On Price Stability with a Job Guarantee

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October 17, 2020

Price stability and full employment are stated policy objectives for many economists, especially economists who subscribe to Modern Money Theory (MMT). To achieve both goals, MMT economists argue for instituting a federal job guarantee program, which they argue would help anchor overall prices. We examine whether this proposal would achieve price stability by extending a benchmark model of time inconsistency to include a job guarantee program. We show that a job guarantee program implemented through fiscal policy is incompatible with stable prices and would generate inflation. With discretion, policymakers have an incentive to target a smaller quantity of job guarantee workers than is consistent with stable prices. We compare this program to a similar proposal, a labor standard under monetary policy, and argue that the MMT proposal, due to political incentives and informational constraints, would result in inferior price stability.

JEL-Classification: E63, B50, E12

Keywords: time inconsistency, discretionary policy, job guarantee, Phillips Curve

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We would like to thank Bryan Cutsinger, Rohan Grey, Josh Hendrickson, and Nathan Tankus for helpful comments and conversations. We would also like to thank Peter Boettke, Alex Salter, and Dan Smith for sending us an advance copy of their book, which helped us in writing our paper. All remaining errors are ours.

1 Introduction

The idea of a job guarantee (JG) program implemented by fiscal policy has gained traction as a palliative to the higher rates of unemployment that occasionally wrack Western economies during recessionary periods; a JG would eliminate involuntary unemployment by definition. Given the high cost of unemployment documented by social scientists and the apparent lack of inflation in the face of historically large government budget deficits, a JG is increasingly seen as both feasible and desirable (Paul, Darity Jr, and Hamilton 2018). Indeed, the idea has entered the mainstream of economics, considered seriously by giants in the field of macroeconomic policy-making, such as Summers (2018), and even advocated by Stiglitz (2019).

The rise of the JG has been mirrored and partially caused by the rise of Modern Money Theory (MMT), an economic school of thought which supports a JG and is highly critical of standard economic approaches to the relationship between deficits, taxation, and inflation.[1] This paper seriously engages with the newly popular ideas of MMT, while harnessing the technical tools that have developed within mainstream macroeconomics.

When assessing policy, as with most macroeconomists, MMT economists are concerned with the maintenance of a stable price level and full employment.[2] What makes their policy recommendations unique is that they recommend a JG program, not only to achieve full employment but also to stabilize the price level.[3] The JG would uncon-

1. In this paper, we focus on a particular aspect of MMT rather than the system as a whole. For a detailed overview of MMT, see Mitchell, Wray, and Watts (2019). See Rondina (2020) for an attempt to insert MMT insights into a neoclassical model. MMT is more properly called a school of thought or theory than a model. By that, we mean, following Leijonhufvud (1997), that MMT is a system of beliefs about the world, compared to a model which is a formalization of particular aspects of those beliefs. The difference is not about mathematics. Many famous economists have worked through logical models without needing mathematics. For examples, see Albrecht and Kogelmann (2020).

2. We will use terms such as "MMT policy," even though there is a distinction between the positive theory and the normative policy proposals. This should be read as short-hand for "a common policy proposed by MMT economists."

3. The fiscal authority, in setting up a JG program, would guarantee full employment by virtue of the fact that, by definition, anyone who refuses the JG offer would be voluntarily unemployed.

ditionally offer a guaranteed job to all who want one at a fixed nominal wage (Wray 1998b; Mitchell 2017; Tcherneva 2020).[4] Mosler (1997, p. 168) argues that "In addition to eliminating involuntary unemployment, the [JG] policy can be shown to provide *price stability*" (emphasis added). Mitchell (2017, p. 60) agrees, saying that a JG "would provide a macroeconomic stability framework designed to deliver full employment and *price stability*" (emphasis added).[5] They argue that the JG would act as an automatic stabilizer, with workers migrating to the JG sector during recessionary periods and out of the JG sector during booms. While the shocks that may cause these shifts may be exogenous, *i.e.*, due to productivity (or other) shocks, they may also be government-induced as a response to excess or insufficient aggregate demand.[6] Indeed, Wray (1998b, p. 543-544) notes that a substantial advantage over classic Keynesian fine-tuning is that, rather than fine-tune the economy as a whole, the fiscal authority would instead conduct the simpler task of using fiscal policy to fine-tune the quantity of laborers employed in the JG, which in turn would stabilize the economy.[7] Mitchell and Mosler (2002, p. 250) agree: "If inflation exceeds the government's announced target, tighter fiscal policy would be triggered to increase the BER, which entails workers transferring from the inflating sector to the fixed price JG sector. Ultimately this attenuates the inflation spiral." Hence fiscal policy is crucial for managing the JG; rigorous analysis of a JG needs to account for this.

4. MMT boasts an exceptionally rich literature on different aspects of the JG. See Mosler (1997), Mitchell (1998), Mitchell and Wray (2005a), Forstater (2006), Tymoigne and Wray (2015), and Tcherneva (2018).

5. It is not that the JG is a good policy that has an extra side benefit of stabilizing policy. The JG is *explicitly* a tool for stabilizing prices. In a blog post responding to critics, Wray (2019a) "MMT does have another tool to maintain price stability. It is the JG approach to full employment. It has always been a core element of MMT."

6. Although the JG program is the primary policy option for achieving stable prices, it is intended as a complement to other options. Other options include regulation, addressing "bottlenecks," and using taxes to temper aggregate demand when necessary (Fullwiler, Grey, and Tankus 2019).

7. MMT economists exhibit substantial faith in the ability of policymakers to use taxes to manage inflation. See Wray (1998a, p. 8-10), Bell (1999), Nersisyan and Wray (2010, p. 14), Tymoigne and Wray (2015, p. 26-8), Wray (2016, p. 10), and Nersisyan and Wray (2019, p. 8-9), all of whom advocate using taxes as one policy tool to fight inflation. While these authors do not explicitly argue such, we assume they mean an increase in taxes that someone needs to decide to do since they never mention an entirely mechanical, rule-based tax system.

To see how price stabilization works, consider the following scenario. Suppose aggregate demand runs too high, causing inflationary pressure. In response, fiscal policy takes action to reduce aggregate demand; for simplicity, it is a tax on non-JG labor. This lowers production and inflation pressure in the non-JG sector. At the same time, this lowers the real wage for those workers, pushing workers out of their non-JG jobs, which reduces average productivity as workers migrate to lower productivity JG work. However, instead of going into unemployment, these workers transfer to the JG sector, which has a fixed wage. Therefore, as inflation kicks in, more and more workers are pushed into the sector without inflationary pressure, which acts as an inflation anchor by reducing inflation and tempering aggregate demand appropriately.

If the job guarantee policy is manipulated by discretionary fiscal policy, *i.e.*, by fine-tuning demand management through taxation and other policies, then it is natural to wonder precisely how well such a program would actually target inflation. Although the JG is an automatic stabilizer, discretionary policy is built into the JG proposal, something which may open the door to a time inconsistency problem.[8] With this in mind, our paper asks how seriously we can take the promise to raise taxes and control inflation under an MMT regime. Is such a policy "time consistent" in the sense of Kydland and Prescott (1977)? That is, given social preferences over how many workers are in the JG, inflation, and taxes, would the fiscal authority set taxes such that the ratio of workers in the JG sector to the labor force is consistent with stable prices? Our answer is no; an MMT policy regime is time-inconsistent.

To study time consistency, we develop a formal model to capture the mechanism explained in words. In our model, there are two sectors (JG and non-JG) and inflation can be influenced by taxation—this is our proxy for fiscal policy. With commitment, the mecha-

8. We recognize that MMT has sought to address this problem by means of automatic stabilizers. We address this in Section 3.

nism works as described by the authors above: if inflation pressures rise, the government raises taxes, workers move to the JG sector, and inflation pressures subside.

With discretionary policy, the equilibrium outcome is different, even in the "best-case" scenario when a benevolent planner has access to non-distortionary, lump-sum taxes. To see why, suppose inflation is initially not optimal in the sense that there are not stable prices.[9] Positive inflation may come from any source; we think of it as emerging from an aggregate demand shock. When there is a trade-off between the proportion of workers employed by the JG, inflation, and taxes, an incentive will exist for the fiscal authority to drive up inflation rather than use fiscal policy sufficiently as a demand management tool because the public desires a lower proportion of workers in the JG program.[10] In other words, when it is optimal to raise taxes according to MMT proponents' recommendations, the benevolent planner will not raise taxes (or whatever the fiscal policy tool is) to the level consistent with optimal inflation.[11] Without the commitment to raise taxes, the JG is worthless as a means to control inflation.[12]

It is worth noting that some advocates of the JG have admitted that it is not a perfect mechanism for managing inflation, acknowledging that it is theoretically possible for inflation to persist even after a JG has been implemented, but not due to time inconsistency. For example, Mitchell, Wray, and Watts (2019, Ch. 19) write, "By design, a JG programme is a complement to…fiscal policies that aim to fine-tune total spending, and welfare or

9. The implementation of a JG, as admitted by Mosler (1997, p. 178) and Wray (1998b, p. 544), may create a one-time increase in the price level if its implementation is not offset with a corresponding decrease in aggregate demand through a tax increase or drop in government spending. In the political and economic environment under which a JG is likely to be ushered in, it is not at all clear that it would be accompanied by offsetting austerity measures. Such an increase in the price level would be enough to initiate the temporary inflation necessary for our model to function.

