

On the topic of Kirznerian market processes (1973), the difference between Hayek's rule and free banking is made abundantly clear in the work of Cachanosky (2014) and Salter (2013) as they distinguish between the designed and emergent order distinction between nominal income targeting and a stable nominal income birthed out of the private provision of currency. The

creation of new money by central banks to stabilize MV still suffers from the problems of monetary non-neutrality and the resulting Cantillon effects can still lead to distortions in the production structure of the economy, more broadly. In modern economies, new money is typically injected into the system through the financial system, and that strongly influences the direction the money takes over the medium run until it becomes "neutral." In a free banking system with a stable nominal income, new money is injected directly where it is demanded, and hence resources are allocated with far fewer distortionary effects.

It is my view that the injection of money into financial institutions can artificially inflate asset prices in the short run, which can send misleading price signals to market participants, misguiding investments, but also possibly incentivizing investment over consumption, given the rising trend of stock prices that new money injections tend to create. Such incentives could potentially lead to asset bubbles as well[3] (Hayek 1931), which could further distort resource allocation.

Another issue that concerns me with the adoption of Hayek's rule is its necessarily countercyclical nature. If recessions occur (perhaps due to capital structure distortions) after a period of monetary overproduction, Hayek's rule would recommend monetary stimulus in order to maintain the constant "stream" (Hayek 1931) of money. Theory would suggest that a fall in the transactions demand for money should be met with an increase in the supply of money, however, such theory can sometimes ignore the causes of recession, especially if such recessions were caused by an excess of money, rather than a shortage. A typical Austrian business cycle

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[3] The bubble creation effect is best visualized through a Hayekian triangle

entails the creation of malinvestments that *must* liquidate to prevent these toxic investments from causing further losses to the economy in the future.

Excessive monetary stimulus, however, *especially* injected at the point of financial institutions, has an effect of preventing these malinvestments from liquidating, and consequently promoting instability, to some degree. Consequently, a modified Hayek's rule that can account for such recessions and react with less aggression might be useful. The construction of such a modified rule must begin with an acknowledgement of the problem of money's non-neutrality, and could potentially consider measures of TFP to create a productivity norm that does not act in ways that may deepen or simply delay recessions.

There is also the obvious issue that plagues all rules-based monetary policy regimes that seek to target aggregates: what measure of nominal income should be stabilized? Typically, advocates of nominal income targeting advocate for a nominal GDP target, while Bill Niskanen advocated for targeting the nominal value of final sales to domestic purchases (Niskanen 1992). Cachanosky (2014) finds that the empirical difference between NGDP and NFSDP is small and likely insignificant, so this does not seem to be much of an issue for Hayek's rule. However, there exists inherent issues with the measurement of variables like GDP and FSDP (Feldstein 2017) that will likely bleed into the conduct of monetary policy. A rule can only be as good as the variables fed to it.

Of course, economists have offered several more criticisms of nominal income targeting, however, these should suffice for my analysis, as this paper intends to focus on those issues particularly relevant to the Austrian framework of thinking, as such analysis is notably lacking from the literature.

Ethical Considerations

As with all issues of public policy, there are powerful ethical considerations that need to be considered, and issues of justice have been fundamental to the debate surrounding the productivity norm since its inception. As noted earlier in this essay, part of Samuel Bailey's original justification for the productivity norm was that it was *just*. This argument of justice was also key to the Wicksell-Davidson debates, with Wicksell arguing that price stability was just because it maintained the relationship of the debtor and creditor, whereas deflation unfairly burdens the debtor, who now has to repay a higher real amount. I'm inclined to agree with Davidson (and Bailey) in this debate, however, as, while it is true that a zero inflation policy would avoid significant changes in the relationships between debtors and creditors, *productivity* induced changes in the price level allow for completely ethical changes in the relationship since, while the debtor has to pay a higher real amount, it is also easier for him to acquire the necessary wealth with the increased productivity and the fall in prices. Furthermore, as Selgin (1995b) points out, "the productivity-related gains creditors would enjoy under a productivity norm are retained by debtors under a norm of zero inflation." Hence, at worst, there is no net loss of justice, per se.