10. Importantly, we are not considering an ill-functioning Congress that needs to make the taxing decision in real-time, nor implying that MMT economists think the ideal policy is for the United States Congress to pass legislation to raise taxes when inflation arises.

11. For recent critiques along different lines, see Palley (2015), Coats (2019), Edwards (2019), and Mankiw (2019).

12. A JG may still be justified on grounds that it removes socially costly unemployment, as in Paul, Darity Jr, and Hamilton (2018).

other social safety nets." Additionally, Tcherneva (2012, p. 5-6) admits that

> "the [JG] program does not eliminate all sources of inflation. Demand-side inflation generated by the private sector (e.g., credit expansion, speculative investment in the housing market) or from other public sector programs (e.g., military spending, no-bid contracts), or cost-push inflation (e.g., from speculation in commodities, oil embargoes) are still problems to be reckoned with."

Mitchell and Wray (2005b, p. 238) second this: "The ELR (job guarantee) pool still allows the economy to operate with higher aggregate demand and lower inflation pressures, although inflation can still result." Consequently, the job guarantee does not fully address the inflation bias problem; it may prevent excessive inflation or deflation, but some inflation may remain. We seek to provide a further explanation of this result.

We are establishing a benchmark; if we cannot expect a disinterested technocrat to successfully reduce inflation with taxation, then it follows that an agent operating at a higher time discount with greater self-interest will likewise fail and to a greater degree; any real-world decision-maker will do even worse than our benchmark case and therefore the equilibrium inflation rate would be higher.

Given the inflation bias present in a JG program with fiscal discretion, we compare it to its full-employment monetary cousin, under which the central bank would fix the dollar against nominal wages, *i.e.*, a labor standard (Thompson 1982; Glasner 1989; Hendrickson 2018). The labor standard is proposed as a policy to achieve full employment and price stability, as is the JG. Using the monetary constitution framework originated by Buchanan (1962) and further developed by Boettke, Salter, and Smith (2018), we compare the MMT proposal with the Thompson proposal in their respective capacities as tools for stabilizing prices, under the standards of incentives and information. We wrap up by suggesting a method of furthering dialogue between MMT and neoclassical economists.

2 A Job Guarantee as Inflation Management

To understand whether or not a JG policy combined with fiscal management of inflation would lead to an inflationary bias, we adapt a Barro and Gordon (1983) model to fit the MMT environment by including a JG sector and a fiscal policy that operates by manipulating the balance between JG and non-JG employment.

Suppose there is initially a positive inflation shock. Would the fiscal authority take sufficient action to restore stable prices? Following Kydland and Prescott (1977) and Barro and Gordon (1983), we show that using a JG with fiscal policy will not stabilize prices because, with discretion, the fiscal authority will face an incentive to allow the buffer employment ratio to fall and inflation to rise.

Let us assume that we have a benevolent, unelected technocrat who runs fiscal policy and has control over the inflation rate π. This control follows directly from the fiscal authority's control over taxation and the existence of a JG program with fixed wages and prices, which is used as an instrument to control the inflation rate. Mirroring the Barro-Gordon model, we can see this control over taxation as symmetric to control over the growth of the money supply. We also make the simplifying assumptions that there is a constant velocity of money, or at least that changes in tax policy do not affect velocity.

Here we make an explicit assumption about the shape of the aggregate supply curve for a good approximation of a plausible MMT model. The short-run aggregate supply curve is horizontal until full employment followed by an upward sloping curve after Palley (2015). As Wray (1997, p. 547) explains, "If resources are fully employed, any extra demand would cause input prices to rise, which could be expected to be passed on in the form of higher prices." Moreover, constructing the model in this way provides policymakers in the model with the easiest signal for when to increase taxes. In this case, an inflation shock would come from a demand shock.

Suppose we have two sectors, one of which is a non-JG sector and the other is a JG sector.

- Sector 1: Non-JG sector with flexible wages and prices
- Sector 2: JG sector with fixed wages and prices

Each sector's share of total expenditures is exogenously given by $\phi_i \in (0,1)$ for each $i \in \{1,2\}$. In the long run, the magnitude of ϕ_2 depends on the JG program's contribution to the real economy. In the most detailed proposal available, Tcherneva (2018) suggests following the New Deal model and employing JG workers in public works projects such as restoring the environment, building gardens, building trails, and funding artist collectives. Whatever the merits of such programs are, government work in this area could hardly constitute a substantial part of the real economy. Tymoigne (2014, p. 526) argues that a JG program would cost somewhere between 2 percent to 5 percent of GNP for an economy that faces unemployment rates around 4 percent in booms and 11 percent in busts.

Since the JG sector has a fixed price level whereas the non-JG sector is flexible, it follows that examining sectoral inflation rates severally and jointly would be useful for our analysis. Let π_i be inflation in each sector i. We stipulate for simplicity that aggregate inflation is determined as the weighted sum of each sector's inflation rate:

$$\pi = \sum_{i=1}^{2} \phi_i \pi_i, \text{ where } \phi_1 + \phi_2 = 1. \tag{1}$$

Inflation in the JG sector is fixed at $\pi_2 = 0$. As Mitchell, Wray, and Watts (2019, Ch. 19) themselves write, "The fixed wage offer that defines the JG policy also serves to stabilise the growth rate in money wages in the economy and thus provides a nominal anchor against inflation," which strongly suggests that nominal wages are fixed under the JG

and hence inflation in that sector must be zero since there is a constant price level.[13]

The mechanism for moving workers from the JG sector to the non-JG sector is fiscal policy. When inflation rises, the role of the fiscal authority is to manipulate fiscal policy settings "to reduce the level of private sector demand. Labour is then transferred from the inflating private sector to the fixed wage JG sector and the BER [the ratio of JG employees to the total labor force] rises" (Mitchell, Wray, and Watts 2019, Ch. 19). This is seconded by Mitchell (2017, p. 70): "The value of the JG is that the government always knows that if total spending levels come up against the real capacity of the economy, then they are able to tighten fiscal policy without creating unemployment. In normal times, the JG would be a very small program but essential to those who would otherwise be excluded by private employers."

Here, we use taxation as a reasonable proxy for fiscal policy since this is often cited as a tool for managing demand within the MMT literature. For example, Mosler (2010) writes, "To prevent the government's spending from causing that kind of inflation, the government must take away some of our spending power by taxing us, not to actually pay for anything, but so that their spending won't cause inflation." This policy-induced negative shock to aggregate demand will then shift workers to the non-JG sector.[14] Inflation, then, is determined by changes in fiscal policy through a taxation mechanism. This

13. We invite MMT scholars to provide clarity on the extent to which the nominal JG wage might be adjusted to account for productivity growth. Mitchell and Mosler (2002, p. 250) write, "There is an issue about the validity of an unchanging nominal anchor in an inflationary environment. The JG wage would be adjusted in line with productivity growth to avoid changing real relativities. Its viability as a nominal anchor relies on the fiscal authorities reigning in any private wage-price pressures. Clearly, in a hyperinflation environment, the discipline of the JG wage would fail. But in historical experience these circumstances have been rare." Moreover, there is definite tension with the idea that social justice should determine the wage as "an expression of the aspiration of the society of the lowest acceptable material standard of living" (Mitchell 2017).

14. To clarify, we mean using policy when there is "excess aggregate demand" and the economy is at or above full employment. In our models that is the only source of inflation. Wray (2016, p. 10) claims that inflation before full employment is possible when spending increases too much in "sectors with a low elasticity of output (where additional demand causes prices to rise without increasing output much)." Fullwiler, Grey, and Tankus (2019) point out that the economy, at least from the perspective of MMT, has not been at full capacity for quite some time and inflationary pressures have mainly arisen from bottlenecks.

trade-off between inflation and taxation leads to the result that taxes reduce aggregate demand and shift workers to the JG sector.