Beyond that, it is the case that, while the government maintains a monopoly of the monetary system, it has an ethical obligation to promote macroeconomic stability. While the scope of this study is necessarily limited, there appears to be clear advantages to Hayek's rule over price stabilization and inflation targeting, which suggests that central banks have some ethical imperative to consider a stable nominal income rule.

Political Economy Concerns

As with the embrace of any rules based monetary policy, there are some serious political economy hurdles to overcome. Firstly, it is difficult to see a rule as restrictive as Hayek's rule when it comes to the expansion of the money supply be adopted by a central bank, as such an outcome would be inconsistent with their incentives to inflate and defer (Brennan and Buchanan 2008). Furthermore, unlike rules that target positive growth rates of variables like inflation or even NGDP, Hayek's rule would require monetary tightening if there is any growth rate in the nominal income, which could serve as a difficult barrier, since monetary tightening is often unpopular with politicians and people.

That said, the recent success of major central banks in combating inflation allows for central banks to credibly commit to a stable nominal income, and if an explicit rule is adopted, it has the advantages of working strongly in favor of depoliticizing monetary policy *and* creating a relatively neutral money supply that would allow markets to function efficiently and limit fiscal profligacy by the hands of the state. It would be more difficult to adopt such a rule in economies where central banks have been restrained by the political arm of the government, and the central bank, even if committed to ensuring broader macroeconomic stability, may need to create an environment in which a credible commitment is possible.

Furthermore, the similarities between the classical gold standard and a policy of stable nominal income (White 1999) might be exploited to move a central bank towards the direction of a commodity standard, which might serve to eliminate some of the political and economic problems associated with fiat currency.

After the Global Financial Crisis, it has become clear that new ways of looking at monetary policy are absolutely necessary, and Hayek's rule is one of many possible paths that central

banks might take to promote greater stability over the long run. A lack of empirical evidence

surrounding nominal income targeting is certainly a concern, but the theory suggests that

adopting Hayek's rule might be successful in preventing the kind of large scale financial

meltdowns that economists have been struggling with since the inception of the field. Hayek's

rule is by no means perfect, and further research in this field is absolutely necessary, and could

prove to solidify the place of stable nominal income targeting as the future of monetary policy.

The next part will explore the classical gold standard in greater depth to offer an important

standard of comparison.

PART 2: THE CLASSICAL GOLD STANDARD

This paper began by acknowledging the necessary flexibility in defining the "classical gold standard." I will reiterate the cursory definition offered in the introduction section and explore that understanding more meaningfully. I will then provide a brief history of the classical gold standard, primarily as it operated in the United States, and contrast this with more popular misinterpretations of the functioning of the classical gold standard. Concurrently, I will briefly explore the intellectual history that surrounded the classical gold standard in a manner not dissimilar to the history of thought exposition offered in Part 1 of this paper. This intellectual history will be coupled with a brief exposition of the representation of the classical gold standard in the contemporary academic discourse. Subsequently, this paper includes a brief theoretical elucidation of the economics of the classical gold standard followed by a political economic analysis of the institutional strength of the classical gold standard as a rule for monetary policy. It should be noted that a similar analysis can be applied to similar precious metal standards, but the prevalence of gold in recent history and the academic literature makes it apt for the following survey.

History of the Classical Gold Standard

As I have discussed in the introduction to this paper, the classical gold standard is popularly understood as an amalgamated approximation of the monetary systems of major economies between 1821 and 1931 (Schwartz 1984), but it is often more specifically referred to as a descriptor for the "type" of gold standard that the United States and England had adopted (though it might be more accurate to say "drifted to") to between 1880 and 1914 (Gallarotti 1995). It's worth noting that the classical gold standard was an *international* standard, and a contemporary political scientist or economist advocating for a domestic monetary system may have to reconsider many of the arguments in the literature with this qualifier in mind.

Quite simply, each nation on this standard defined each unit of its national currency as a fixed amount of gold that was not to be changed barring extraordinary circumstances. This usually meant that each nation "fixed"[4] the price of gold, and, as a result, also created a system of fixed exchange rates across all countries on this standard. For example, the United States officially set the price of a troy ounce of gold in 1879 to $20.67 and, since exchange rates were necessarily fixed, a sterling pound was worth $4.8665 up until the First World War (Schwartz 1987). Unlike many contemporary gold-based proposals for monetary reform (Laffer 1980; Shelton 1994; Wanniski 1978), the classical gold standard maintained its credibility through the promise of convertibility, much like the free banking era in Scotland (White 1984), except instead of individuals redeeming notes at their nearest commercial bank at the market price, people could redeem their notes for gold from the government (not necessarily a "central bank" in the modern sense of the term) at the fixed price. For the purposes of this study, we can gloss over the minor (though not necessarily insignificant) variations between the gold standards of different countries during the "classical gold standard" period and utilize this general framework of its operation for our analysis. As the reader can see, the classical gold standard does *not* involve interest rate targeting in the monetary authority's operating framework, and modern misunderstandings of the classical gold standard detract from its primary economic concerns by faulting a non-existent framework.

Unlike advocacy for a steady stream of money, it's difficult to pinpoint when gold emerged as a monetary standard in academic discourse. When discussing defenses of gold money in *Gold, The Once and Future Money*, Nathan Lewis says, "The classical viewpoint is as old as civilization

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[4] It is important to disregard common misinterpretations that this "fixing" is equivalent to the fixing of the prices of some goods through price controls. This is more analogous to defining a unit of measurement such as the length of a yard.

and is echoed in the writing of Confucius, Mencius, and Lao-tzu" (Lewis 2007). Gold (and other

precious metals, most notably silver) served as the backbone of monetary systems since at least

the 7th Century B.C. when the Lydians utilized coins forged out of a mixture of gold and silver

called the electrum as currency; since then, nearly all major commercial civilizations had some

mixture of precious metals as a standard for money up until the collapse of the international gold

standard in 1971 (Ibid). Carl Menger's *On the Origin of Money* (1892) describes how a society

comes to value gold (and similar precious metals) as money; Ludwig von Mises (1924) provides

an elegant summary of Menger's theory:

Let us take, for example, the simple case in which the commodity p *is desired only by the holders of the commodity* q, *while the commodity* q *is not desired by the holders of the commodity* p *but by those, say, of a third commodity* r, *which in its turn is desired only by the possessors of* p. *No direct exchange between these persons can possibly take place. If exchanges occur at all, they must be indirect; as, for instance, if the possessors of the commodity* p *exchange it for the commodity q and then exchange this for the commodity r which is the one they desire for their own consumption…*
Thus along with the demand in a market for goods for direct consumption there is a demand for goods that the purchaser does not wish to consume but to dispose of by further exchange…
Now all goods are not equally marketable. While there is only a limited and occasional demand for certain goods, that for others is more general and constant. Consequently, those who bring goods of the first kind to market in order to exchange them for goods that they need themselves have as a rule a smaller prospect of success than those who offer goods of the second kind. If, however, they exchange their relatively unmarketable goods for such as are more marketable, they will get a step nearer to their goal and may hope to reach it more surely and economically than if they had restricted themselves to direct exchange.
It was in this way that those goods that were originally the most marketable became common media of exchange, i.e. goods into which all sellers of other goods first converted their wares and which it paid every would-be buyer of any other commodity to acquire first. And as soon as those commodities that were relatively most marketable had become common media of exchange, there was an increase in the difference between their marketability and that of all other commodities, and this in its turn further strengthened and broadened their position as media of exchange.

As I mentioned earlier, some form of a gold standard has been intellectually supported for

hundreds upon hundreds of years, but more recent reiterations tend to rely on arguments

provided since the era of the British and French classical economists, while many modern critics

find themselves relying on the foundations of the Keynesian revolution. Economic historian

Michael Bordo very astutely divided the thinking of the gold standard into five schools of

thought: the classical school (including thinkers like Richard Cantillon, David Hume, John Stuart Mill, and Walter Bagehot), the neoclassical school (developed the thinking of the classical school in works by Alfred Marshall, Irving Fisher, and Knut Wicksell), the Harvard school (this included F.W. Taussig and his students and critics like J.W. Angell that primarily focused on developing the Humean balance-of-payments theory), the interwar critics (Bordo highlights the contributions of Keynes and Viner that criticized the gold standard for its proscription of more radical demand-side management policies), and post-World War II reinterpreters (this was a diverse group that included neo-Keynesians, monetarists, New Classicals and more that approached the gold standard from a host of different ways) (Bordo 1984). It's also worth acknowledging the economists in the Modern Free Banking school such as George Selgin, Richard Timberlake, Kevin Dowd, and Larry White for their studies of historical free banking arrangements based in gold. Given the enormous history of the gold standard, this paper will not describe the evolution of the arguments for and against the gold standard since its inception, and will instead focus on formulating the theoretical foundations of the gold standard in the following section.