From an MMT perspective, taxes are not for financing government expenditures; taxes are "functional" (Lerner 1943) and therefore operate as a key instrument for removing money from the economy and taming inflation. We assume there is a direct relationship between initial inflation, realized inflation, and taxes so that

$$\pi(\tau) = \phi_1 \pi_0 \left(1 - \frac{\tau}{\tau^{SP}}\right) \tag{2}$$

where π is the realized inflation rate, π_0 is the initial inflation rate or shock to the non-JG sector, τ^{SP} is the level of new taxes that corresponds to stable prices, and τ is actual new taxes, which the planner chooses. Given some inflation shock, there exists a unique τ^{SP} that can return price stability.[15] Hence, the fiscal authority trades off inflation against new taxes; positive new taxes result in lower inflation for the non-JG sector. For simplicity, we model this relationship as linear. To follow the MMT story, we assume that π_0 is positive; the fiscal authority wants to *reduce* inflation to its optimal level.

We are augmenting the Barro-Gordon model by adding taxes. To do so, we need a relationship between new taxes and inflation, and equation (2) describes it. The fiscal authority must follow a path from initial inflation to final inflation by changing the level of new taxes, which we assume to be linear for convenience. If initial inflation is even higher, $\pi_0' > \pi_0$, so is the required level of taxation to return to stable prices, $\tau^{SP'} > \tau^{SP}$. Figure 1 shows a simple illustration of the relationship between inflation and new taxes. The taxation level τ is meant to capture those taxes that are explicitly meant to cut inflation, or they can be thought of as new taxation. More precisely, it is those new taxes that are collected and not spent by the fiscal authority. This reduction in aggregate demand is

15. Notice that this relationship does not need to be linear for the argument to proceed; it is a mathematical simplification. All that is necessary is for *some* inverse relationship to exist between taxes and inflation.

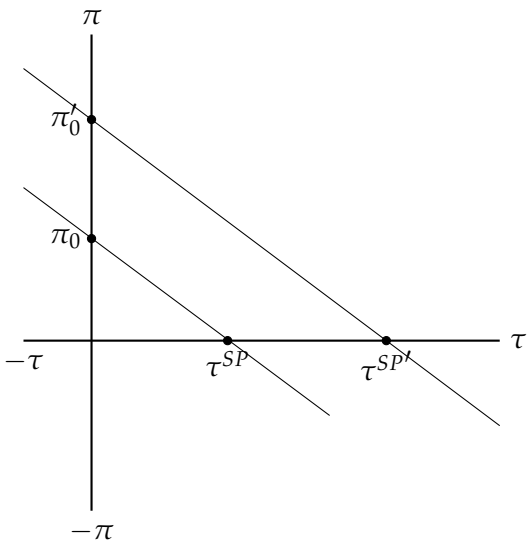

Figure 1: Taxes vs. Inflation Trade-off

what increases the buffer employment ratio and thereby reduces inflation.[16] It is useful to consider the slope of the taxation-inflation trade-off as roughly equivalent to a fiscal multiplier.

Equation 2 shows how the JG could control inflation. An increase in the JG size, which is the same as a decrease in the non-JG size, decreases inflation mechanically:

$$\frac{\partial \pi(\tau)}{\partial \phi_1} = -\frac{\partial \pi(\tau)}{\partial \phi_2} < 0.$$

However, this derivative ignores the political economy issue. The taxes are not fixed; τ is a choice variable by the planner. We return to this shortly.

We define the buffer employment ratio (BER) as the number of people employed in the JG sector (JGE) divided by all workers in the economy, E:

$$\beta \equiv \text{BER} = \text{JGE}/\text{E}. \tag{3}$$

16. For units to make sense, conceive of τ as the percentage increase or decrease in taxes.

Following Mitchell (1998), we assume that there is a BER that leads to "non-accelerating" prices. It is called the non-accelerating buffer employment ratio (NAIBER). Symbolically, let η represent the NAIBER, which is the steady-state BER, and β the BER. There is also a relationship between the BER, NAIBER, inflation, and expected inflation:[17]

$$\beta = \eta - k\left(\pi - \psi\pi^{e}\right). \tag{4}$$

That is, the prevailing BER is a function of the NAIBER parameter η, current inflation, and the public's inflation expectations. When the BER is less than NAIBER, inflation will run correspondingly higher in the short run. The parameter $\psi \in [0,1]$ determines the extent to which the BER reverts back to the NAIBER in the long run. Given existing MMT literature, it is unclear what value ψ should take. An argument could be made that, even though the NAIBER is a long-run steady-state value, the fiscal authority ultimately controls the long-run value of this parameter (Mitchell, Wray, and Watts 2019, p. 305) and therefore inflation expectations are of little importance in the long-run. We take the NAIBER as given and allow the reader to attach however much importance she wants to inflation expectations. Expected inflation is taken as given and is determined as a weighted sum of the expected inflation rates in each sector:

$$\pi^{e} = \sum_{i=1}^{2} \phi_i \pi_i^{e} \tag{5}$$

Note that, by combining equations (2) and (4), we obtain a mechanism for how the government can manipulate the prevailing BER through fiscal policy, something required under the MMT program (Ch. 19):[18]

17. We are implicitly assuming symmetry between positive and negative inflation shocks. This is not important, since we are always focused on positive inflation shocks in this paper.

18. We recognize that this relationship is, in some sense, a crude form of a Phillips curve, the existence of which is somewhat disputed. But we argue that this relationship is theoretically relevant because MMT economists explicitly acknowledge a relationship between inflation and the status of the prevailing buffer

$$\begin{aligned} \beta &= \eta - k\left(\pi - \psi\pi^{e}\right) \\ \Rightarrow \beta(\tau) &= \eta - k\left(\phi_1\pi_0\left(1 - \frac{\tau}{\tau^{SP}}\right) - \psi\pi^{e}\right) \end{aligned} \tag{6}$$

Thus, the fiscal authority can drive changes in the BER through changes in fiscal policy, *i.e.*, taxation, by changing realized inflation relative to expected inflation and the long-run relationship between the BER and the NAIBER.

The policymaker's preferences reflect consumers in the economy.[19] Preferences are represented by isomisery (social indifference) curves over deviations from the desired BER and inflation; the benevolent fiscal authority seeks to minimize over them. In particular, the fiscal authority, taking the NAIBER, expected inflation, inflation in the JG sector, and positive initial inflation as given, chooses the level of new taxes τ to minimize the present value of the stream of future misery indices.[20] Without loss of generality, let socially desired inflation $\pi^{*} = 0$.[21]

$$\min_{\tau} Z(\tau) = a(\beta(\tau) - p\eta)^2 + b(\pi(\tau))^2 \tag{7}$$

The desired BER is expressed as a fraction of the NAIBER, a parameter assumed to be known; the coefficient $p \in [0, 1)$, which means that, if not for inflation, society would prefer the actual BER to be less than the NAIBER. We discuss this assumption in-depth in Section 2.2. Substituting (6) into (7) and taking a first-order condition yields the following

employment ratio with respect to the NAIBER.

19. We abstract from the possibly redistributive effects of a change in the money supply engendered by new taxes, as well as from any temporary effect of a change in inflation on real income.

20. Note that, following White (1999), that means this reduces to a one-period problem since, by assumption, future buffer employment ratios and expected inflation rates are independent of the current period inflation rate.

21. We normalize π^{*} to zero following the convention of Barro and Gordon (1983) and reflecting MMT's desire for price stability mentioned above. Note that we could, following Friedman (1969), also rationalize a negative target, or a positive rate for seigniorage revenues (Selgin and White 1999). Ultimately, the exact target is analytically irrelevant.

equilibrium solution for τ:

$$\tau^{REE} = \left(\frac{-\tau^{SP}}{(ak^2 + b)\phi_1 \pi_0} \right) \left[ak\eta(1-p) - ak^2\pi_0\phi_1 + ak^2\psi\pi^e - b\pi_0\phi_1 \right] \tag{8}$$

Plugging this into (2) gives the following result for inflation:

$$\pi = \frac{ak\eta(1-p) + ak^2\psi\pi^e}{ak^2 + b} \tag{9}$$

Up to this point, the discussion has taken expectations as exogenous. Now, we impose the equilibrium condition that expectations are rational, such that $\pi = \pi^e = \phi_1\pi_1^e + \phi_2\pi_2^e$. Taking account of the fact that aggregate inflation is determined by (1), we can solve for aggregate inflation:

$$\pi^{REE} = \frac{ak\eta(1-p)}{ak^2(1-\psi) + b} > 0. \tag{10}$$

Therefore, the equilibrium inflation rate will be greater than zero, showing that even a benevolent, MMT planner would not commit to stable prices, even with a JG. The result is straightforward: if the fiscal authority has preferences over the BER and inflation, but there are tradeoffs between them, then an inflation bias will exist. Inflation can be used in the short-run, and potentially the long-run (depending on the value of ψ), to obtain a prevailing BER lower than the NAIBER. To the extent that a lower BER assures greater productivity and hence greater output compared to a higher BER, this will be desired. Moreover, this problem is compounded by the fact that to reduce inflation, costly taxes are necessary. The public, taking account of the incentives facing the fiscal authority and the different trade-offs she faces, then forms rational expectations around an inflation rate greater than zero.

To see this another way, suppose the public expected zero inflation. Clearly, this would

be irrational expectations, since realized inflation would be

$$\pi = \frac{ak\eta(1-p)}{ak^2(1-\psi)+b} > 0 = \pi^e \Rightarrow \pi \neq \pi^e. \tag{11}$$

In contrast to discretionary policy, we can imagine a benevolent planner that commits to a tax rule, which specifies an automatic tax increase for every π_0 shock. When $\psi = 1$, the planner's optimal tax rule implements zero inflation.[22] With commitment, the planner wants to stabilize prices. This is why we refer to stable prices as the "optimal" policy.

In the rational expectations equilibrium, where the fiscal authority provides the best response to the public's inflation expectations, which in turn are based on the fiscal authority's reaction function, the fiscal authority cannot credibly raise taxes to the optimal level and therefore cannot effectively reduce the actual inflation rate with tax policy.[23]

2.1 The Ineffectiveness of a JG

The previous section showed that the JG does not solve the time-inconsistency problem in the MMT program. Even with a JG, the planner does not have sufficient incentives to maintain stable prices.

This section makes a stronger point: the JG does nothing to stabilize prices. Note that because ϕ_2 does not show up for the final expression for equilibrium inflation. Therefore,

22. In a model that uses a NAIRU, instead of NAIBER, $\psi < 1$ means that the long-run Phillips curve is not vertical. Then the planner can exploit inflation to lower unemployment, even in the long-run.

23. For those who dislike our specific model, it is important to note that our main result, that a policymaker without commitment will be more inflationary than the optimal policy, is quite general. The result relies on three hopefully uncontroversial assumptions. First, we make an assumption about preferences: the policymaker is willing to trade off inflation for a smaller BER. Second, we make an assumption about feasible outcomes: there exists some BER where a further decrease in the BER will increase inflation. Third, we assume that aggregate demand and hence inflation in the non-JG sector can be reduced through increases in taxation. These three assumptions, the latter two of which are found in MMT literature, combine to give the result. If the policymaker can decrease the BER through an increase in inflation, she will want to, contrary to the optimal policy according to MMT proponents.

regardless of whether a JG exists or what its size is

$$\frac{\partial \pi^{REE}}{\partial \phi_2} = 0$$

Any change in the JG share of the economy does not affect equilibrium inflation. The reasoning is simple: as the JG share grows, its capacity as a nominal anchor increases as a consequence. However, with discretion, the planner has an incentive to stimulate the rest of the economy to a greater extent, resulting in an unchanged equilibrium inflation rate.

This is shown when we consider instead the effect of a change in ϕ_2 on taxes levied on the non-JG sector.

$$\frac{\partial \tau^{REE}}{\partial \phi_2} = -\frac{\tau^{SP} ak\eta(1-p)}{\pi_0 \phi_1^2 \left(ak^2(1-\psi)+b\right)} < 0. \tag{12}$$

Thus, the planner has even less of an incentive to increase taxes as much as she ought to, implying, a higher equilibrium inflation rate for the non-JG sector, though the same overall equilibrium inflation rate. Regardless of the JG share of the economy, (10) represents a social optimum given the constraints facing the planner.

Next, we analyze the extent to which the BER conforms to the NAIBER in the long-run given expectations. That is, we analyze the effect of an increase in ψ on the equilibrium inflation rate. For simplicity, assume $a = b = 1$.

$$\frac{\partial \pi^{REE}}{\partial \psi} = \frac{k^3 \eta(1-p)}{(k^2(1-\psi)+b)^2} > 0 \text{ where } \psi \in [0,1] \tag{13}$$

Thus, as ψ tends toward one, that is, as inflation expectations force the BER toward the NAIBER, the ability of the planner to permanently reduce the BER is mitigated, resulting in a lower equilibrium inflation rate. Given that we are unclear precisely what value this parameter could be expected to take given existing MMT literature, it is uncertain how

close to one or zero this parameter is.

2.2 A Brief Justification for $p < 1$

There is reason to believe that $p \in [0, 1)$. In general, a lower BER would surely be strictly preferable to a higher BER in the short run for several reasons. First, a lower BER is associated with higher productivity. Whatever the merits of the work performed within a JG program, there is a marked negative difference in the quantity and quality of output per person in a JG program versus in normal public or private sector employment, a fact which will tend to push the social desirability of employing people in a job program lower and hence reduce p. Indeed, one of the primary expositors of the JG acknowledges this problem: "Minimizing the BER improves productivity growth but leaves the economy open to inflation. By maximizing the BER, it controls inflation, but reduces productivity growth overall" (Mitchell 1998, p. 553). In this respect, a trade-off between inflation and productivity introduces a dilemma: to the extent that productivity is valued over inflation may determine the extent to which an inflation bias emerges.

Moreover, the greater the quantity of workers employed in a JG program, the more power workers will tend to have over employers in terms of exerting wage demands. Perhaps most crucially for why $p < 1$ is the fact that "the JG workers comprise a credible threat to the current private sector employees because they represent a fixed-price stock of skilled labour from which employers can recruit" (Mitchell and Wray 2005a, p. 6). To the extent that wage-earners have less bargaining power because of the JG, and in particular, to the extent that the JG represents a threat to both private- and public-sector unions, the JG represents a substantial negative externality for these groups *while they are employed*. All else equal, it is far better for a wage-earner or a union to have a lower buffer employment ratio because it increases their bargaining power. Indeed, while unions and labor lobbying groups could lobby for a lower BER, this would tend to raise the NAIBER

in the long run, simply because these very same groups, whose existence is encouraged by MMT (Mitchell and Wray 2005a, p. 7), raise real wages above the market wage.

While we consider our arguments sufficient to justify $p < 1$, there has been some debate regarding whether that assumption is justified or even necessary to generate the result in the context of monetary policy. For example, Blinder (1998) challenges the empirical validity of $p < 1$ since, in his view, bankers target the natural rate of unemployment in practice. McCallum (1997) argues that since central bankers understand that the Phillips curve is vertical in the long-run, they would not target an unobtainable goal. On the other hand, Ruge-Murcia (2003) and Cukierman and Gerlach (2003) have demonstrated that inflation bias can result even when $p = 1$. If, for instance, there is uncertainty in the economy and the central bank is more concerned about excessive unemployment than excessive overemployment, an inflation bias can result. Here, the JG corollary would be if the fiscal authority were more concerned about a higher BER than a lower BER. Hence it is not strictly necessary for our model to have $p < 1$, but it does illustrate the result most clearly.

3 Automatic Stabilizers and Countercyclical Policy

While the MMT literature has not explicitly discussed the issue of time consistency, MMT economists have advocated for the use of automatic stabilizers as a means of overcoming general political economy concerns (Fullwiler, Grey, and Tankus 2019). Typically, such recommendations include countercyclical spending, such as the JG, and procyclical tax policies (Wray 2019b, p. 17). Examples include "no longer indexing tax brackets or indexing them to an inflation target instead and introducing more tax brackets so that as incomes rise faster than the inflation target a higher percentage of income is progressively taxed" (Fullwiler, Grey, and Tankus 2019) as well as traditional taxation policies.

For example, as incomes decline with a decrease in private sector demand, tax receipts fall. Note that tax bracket indexation may be counterproductive because changes in the price level may come from either a supply shock or a demand shock. Indeed, under this policy, the automatic stabilizer would be contractionary when an adverse supply shock occurs, which is precisely the opposite of the appropriate policy response. Additionally, rather than allowing a fiscal authority to attempt to change taxes in real-time, Fullwiler, Grey, and Tankus (2019) suggest that "varying tax rates and other inflation offsets should be included in the budgeting process from the outset." This may have some merit, but including "inflation offsets" at the beginning of the period does not categorically evade the problem of discretion if the rule is not set independent of the fiscal decision-making process, which by design occurs at the beginning of the period. Moreover, the authors take the position that "we are not against one or more agencies being given additional tools to collectively manage demand on a discretionary basis" (Fullwiler, Grey, and Tankus 2019) yet we fail to see how this eliminates fiscal fine-tuning.