At the risk of seeming inordinately Americentric, it might benefit the reader to acquaint himself with the history of the emergence and collapse of the classical gold standard in the United States to situate the theoretical arguments both for and against the classical gold standard. Since America's inception and until the fall of Bretton-Woods, gold and silver have played important roles in its monetary system to varying degrees. From 1791 to 1834, silver served as the *de facto* monetary standard and gold from 1834 to 1861 due to differences between the market pricing of gold and silver and the prices set by the monetary authority. The Civil War was a period of

relative monetary disorder and the beginning of "Wildcat Banking,"[5] but by 1879, the United

States returned to a metallic standard and thus began the era of the "classical gold standard."

During this period the government issued gold and silver certificates and they also reintroduced

Treasury notes in 1890, but this time as legal tender. Congress officially passed the Gold

Standard Act in 1900 where gold was declared the official unit of account and a gold reserve was

created (though Treasury notes were no longer legal tender) (Elwell 2011). Private banks also

continued to produce paper currency but were limited by government bond production, state

taxes, and various branching restrictions (Rockoff 1991).

Theoretical Foundations of the Classical Gold Standard

As I did with Hayek's rule, I will provide an explanation of the theoretical underpinnings of the

classical gold standard to provide the reader with the necessary economic context for the

purposes of this paper. It is important to emphasize that under this standard, paper notes

produced by the monetary authority are not money in and of themselves, but are rather "money-

substitutes" in the Misesian terminology; rather it is gold that is the money itself. It is first

important to understand how the price level and quantity of money are determined under a gold

standard regime.

In simple terms, the price level is determined by the fixed price of gold multiplied by the market

"value" of gold, i.e. the purchasing power of gold, which is usually given in terms of some price

index. The classical gold standard was notable for maintaining a relatively stable price level

throughout its history despite the extremely limited rate of new gold production (Selgin,

Lastrapes, and White 2012). For P to be mostly unchanging and the price of gold fixed, then it

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[5] It is worth noting the recent qualified rehabilitation the American free banking era has received in the
literature. See

would seem as though the purchasing power of gold is also unchanging. This is a result of the fact that, unlike fiat money, gold also has non-monetary uses and can reasonably be transformed between monetary and non-monetary uses. Lawrence White (1999b) provides an excellent exposition of how the interaction between gold's monetary and non-monetary uses leads to a relatively stable P.
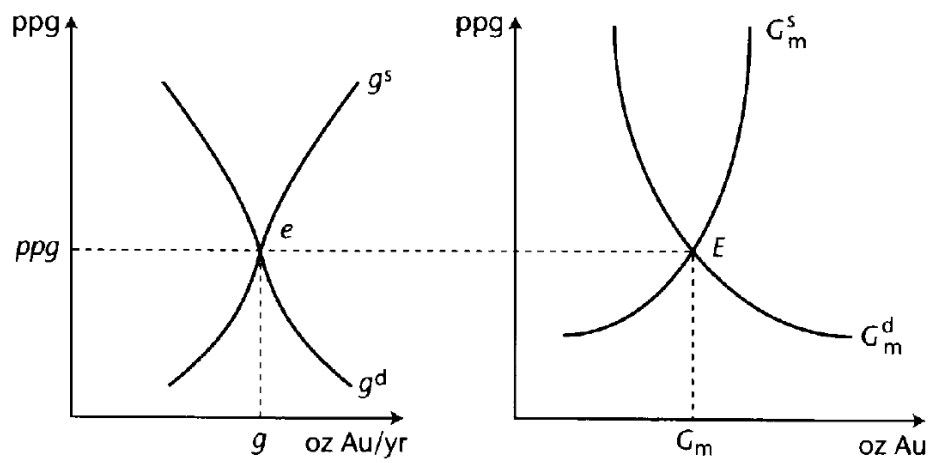
The diagram on the left displays the *flow* equilibrium for gold, which refers to the non-monetary consumptive equilibrium for gold, where g^d is the flow demand of gold and g^s is the flow supply of gold. The diagram on the right, however, displays the *stock* (referring to the money stock) equilibrium for gold. This describes the supply and demand relationship for "monetary" gold, where G^s_m is the flow supply of gold and G^d_m is the flow demand for gold. Given the interchangeability between the "flow" and "stock" uses of gold, the supply and demand curves are the "inverses" of each other between the graphs, in a sense. For instance, if the purchasing power of gold is rising for whatever reason, the opportunity cost of owning "flow" gold increases, and more flow gold will be converted to stock gold, and vice versa.

An increase in the demand for money translates to an increase in the demand for stock gold, which would temporarily increase the purchasing power of gold. However, this higher purchasing power incentivizes increased gold production (through mining activities and the like), which enters as flow gold, which in turn leads to an excess in the supply of flow gold. The excess flow gold is therefore converted to stock gold, where it is more highly valued, leading to an increase in the supply of stock gold and a decrease in the purchasing power, roughly to its original purchasing power. The reverse of this process occurs when money demand falls. This can be visualized in the following graph also from White (1999b):
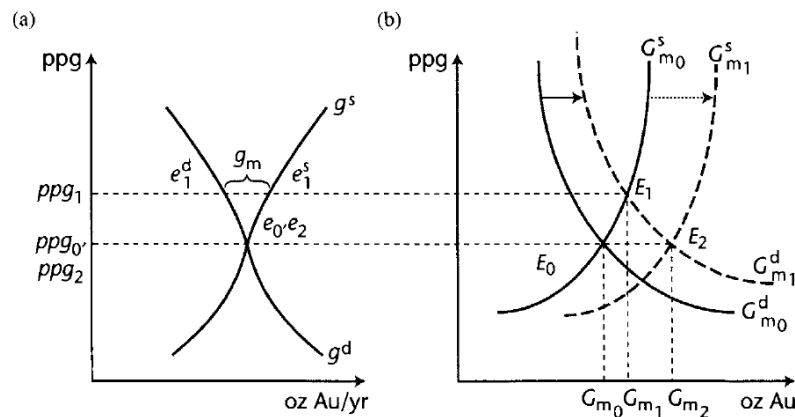

Figure 2 Taken from page 32 of The Theory of Monetary Institutions *(White 1999b)*

If there's a stochastic increase in the supply of money, perhaps as a result of a gold rush or the like, then there will be a temporary decrease in the purchasing power of gold that will be accompanied by a shortage of flow gold. Consequently, monetary gold will be melted down to be used for non-monetary purposes such as jewelry and fillings, leading to leftward shift in the supply of stock gold and an increase in the supply of flow gold, bringing the purchasing power of gold back to its original level. Similarly, the reverse is again true for a decrease in the supply of monetary gold. The inverse of these mechanisms occur when there are changes in the supply and demand for non-monetary gold for reasons unrelated to the stock of monetary gold, once again

promoting a stable purchasing power of gold, and consequently a stable price level. This can be
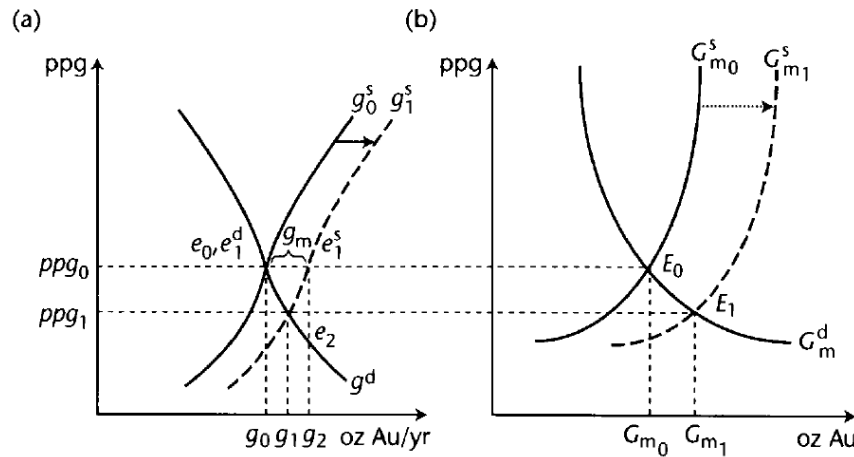visualized in the following graph:

Figure 3 Taken from page 35 of The Theory of Monetary Institutions *(White 1999b)*

From the lens of macroeconomics, it would seem that a classical gold standard would be
consistent with a price stabilization regime in terms of its reaction to aggregate supply and
demand shocks, though this is only partially true. Per the analysis in Part 1 of this paper, it would
seem as though a classical gold standard would lead to monetary disequilibrium, but the
argument is more nuanced. In the case of negative aggregate demand shocks, it behaves not
dissimilarly to a central bank following Hayek's rule or a price stability mandate, thus being
appropriately countercyclical in combating recessions. The logic is fairly straightforward, since a
decline in aggregate demand depresses demand for money, which sets the stock and flow motion
in gear again, leading to a return to the stable price.

Supply shocks, however, present a slightly different case, and in fact lead to results closer to
NGDP stabilization, much like Hayek's rule, though not quite entirely, thus providing results
more similar to the commodity standard free banking described in Part 1 of the paper. Positive
supply shocks, for instance, perhaps through economy-wide productivity increases, shift the

aggregate supply curve to the right, and lead to a general decline in the price level of the

economy. This in turn increases the demand for money, which would produce the price

stabilizing movements described earlier. However, the wealthier economy created by the positive

supply shock will also demand *more* non-monetary gold (as economies grow wealthier they

demand more luxuries like jewelry, gold teeth fillings, etc.) which consequently shifts the

demand for non-monetary gold to the right as well. This in turn produces a purchasing power of

gold between the original price level and the new price level, hence moderately stabilizing

nominal income. This is likely partially a result of the market-oriented nature of the gold

standard that is somewhat representative of the inherent disequilibrium in money markets also

discussed in Part 1. That said, as long as there is a disparity between the demand and supply for

stock gold or flow gold, the aforementioned mechanisms will be set in motion. Thus it's no

surprise that positive supply shocks in the American classical gold standard led to temporary

"secular" deflation before an eventual return to the original price level (Bordo and Redish 2003).

The Economics of the Classical Gold Standard vs. Hayek's Rule
Unlike a central bank that follows Hayek's rule, however, an economy founded on a classical

gold standard does not need to be as concerned about "data lags," again because of its market-

oriented nature[6]. Markets are at least somewhat efficient and the stock and flow markets for gold

will tend to anticipate changes in supply and demand, leading to relative macroeconomic

stability. The classical gold standard also avoids the problems of measurement that a fiat

monetary regime will face. As noted in Part 1, a successful central bank by the standards of

Hayek's rule need to utilize a measure of NGDP that is accurate and forward looking, whereas

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[6] Some economists have suggested that a central bank following an NGDP futures market can circumvent this problem, though there is little empirical evidence to suggest a highly efficient and populated market for NGDP futures.

the classical gold standard eliminates the need for any such measurement for self-evident reasons.

Regardless, the existence of a central monetary authority will always lead to problems of monetary non-neutrality not dissimilar to the problems faced by a monetary regime that follows a doctrine of stable NGDP, but not nearly to the same extent. In a fiat money regime, all new money enters through the location of monetary injection, typically the financial system; however, under a gold standard, new money can enter directly where it's demanded, given the fact that it is *gold* that is the legal tender. It's also worth noting that a classical gold standard also has the capacity to respond more quickly to negative aggregate demand shocks, thus preventing recessions from deepening, given the immediate market reaction to the increase in the demand for stock gold.