While we have no objection to further progressivity on stabilization grounds, we do observe several problems with relying on procyclical tax policies as a primary stabilizer. First, there is a prime mover problem. Suppose there is a demand shock primarily due to loose fiscal policy. That is, automatic stabilizers are not designed sufficiently well such that inflation could be throttled at its source. Presumably, this is not impossible. Then we are back to our model: discretionary policy is necessary to reduce inflation any further than what the automatic stabilizers have accomplished. Second and relatedly, it is highly unlikely that, absent an enormous change in the structure of taxation, automatic tax policy would be sufficient to reduce the BER significantly absent discretionary intervention. Historically, discretionary policy has made up 50% of the policy response to demand shocks (Sheiner and Ng 2019). Indeed, Auerbach and Feenberg (2000) and Cohen and Follette (2000) find that the impact of automatic stabilizers, while apparent, is

overall quite modest, indicating that MMT may have a more substantial overhaul of the tax system in mind. Otherwise, the policies advocated would be insufficient. Moreover, the automatic stabilizers would have to be designed such that they would automatically move the BER to the NAIBER, something which not only would require current knowledge of the NAIBER but God-like foresight of the structure of the economy.[24] At some point, there must be discretion.

Third, and perhaps most importantly, it is impossible for these automatic stabilizers to discriminate between supply shocks and demand shocks (Blanchard 2000). In an ideal world, stabilization policies would minimize deviations from potential output but not react to changes in potential output. This is not the case with automatic stabilizers (like tax policy) intended to react to changes in output, but which cannot adequately discriminate between changes in potential output and deviations from potential output. Moreover, as noted by Blanchard and Summers (2020), output shocks tend to be more persistent than unemployment shocks and hence may be permanent changes to potential output rather than deviations from potential output. Consequently, automatic stabilizers triggered by output changes—like tax policy—are not recommended.

Fourth, Blanchard and Summers (2020) advocate for semi-automatic stabilizers triggered by unemployment rather than output.[25] In a JG world, this is not possible. Changes in the BER follow changes in the stance of fiscal policy rather than vice versa, so that the structure of JG employment could not serve as a useful trigger for an automatic stabilizer. Thus, absent a major innovation in stabilization policy, MMT policymakers would be forced to conduct automatic stabilizers (or semi-automatic stabilizers) based on output

24. Moreover, the design of automatic stabilizers would not be immune from the Lucas Critique (Lucas 1976).

25. Semi-automatic stabilizers are fiscal rules—generally, tax or spending measures—"triggered by the crossing of some statistical threshold, be it a low output growth rate or a high unemployment rate" (Blanchard and Summers 2020, p. 125). An existing example is the extension of unemployment benefits during a recession.

triggers, a suboptimal policy.

Even taking into account automatic stabilizers like a progressive income tax structure, the fiscal authority would still, on net, prefer less taxes than is required to move the BER to the NAIBER. Moreover, the only way to avoid this outcome, which would be to eliminate discretion completely, would require designing a system of automatic stabilizers perfectly such that the future path of booms and busts are exactly offset and the BER equals the NAIBER consistently, something which we have already argued is impossible. Finally, if the fiscal authority does tie its own hands and leaves demand management completely to an imperfect system of automatic stabilizers, there would inevitably be accelerating or decelerating inflation. The reason is simple: if fiscal policy is necessary to move the BER to the NAIBER, but is incapable of doing so, then the BER will be at a level such that inflation is accelerating or decelerating.

4 A Labor Standard as Monetary Policy

The previous sections showed that, once we take into account the incentives of a policymaker, even a benevolent one, the MMT policy proposals would have difficulty stabilizing prices. However, it does still eliminate unemployment, which may be an important policy goal. In this section, we present another stabilization policy that is meant to secure full-employment: a labor standard. The next section more thoroughly compares the JG to the labor standard.

The idea of the labor standard is to stabilize wages (compared to an overall price index) and therefore help maintain full employment. Dating back to proposals from Thompson (1982) and Glasner (1989) and, more recently, discussed in Hendrickson (2018), the proposal would define the dollar as a fixed quantity of labor. For instance, by legislative or constitutional fiat, the dollar could be defined as 12 minutes of labor so that one

hour of labor could be purchased with $5. If labor were homogeneous and sold in spot markets, then this would function similarly to the gold standard, except without the economic fluctuations that typically accompany shocks to gold supply and demand.[26]

Because labor is heterogeneous and is not sold in spot markets, the central bank would instead "agree to buy and sell a particular asset of its own choosing on demand at the current price, but the central bank would guarantee that the value of this asset would always be equivalent to a fixed quantity of labor," where a fixed quantity of labor is defined as the average of an index of nominal wages (Hendrickson 2018, p. 3). For example, suppose the central bank chose to make silver indirectly convertible with a labor wage index which has an average wage of $5 per hour. The central bank fixes this wage as the target. The market price of silver is $5 per ounce. The nominal value of the wage index is announced at the beginning of every period. In period t, traders purchase n ounces of silver from the central bank, which is equivalent to purchasing n hours of labor. In the period $t+1$, the average wage, due to a negative output shock, declines to $4 per hour. Sellers of silver who sold some quantity n hours of labor would be owed $\$n$ by the central bank; buyers would owe $\$n$ to the central bank. If the market expects nominal wages to decline, as they did, then more silver would be sold to the central bank than purchased by traders, something which increases the money supply on net and thereby increases nominal wages. As Hendrickson (2018, p. 4) points out, these market exchanges would guarantee that nominal wages would generally remain constant intertemporally. Sales and purchases made by the central bank would be functionally equivalent to the open market operations conducted by central banks today in the maintenance of interest rate targets.

According to advocates of the proposal, there would be three key benefits. First,

26. One of the key criticisms of the gold standard is that, while gold's actual share of the economy was quite small, something like a gold supply shock could cause a dramatic increase in the price level and thereby cause outsized output fluctuations.

changes in the price level would be driven by the real side of the labor market, *i.e.,* by changes in the relative value of all other goods with respect to labor. Such an economy would function more closely to one described by moneyless economic models defined in terms of a numeraire good. Second, monetary policy would be effectively conducted by the market rather than a centrally directed authority, something which it has in common with certain NGDP targeting proposals (Sumner 2014). Third, wages would be kept relatively constant in nominal terms across the business cycle, something identified by Thompson (1982, p. 2) as the key to smoothing the costs of output shocks across time. This third point is why it is a useful comparison to the JG and why Hendrickson (2018, p. 5) calls the labor standard a "monetary-policy-based job guarantee," even though it does not guarantee full employment.

The enumerated reasons explain why Thompson (1982) humbly called it a "perfect monetary system." We reserve judgment on its perfection but will proceed to argue that it is a more practicable program for stabilizing the price level than a JG.

5 Fiscal versus Monetary Policy: A Monetary Constitution Approach

As a performance benchmark, it is useful to compare the fiscal JG to its monetary cousin, the labor standard. The proposals are similar insofar as both fix the dollar against wages, but they differ in execution. While the fiscal JG targets only one wage, the minimum wage, the labor standard targets a wage index. Moreover, the fiscal JG (at least as proposed so far) is executed under discretionary policy whereas the labor standard is a strict rule.[27] Given that these similar proposals are both intended to stabilize the price level, it

27. Another key difference is that the fiscal JG guarantees a job, but the labor standard does not.

makes sense to evaluate in a monetary constitutional approach.

Following Buchanan (1962) and operating under the framework of Boettke, Salter, and Smith (2021), we evaluate the relative practicability of these two proposals under a monetary constitutional rubric. The idea of a monetary constitution, just as an overall constitution, is for "rules-guided policy, insisting that the rule be general, fixed in advance, and not subject to change based on the whims of monetary policymakers" (Hendrickson and Salter 2018, p. 22). The extent to which a particular system is able to achieve price stability depends on the ability of that system to allow the path of inflation to be predictable, for those operating the system to have the incentives to achieve price stability, and whether or not those operating the system have the necessary information to hit planned targets. Therefore we evaluate the proposals in terms of the incentives that policy-makers face and the information they have.[28]

5.1 Incentives

If a policymaker intends to manage inflation with fiscal policy and a JG, does she have the necessary incentives to achieve stable prices? This is precisely the question we ask in section 2, in which we find that, in general, the policymaker will not be incentivized to target the NAIBER and therefore achieve stable prices. Rather, to the extent that the public prefers a lower BER and dislikes taxes, the more of an incentive the fiscal authority has to take advantage of the anchoring characteristic of the JG and temporarily drive up aggregate demand in the non-JG sector. While we agree that if concerns about political economy are waved away, perfect discretion will outperform any rule, but analytical rigor requires political economy considerations (Boettke, Salter, and Smith 2018, p. 544).

A solution to this problem is not immediately apparent. While Fullwiler, Grey, and

28. In general, we agree with critics of independent central banking that it is quite difficult in practice to insulate banks from political pressure (Boettke, Salter, and Smith 2021; Wray 2014; Hartwell 2019) and therefore advocate instead for strict *constitutional* rules, further insulating central banks.

Tankus (2019) contemplate the possibility of an independent agency managing demand policy in the same way as a central bank, this is objectionable for two reasons. First, it would likely be subject to the same criticisms levied by Wray (2014), namely that an independent authority would be independent in name only. That is, a fiscal authority could not truly be independent of the desires of a polity, democratic or otherwise. Second, it is highly undesirable and implausible in a modern democratic society to have a fiscal authority independent of the concerns of duly elected officials, or for those officials to act independently of the desires of their constituents. Such action would surely counter the incentive structure facing elected politicians (Buchanan and Wagner 1977).

Indeed, it is not altogether clear whether even a constitutional measure would be enough to bind the hands of the fiscal authority such that the inflation bias is eliminated. Recent work has shown that even the most stringent of fiscal limitations fail to follow through on their promise (Eliason and Lutz 2018). Moreover, since a prerequisite of functional finance—a cornerstone of MMT—is the idea that taxation should be used to influence the "social interest" (Lerner 1943, p. 46) there will arise situations when social goals must be weighed against the prospect of inflation. If, for example, the rich are already taxed at what MMT has deemed to be the optimal redistributive rate and inflation is still a threat, then taxes would have to be raised on the poor. Even setting aside the problem of fiscal lags, it is not altogether clear how exactly taxes could be used to reduce inflation when the system is not lump-sum or flat. Indeed, a key issue with the MMT program is that it introduces a plethora of policy objectives related to a green new deal, reduction of inequality, and social justice (Forstater 2006; Nersisyan and Wray 2019; Wray and Forstater 2004). We do not object to these objectives per se, but acknowledge that these unofficial objectives surely have trade-offs with each other or with long-run price stability (Boettke, Salter, and Smith 2021, p. 54). This is one of the fundamental tensions in the MMT program: given the existence of trade-offs between policy objectives and a

fiscal authority who presumably has some discretion (it is impossible to conceive of a situation otherwise), then price stability surely cannot be guaranteed.

Compare this to the labor standard, where humans are not even required to participate in its operation. Though it could be operated as a contingent rule similar to the gold standard (Bordo and Kydland 1995), a labor standard could be strictly implemented with a computer passively buying and selling from investors at given prices. Such a system would be a "true" rule in the sense that it would actually bind monetary policy makers (Boettke, Salter, and Smith 2018, p. 535). In such a case, there would be no need for a quasi-independent monetary authority with contradictory incentives to stabilize prices and assure full employment, nor a bureaucratic apparatus with its own set of incentives. Indeed, there is very little incentive to speak of in such a case; the system is set up such that it operates automatically.

Hence it seems that a labor standard would ensure a stable price level due to its strictness, whereas a fiscal JG would be incentivized to push inflation higher. Consequently, a labor standard meets Buchanan's *predictability* criterion to a greater extent, *i.e.*, a labor standard creates an environment in which the value of the monetary unit is relatively more stable. As in the central banking literature, it seems that "a simple rule almost surely will outperform discretion by the wisest and most conscientious" fiscal authorities (p. 544).

5.2 Information

It is well-established among economists that some rules perform better than others on the basis of information. For example, a Taylor Rule requires more information than nominal GDP targeting; the former requires knowledge of the output gap and parameter calibration frequently subject to change, while the latter can rely on dispersed knowledge captured in futures contracts to achieve price stability (Beckworth and Hendrickson

2020). The information necessary for optimal social plans to work is not only frequently dispersed among individual agents but is inarticulable and therefore inaccessible to a central authority (Hayek 1945), which in practice means that the more information necessary for a rule to function, the more likely it is to fail. This is true even for approaches like the JG, which in practice require substantial information to be implemented.

Consider a comparison between the labor standard and the JG. In the first case, for an optimal plan to be carried out, *i.e.,* for price stability to be achieved, policymakers only need knowledge of two parameters: the wage index and the price of the traded asset indirectly converted for labor (silver). Wage indices are subject to error and frequent revision. Given that there is not presently reason to believe that errors are randomly distributed, it follows that targeting the wage index may lead to some issues. But since the labor standard is a credible rule enforced in spot markets, traders can price in expected errors. Additionally, the price of silver is immediately known given that is traded in spot markets daily, with market-clearing prices apparent to anyone who participates.

Now consider the fiscal JG. Inflation control depends crucially on both the fiscal authority's desire and ability to target the NAIBER. Taking as given the fiscal authority's will to target the NAIBER, it is unclear precisely how this would be accomplished. There are two discrete issues. First, the fiscal authority must have knowledge of what the NAIBER actually is or a process must exist that automatically targets the NAIBER. Second, the fiscal authority must know how to target the NAIBER.

As with potential output or the natural rate of unemployment, the NAIBER is difficult to fix and is a function of many parameters, including the labor stock's skills and education, productivity, trade policy, and other factors. Although the NAIBER differs from the NAIRU, it is unclear why it would be any easier to estimate the former than the latter, which in practice is exceptionally difficult (Watson 2014). Hence a process must exist that guarantees stable prices without specific knowledge of the NAIBER.

Targeting the NAIBER is accomplished through fiscal policy (Mitchell 2000, p. 97). That is, while the hiring process of the JG does act as an automatic stabilizer in the sense that the marginal hire represents the "minimum fiscal shift that is required to maintain employment at its previous level the face of a falling level of private demand," (Mitchell, Wray, and Watts 2019, Ch. 19), the necessity of that marginal hire is determined endogenously. When private demand rises or falls, it is the task of the fiscal authority to raise or lower the BER.[29] Consequently, it is reasonable to presume that it would suffer from the same knowledge problems apparent under other discretionary fiscal regimes.

Moreover, consider the technical problem of how to appropriately measure economic conditions. For the fiscal authority, it will be unclear how to gauge the state of the economy at any given time, especially since most tools feature measurement lags and there still exist substantial disagreements about how to measure inflation and economic growth (Salter and Smith 2017, p. 509). Moreover, the policy tools open to a fiscal authority are practically limitless. Whereas a central bank is constrained to choosing among a few relevant, legislatively defined options, a fiscal authority could choose almost any option that could conceivably be called "counter-cyclical." Further, the optimal policy response to an output shock depends crucially on whether the source of the shock emanates from a supply shock or the demand shock, something which is again almost impossible for authorities to determine in real-time and has presented a substantial threat to economic policy-making (Sumner 2014, pp. 327-8). There is, moreover, a significant problem with determining the size of the fiscal multiplier empirically, something which must be known to generate a policy response of the appropriate magnitude. Although MMT policies are not Keynesian pump-priming policies, they are still reliant on discretionary fiscal policy

29. The relevant passage in the text notes that "the maintenance of the level of employment, however, is achieved by raising the BER…The government may decide that it has non-inflationary room to then expand non-JG employment via direct job creation in the career section of the public sector or by a general fiscal stimulus designed to increase private sector employment" (Mitchell, Wray, and Watts 2019, Ch. 19).

to adequately adjust aggregate demand such that the BER is non-inflationary, which in practice means taking account of some fiscal multiplier. Given the range of these multipliers, it is not altogether clear how the fiscal authority would determine the correct multiplier and the correspondingly correct policy.[30] In short, knowledge problems abound.

Fundamentally, a greater problem exists. Difficulties with forecasting changes in the economy and the necessary fiscal policy response may ultimately prove insurmountable in light of the "Lucas Critique" (Lucas 1976) and "Goodhart's law" (Goodhart 1975). In its implementation, the JG requires the usage of historical data to generate appropriate policy responses to shocks. Even if that process is not discretionary, the automatic stabilizers which may automatically generate a policy response to a demand shock or a supply shock and thereby move the JG would have to be designed based on historical data. In both cases, the creation of policy would necessarily rely on historical data contingent on potentially irrelevant past expectations and beliefs. "Since these expectations and beliefs can and do change, sometimes drastically, out-of-sample generalizations of policy effects are unreliable. This becomes even more difficult when the policy in question causes changes in expectation" (Boettke, Salter, and Smith 2021, p. 63). In contrast, a labor standard is entirely automatic and present-oriented; no knowledge of policy yesterday is necessary to generate stable prices today.

Therefore, in comparison to a labor standard that requires minimal information to maintain, a fiscal JG requires substantially more knowledge and is thus far less likely to succeed in practice. The Taylor Rule works quite well on paper but knowledge of the relevant parameters is often elusive and indeterminate (Beckworth and Hendrickson 2020). Precisely the same problem exists for MMT policies.

30. Reputable studies find substantially different figures, each of which has different implications for how the government ought to conduct fiscal policy. Whereas Barro and Redlick (2011) find a multiplier less than one, Romer and Romer (2010) argue that the multiplier is greater than one, whereas Mertens and Ravn (2013) finds a multiplier of approximately one.