Political Economic Considerations of the Classical Gold Standard vs. Hayek's Rule
The classical gold standard is often praised by hard money enthusiasts for its relative resilience to political considerations as it raises the cost to engage in unconstrained monetary policy. The convertibility offered by the classical gold standard helped establish a "credible commitment" to maintaining a fixed price of gold which in turn minimized the effects of the time-inconsistency problem that plagues the political economy of monetary policy. Consequently, a convertible gold standard both restricts the ability of the government to borrow as it necessarily prevents overissue of notes (Salsman 1995) while reducing the "risk" of government debt to the citizens, in that the value of government debt cannot be easily eroded by inflationary policies in the future (Bordo and Kydland 1996). It would not be unreasonable to assume that a central bank that follows a stable NGDP pathway also avoids this time-inconsistency issue. However, it is more difficult for a fiat monetary regime to make equally credible commitments, and the resulting

uncertainty will be priced in. This makes such a policy particularly unreliable in developing or underdeveloped countries aiming at monetary reform, especially given the restrictive nature of Hayek's rule that may make such a strong commitment seem unbelievable. As I noted earlier in this paper, the similarities between the classical gold standard and a policy of stable nominal income (White 1999a) might be exploited to move a central bank towards the direction of a commodity standard, which might serve to eliminate some of the political and economic problems associated with fiat currency.

That said, in a contemporary setting, it's difficult to imagine a scenario in which central banks could return to a classical gold standard of any sort. Firstly, a gold standard's birth is unlikely in the era of high public debt that we live in; a commodity standard only seems realistically achievable if significant amounts of public debt are paid off and the state can credibly commit to maintaining a relatively low level of public debt (Salsman 2017). A simple rule for monetary policy such as Hayek's rule, however, can easily be achieved without any significant changes to the operating system of a standard modern central bank such as the Federal Reserve.

Skeptics of the gold standard often point to the resource costs involved in maintaining a gold standard, and it's difficult to contend that a 100%+ central bank reserve gold standard would be very costly to maintain, but the benefit of the classical gold standard was that it maintained only a fraction of the money supply in reserves. Discipline was introduced through a pseudo-market mechanism, i.e. if the central bank is engaging in inflationary policies, there is a greater demand to redeem paper notes for gold and vice versa, which keeps the central bank's behavior in check to avoid a default. Furthermore, there are arguments that the resource cost of maintaining a gold standard is not as high as skeptics claim (Garrison 1985), and the added stability from the

credible commitment of the gold standard is an added political economic benefit of a hard money

standard (Lucas 1987).

PART 3: CONCLUSION

From the analysis in the preceding pages, it is clear that there are an enormous number of considerations, ethical, political, and economic when it comes to debating the merits of these two monetary regimes. Given the market-oriented nature of the classical gold standard and its convertibility, it seems to have clear advantages to adopting a fiat currency following Hayek's rule. However, the enormous political costs of switching to a gold standard from our present fiat money system make a transition unlikely, notwithstanding the at least $3.5 trillion necessary to acquire the necessary gold in the United States alone (Cutsinger 2020). With all this said, is it even worth discussing alternative monetary regimes founded in gold and other commodities?

With heterodox economic thinking on the rise, there appears to be greater appreciation for unconventional ideas, especially as monetary policy is being pushed to its limit in most major economies. While gold may be a difficult standard to adopt, it could provide us with a compass. Salsman (1990) provides a possible pathway for the American economy to eventually return to a gold standard. It would not be out of the question for a monetary authority to adopt a form of Hayek's rule as an intermediate step towards achieving a gold standard or even a "real" gold price rule standard (Salsman 2020).

Such an investigation also opens up further avenues of research that marry the "old" approaches in this paper with the cutting edge of technology and macroeconomic thinking. There is much promise in the idea of a "synthetic commodity money" (Selgin 2015), and developing monetary regimes that incorporate such thinking with gold and Hayek's rule could feasibly create new monetary regimes that can reasonably be run by Friedmanite-style computers (Friedman 1999) and provide even stronger responses to political economy problems faced by state-run monetary regimes such as the time-inconsistency issue. The future of money could very well be a

cryptocurrency linked to the price of gold or an NGDP futures market (Sumner 2013) that could offer remarkable stability and free economic actors from the shackles of monetary uncertainty.

Both of these regimes have different merits to them, and the political economic incentives offered by the both of them need to be independently considered when designing appropriate monetary regimes. As I noted before, the strong commitment capacity of the classical gold standard makes it an ideal guide when developing new monetary regimes, while the practicality of Hayek's rule makes it suitable for swift adoption. There has hardly been a more exciting time to study the political economy of money, and as old ideas once again return to the forefront of academic debate, now is the time to reconsider gold and a stable NGDP policy to rough what are sure to be uncertain times.

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