6 Concluding Remarks

Consistent with others' findings of central bank inflation management under discretion, we find that inflation management under discretionary fiscal policy is subject to the same problem. Even with a JG intended to act as a nominal anchor, an inflation bias will exist under the following conditions. First, that the public may prefer a BER less than the NAIBER. Second, there is a trade-off between inflation and buffer employment. Third, that taxes trade off against inflation, *i.e.,* that fiscal policy can be used to reduce aggregate demand. Extending this result, we consider a fiscal JG under a monetary constitutional framework, with a labor standard serving as a foil. We find that, compared to a labor standard, a fiscal JG is severely lacking in its capacity to serve as an inflation management tool. Even so, whether or not a JG is on net desirable depends on a range of factors outside the scope of this study.

We are confident that some proponents of MMT will be dissatisfied with our model, which is indeed a simplification of the policies they propose. For example, rather than take expenditure weights ϕ_i as given, perhaps it would be better to let the fiscal authority choose these endogenously. Yet our study is *not* intended to be a complete analysis of MMT, and our point is quite general: proponents of MMT need to carefully consider questions of political economy.

Since our study focused substantially on the fiscal JG's inflation management capabilities rather than its capacity to increase (or reduce) output, we see this as a potential avenue for future research and discourse between neoclassical and MMT economists. Given that, let us conclude by proposing one way forward for fruitful discussions on the topic of MMT. We are slow learners, slower than most of the profession, and it is difficult for us to properly understand MMT journal articles when the methods and modeling techniques they use are substantially different from what we work on every day. It is very much like

taking an Aztec and dropping her in Madrid—broadly, everything is the same, but all details from the architecture to the language are worlds apart. No doubt, the paradigm shift engendered by MMT's rising status is similarly disorienting for mainstream economists when they attempt to engage with the literature. Consequently, it would be useful for furthering the discussion between MMT and mainstream economics and for understanding if more MMT ideas could be expressed within mainstream models. Andolfatto (2018) has set an example on the topic of banking. As with this paper, that often means extracting a slice of MMT rather than the whole system.

But that requires something of mainstream economists as well: reading and discussing outside of our particular framework, having the patience to work on ideas that do not come as natural, and fairly reading those we have disagreements with. Because we believe that MMT has something to offer the economics profession as a means for critically examining our own assumptions and models, we think this presents a feasible path forward for mutual understanding.

References

Albrecht, Brian C., and Brian Kogelmann. 2020. "Coasean Causal Inference: Using Models as Foils." https://www.briancalbrecht.com/Albrecht_Kogelmann_Coasean_Inference.pdf. (Cited on page 2).

Andolfatto, David. 2018. "Reconciling Orthodox and Heterodox Views On Money and Banking." *Review of Economic Analysis* 10:351–370. https://openjournals.uwaterloo.ca/index.php/rofea/article/view/1474. (Cited on page 31).

Auerbach, Alan J., and Daniel Feenberg. 2000. "The Significance of Federal Taxes as Automatic Stabilizers." *Journal of Economic Perspectives* 14 (3): 37–56. (Cited on page 19).

Barro, Robert J., and David B. Gordon. 1983. "Rules, discretion and reputation in a model of monetary policy." *Journal of Monetary Economics* 12, no. 1 (January): 101–121. ISSN: 0304-3932. doi:10.1016/0304-3932(83)90051-X. https://www.sciencedirect.com/science/article/abs/pii/030439328390051X. (Cited on pages 7, 13).

Barro, Robert J., and Charles J. Redlick. 2011. "Macroeconomic Effects from Government Purchases and Taxes." *Quarterly Journal of Economics* 126:51–102. (Cited on page 29).

Beckworth, David, and Joshua R. Hendrickson. 2020. "Nominal GDP Targeting and the Taylor Rule on an Even Playing Field." *Journal of Money, Credit and Banking* 52, no. 1 (February): 269–286. ISSN: 0022-2879. doi:10.1111/jmcb.12602. https://onlinelibrary.wiley.com/doi/abs/10.1111/jmcb.12602. (Cited on pages 26, 29).

Bell, Stephanie. 1999. "Functional Finance: What, Why, and How?" (Cited on page 3).

Blanchard, Olivier. 2000. "The Automatic Fiscal Stabilizers: Quietly Doing Their Thing—Commentary." *Economic Policy Review,* no. April: 69–74. (Cited on page 20).

Blanchard, Olivier, and Lawrence H. Summers. 2020. "Automatic Stabilizers in a Low-Rate Environment." *AEA Papers and Proceedings* 110:125–130. (Cited on page 20).

Blinder, Alan S. 1998. *Central Banking in Theory and Practice.* Cambridge, MA: MIT Press. (Cited on page 18).

Boettke, Peter J., Alexander W. Salter, and Daniel J. Smith. 2018. "Money as meta-rule: Buchanan's constitutional economics as a foundation for monetary stability." *Public Choice* 176:529–555. (Cited on pages 6, 24, 26).

———. 2021. *Money and the Rule of Law: Generality and Predictability in Monetary Institutions.* Cambridge University Press. (Cited on pages 24, 25, 29).

Bordo, Michael D, and Finn E. Kydland. 1995. "The Gold Standard As a Rule: An Essay in Exploration." *Explorations in Economic History* 32:423–464. (Cited on page 26).

Buchanan, James M. 1962. "Predictability: The criterion of monetary constitutions." In *In search of a monetary constitution,* edited by Leland Yeager, 155–183. Cambridge, MA: Harvard University Press. (Cited on pages 6, 24).

Buchanan, James M., and Richard E Wagner. 1977. *Democracy in Deficit: The Political Legacy of Lord Keynes.* New York City: Academic Press. (Cited on page 25).

Coats, Warren. 2019. "Modern Monetary Theory: A Critique." *Cato Journal* 39 (3). (Cited on page 5).

Cohen, Darrel, and Glenn Follette. 2000. "The Automatic Fiscal Stabilizers: Quietly Doing Their Thing." *Economic Policy Review,* no. April: 35–67. (Cited on page 19).

Cukierman, Alex, and Stefan Gerlach. 2003. "The Inflation Bias Revisited: Theory and Some International Evidence." *The Manchester School* 71 (5): 541–565. (Cited on page 18).

Edwards, Sebastion. 2019. "Modern Monetary Theory: Cautionary Tales from Latin America." *Cato Journal* 39 (3). (Cited on page 5).

Eliason, Paul, and Byron Lutz. 2018. "Can fiscal rules constrain the size of government? An analysis of the "crown jewel" of tax and expenditure limitations." *Journal of Public Economics* 166:115–144. doi:https://doi.org/10.1016/j.jpubeco.2018.07.008. (Cited on page 25).

Forstater, Mathew. 2006. "Green Jobs: Public Service Employment and Environmental Sustainability." *Challenge* 49 (4): 58–72. (Cited on pages 3, 25).

Friedman, Milton. 1969. "The Optimum Quantity of Money." In *The Optimum Quantity of Money and Other Essays.* Chicago: Aldine Publishing Company. (Cited on page 13).

Fullwiler, Scott T., Rohan Grey, and Nathan Tankus. 2019. *An MMT response on what causes inflation.* https://ftalphaville.ft.com/2019/03/01/1551434402000/An-MMT-response-on-what-causes-inflation/. (Cited on pages 3, 9, 18, 19, 24).

Glasner, David. 1989. *Free banking and monetary reform.* Cambridge: Cambridge University Press. ISBN: 0521361753. (Cited on pages 6, 21).

Goodhart, Charles. 1975. "Problems of Monetary Management: The U.K. Experience." *Papers in Monetary Economics* 1. (Cited on page 29).

Hartwell, Christopher A. 2019. "On the impossibility of central bank independence: four decades of time- (and intellectual) inconsistency." *Cambridge Journal of Economics* 43 (1): 61–84. (Cited on page 24).

Hayek, Friedrich A. 1945. "The Use of Knowledge in Society." *American Economic Review* 35 (4): 519–530. (Cited on page 27).

Hendrickson, Joshua R. 2018. *Monetary Policy as a Jobs Guarantee.* Technical report. Arlington, VA: Mercatus Center at George Mason University. https://www.mercatus.org/system/files/hendrickson_-_policy_brief_-_monetary_policy_as_a_jobs_guarantee_-_v1.pdf. (Cited on pages 6, 21–23).

Hendrickson, Joshua R., and Alexander W. Salter. 2018. "Going beyond monetary constitutions: The congruence of money and finance." *Quarterly Review of Economics and Finance* 69:22–28. (Cited on page 24).

Kydland, Finn E., and Edward C. Prescott. 1977. "Rules Rather than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy* 85, no. 3 (June): 473–491. ISSN: 0022-3808. doi:10.1086/260580. https://doi.org/10.1086/260580. (Cited on pages 4, 7).

Leijonhufvud, Axel. 1997. "Models and theories." *Journal of Economic Methodology* 4, no. 2 (December): 193–198. ISSN: 1350-178X. doi:10.1080/13501789700000014. http://www.tandfonline.com/doi/abs/10.1080/13501789700000014. (Cited on page 2).

Lerner, Abba P. 1943. "Functional finance and the federal debt." *Social Research* 10 (1): 38–51. (Cited on pages 10, 25).

Lucas, Robert E. 1976. "Econometric Policy Evaluation: A Critique." *Carnegie-Rochester Conferences Series on Public Policy* 1 (1): 19–46. (Cited on pages 20, 29).

Mankiw, Gregory N. 2019. "A Skeptic's Guide to Modern Monetary Theory." (Cited on page 5).

McCallum, B.T. 1997. "Crucial Issues Concerning Central Bank Independence." *Journal of Monetary Economics* 39:99–112. (Cited on page 18).

Mertens, Karel, and Morten O. Ravn. 2013. "The Dynamic Effects of Personal and Corporate Income Taxes in the United States." *American Economic Review* 103:1212–1247. (Cited on page 29).

Mitchell, William F. 1998. "The Buffer Stock Employment Model and the NAIRU: The Path to Full Employment." *Journal of Economic Issues* 32 (2): 547–555. (Cited on pages 3, 12, 17).

———. 2000. "The Job Guarantee in a Small Open Economy." In *The Path to Full Employment and Equity,* edited by William F Mitchell and Ellen Carlson, 89–116. Sydney: Centre of Applied Economic Research. (Cited on page 28).

———. 2017. "The Job Guarantee: A Superior Buffer Stock Option for Government Price Stabilisation." In *The Job Guarantee and Modern Money Theory: Realizing Keynes's Labor Standard,* edited by Michael J Murray and Mathew Forstater, 47–72. (Cited on pages 3, 9).

Mitchell, William F., and Warren B. Mosler. 2002. "Fiscal Policy and the Job Guarantee." *Australian Journal of Labour Economics* 5 (2): 243–259. (Cited on pages 3, 9).

Mitchell, William F., and L. Randall Wray. 2005a. "Full Employment through Job Guarantee: A Response to Critics." (Cited on pages 3, 17, 18).

———. 2005b. "In Defense of Employer of Last Resort: A Response to Malcolm Sawyer." *Journal of Economic Issues* 39 (1): 235–244. (Cited on page 6).

Mitchell, William F., L. Randall Wray, and Martin J. Watts. 2019. *Macroeconomics.* Red Globe Press. (Cited on pages 2, 5, 8, 9, 12, 28).

Mosler, Warren B. 1997. "Full Employment and Price Stability." *Journal of Post Keynesian Economics* 20 (2): 167–182. ISSN: 01603477. doi:10.1080/01603477.1997.11490146. (Cited on pages 3, 5).

———. 2010. *Seven Deadly Innocent Frauds of Economic Policy.* Valence. (Cited on page 9).

Nersisyan, Yeva, and L. Randall Wray. 2010. *Deficit Hysteria Redux? Why We Should Stop Worrying About U.S. Government Deficits.* Technical report. Levy Economics Institute. (Cited on page 3).

———. 2019. "How to Pay for the Green New Deal." (Cited on pages 3, 25).

Palley, Thomas I. 2015. "Money, Fiscal Policy, and Interest Rates: A Critique of Modern Monetary Theory." *Review of Political Economy* 27, no. 1 (January): 1–23. ISSN: 0953-8259. doi:10.1080/09538259.2014.957466. http://www.tandfonline.com/doi/full/10.1080/09538259.2014.957466. (Cited on pages 5, 7).

Paul, Mark, William Darity Jr, and Darrick Hamilton. 2018. "The federal job guarantee: A policy to achieve permanent full employment." *Center on Budget and Policy Priorities.* (Cited on pages 2, 5).

Romer, Christina D, and David H Romer. 2010. "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks." *American Economic Review* 100:763–801. (Cited on page 29).

Rondina, Giacomo. 2020. "A Blue Paper on Modern Monetary Theory." https://drive.google.com/file/d/1Qyfz37cg0n9bLz7mP-uZ5pG_AOX_Nx4n/view. (Cited on page 2).

Ruge-Murcia, Francisco J. 2003. "Does the Barro-Gordon model explain the behavior of US inflation? A reexamination of the empirical evidence." *Journal of Monetary Economics* 50 (6): 1375–1390. ISSN: 03043932. doi:10.1016/S0304-3932(03)00083-7. (Cited on page 18).

Salter, Alexander W., and Daniel J. Smith. 2017. "What You Don't Know Can Hurt You: Knowledge Problems in Monetary Policy." *Contemporary Economic Policy* 35, no. 3 (July): 505–517. ISSN: 10743529. doi:10.1111/coep.12219. http://doi.wiley.com/10.1111/coep.12219. (Cited on page 28).

Selgin, George, and Lawrence H. White. 1999. "A Fiscal Theory of Government's Role in Money." *Economic Inquiry* 37 (1): 154–165. (Cited on page 13).

Sheiner, Louise, and Michael Ng. 2019. *How stabilizing has fiscal policy been?* Technical report. Brookings Institution: The Hamilton Project. (Cited on page 19).

Stiglitz, Joseph E. 2019. *People, Power, and Profits: Progressive Capitalism for an Age of Discontent.* 371. New York, NY: W.W. Norton & Co. (Cited on page 2).

Summers, Lawrence H. 2018. *A jobs guarantee – progressives' latest big idea.* https://www.ft.com/content/8ee839aa-7dce-11e8-bc55-50daf11b720d. (Cited on page 2).

Sumner, Scott. 2014. "Nominal GDP Targeting: A Simple Rule to Improve Fed Performance." *Cato Journal* 34 (2): 315–338. (Cited on pages 23, 28).

Tcherneva, Pavlina R. 2012. "Inflationary and Distributional Effects of Alternative Fiscal Policies: An Augmented Minskyan-Kaleckian Model." (Cited on page 6).

———. 2018. "The Job Guarantee: Design, Jobs, and Implementation." (Cited on pages 3, 8).

———. 2020. *The Case for a Job Guarantee.* Medford, MA: Polity Press. ISBN: 9781509542116. (Cited on page 3).

Thompson, Earl A. 1982. "Free Banking under a Labor Standard – The Perfect Monetary System." (Cited on pages 6, 21, 23).

Tymoigne, Eric. 2014. "The Cost of Job Guarantee in the United States: Insights from the 1930s Work Programs." *Review of Radical Political Economics* 46 (4): 517–535. (Cited on page 8).

Tymoigne, Eric, and L. Randall Wray. 2015. "Modern Money Theory: A Reply to Palley." *Review of Political Economy* 27, no. 1 (January): 24–44. ISSN: 0953-8259. doi:10.1080/09538259.2014.957471. https://doi.org/10.1080/09538259.2014.957471. (Cited on page 3).

Watson, Mark W. 2014. "Inflation Persistence, the NAIRU, and the Great Recession." *American Economic Review* 104 (5): 31–36. (Cited on page 27).

White, Lawrence H. 1999. *The Theory of Monetary Institutions.* Malden, MA: Blackwell Publishing Inc. (Cited on page 13).

Wray, L. Randall. 1997. "Deficits, Inflation, and Monetary Policy." *Journal of Post Keynesian Economics* 19 (4): 543–571. (Cited on page 7).

———. 1998a. "Modern Money." Annandale-on-Hudson, NY. http://www.levyinstitute.org/publications/modern-money. (Cited on page 3).

———. 1998b. "Zero Unemployment and Stable Prices." *Journal of Economic Issues* 32 (2): 539–545. (Cited on pages 3, 5).

Wray, L. Randall. 2014. "Central Bank Independence: Myth and Misunderstanding." (Cited on pages 24, 25).

———. 2016. "Taxes are for Redemption, Not Spending." *World Economic Review* 7:3–11. (Cited on pages 3, 9).

———. 2019a. *MMT Responds to Brad DeLong's Challenge,* March. http://neweconomicperspectives.org/2019/03/mmt-responds-to-brad-delongs-challenge.html. (Cited on page 3).

———. 2019b. *Reexamining the Economic Costs of Debt.* Technical report. (Cited on page 18).

Wray, L. Randall, and Mathew Forstater. 2004. "Full Employment and Social Justice." In *The Institutionalist Tradition in Labor Economics,* edited by Dell P Champlin and Janet T Knoedler, 253–272. M.E. Sharpe. (Cited on page 25).