On Price Stability with a Job Guarantee

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Modern Money Theory (MMT) has risen to prominence in popular policy debates within macroeconomics. MMT economists argue for creating a job guarantee program, which they argue would generate price stability. Using a benchmark model of time consistency supplemented with a job guarantee, we conclude that once policymakers' incentives are considered, the job guarantee does nothing to help stabilize prices. We compare this program to a competing proposal to maintain price stability and full employment, NGDP targeting.

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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. Under a JG, the government would provide an open offer of employment to any worker at a fixed wage; hence involuntary unemployment could no longer be an issue. 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). The idea has entered the mainstream of economics through Summers (2018) and has been advocated by Stiglitz (2019).

The rise of the JG is mirrored by that 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] Despite MMT's popular prominence and growing acceptance within policy circles, mainstream scholars have mostly avoided formally engaging their ideas and, in many cases, have ignored them altogether. This approach to MMT from economists is increasingly untenable given the clear relevance of their policy ideas in the face of growing debt and deficits and calls for large expansions in the social welfare system such as a JG.

We fill this gap by studying key ideas of MMT inside a standard, neoclassical model and look at their most unique policy proposal: the job guarantee, which promises to both stabilize inflation and eliminate involuntary unemployment (Mosler 1997). We develop a

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 the discussion of Coase in Albrecht and Kogelmann (2020).

political economy model in which policymakers cannot credibly commit to optimal policy, using this to study the price stability properties of the JG. We show that the proposal to replace the standard central banking approach to inflation with a JG suffers from the same time inconsistency problem pointed out in the literature for models without a JG (Kydland and Prescott 1977; Barro and Gordon 1983). The JG does nothing to stablize inflation under a discretionary policy regime. We then compare the JG to an alternative: a nominal GDP targeting regime along the lines of Sumner (2012) under the dual rubrics of incentives and information.[2] Finally, we note that there are significant methodological differences between neoclassical economics and MMT, which generally eschews formal models. Our goal is to provide sensible results and further dialogue and debate between neoclassical and MMT economists and set a standard for academic engagement in the future.

2 A Job Guarantee as Inflation Management

Because a job guarantee program is a novel policy, we start with an overview of the program from the MMT perspective.

Like most macroeconomists, MMT economists express concern with maintaining a stable price level and full employment when assessing policy.[3] 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. The JG, operated by the government through federal agencies, would unconditionally offer a guaranteed job to all who want one at a fixed nominal wage (Wray 1998c; Mitchell 2017; Tcherneva 2020).

2. See (Thompson 1982; Glasner 1989; Hendrickson 2018) for a related proposal, the job guarantee under monetary policy, which has many of the same properties as a nominal GDP target.

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

There are two different models of how a job guarantee program might work. The first would call for something akin to the New Deal's Works Progress Administration and entail centralized administration and decision-making. The second, worked out in detail by Tcherneva (2012, 2018), calls for centralized spending grants to states, municipalities, and various NGOs and non-profits, which would then make their own decisions at a decentralized level. According to advocates of the program, the JG would primarily work to produce public goods, particularly in (green) community investment or community art (Forstater 2006; Tcherneva 2018, 2020). Tcherneva (2018) describes the MMT proposal as allowing for guaranteed jobs in the arts, building green infrastructure, performing child and elder care, and food desert relief. More specifically, Tcherneva (2018, p. 21) gives examples of typical jobs:

I. "A local artist collective employs painters, actors, musicians, and stagehands to run year-round productions for the community. They organize school outreach programs, run summer camps, and offer free art and music classes and literacy-through-the-arts courses for special needs youth. They collaborate with local schools in offering art enrichment programs."

II. "A former coal mining community experiences city blight, mass unemployment, and a high incidence of health problems. The JG organizes a comprehensive program for restoring the natural environment using the abandoned coal mine, based on existing best practices."

Hence JG output will typically go unpriced since the program will tend toward producing public goods. Neoclassical economists may stress the need to finance such a program after looking at the government's intertemporal budget constraint. Financing does not present a difficulty to MMT economists, mainly because, in their conception, governments with sovereign currencies can afford anything; their only constraint is an inflation

constraint (Mosler 1997; Wray 1998b; Bell 2000; Mitchell, Wray, and Watts 2019). A government can "afford" anything that does not generate inflation by printing money. Therefore, even though the size of the JG may shift endogenously as conditions in the labor market change, the government can afford it. To grasp the fiscal magnitude of the program, 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.

While one could advocate for the JG merely because of its social safety net property, MMT economists emphasize its ability to stabilize prices. Mosler (1997, p. 168) argues, "In addition to eliminating involuntary unemployment, the [JG] policy can be shown to provide *price stability*" (emphasis added). Mitchell (2017, p. 60) agrees, writing that a JG "would provide a macroeconomic stability framework designed to deliver full employment and *price stability*" (emphasis added).[4] Indeed, MMT economists pitch the JG explicitly as an inflation management tool to replace the Phillips-curve-based non-accelerating inflation rate of unemployment (NAIRU) system employed by central banks today.

Theoretically, the JG would stabilize prices in two main ways. First, in the background, as an automatic stabilizer, workers migrate in and out of the JG sector endogenously, and the fixed nominal wage and guaranteed job promote price stability. By setting a wage floor and a guaranteed job, there is a floor on nominal income so that if a recession occurs, the government can bound deflation. Hence the government ensures that nominal income cannot fall too low. The outside option of a JG for workers and the large pool of JG workers from which to draw for employers helps discipline the wage bargaining process such that wages cannot rise as quickly as they otherwise might during booms

4. 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."

and cannot fall as quickly as they might during busts. From our perspective, this is functionally the same as our current system, with unemployment insurance serving as the primary automatic stabilizer. Note that we discuss this and other automatic stabilizers in greater detail in Section 4. Moreover, although the JG program is the primary policy option for achieving stable prices, it is intended to complement other price stabilizing policies including regulation, addressing "bottlenecks," price controls, and using taxes to temper aggregate demand when necessary (Fullwiler, Grey, and Tankus 2019). For example, when economies are in boom phases, tax revenues rise as a consequence of greater profitability, which can automatically act as a mechanism for slowing private and moving workers to the JG sector, consequently anchoring prices (albeit with sufficient fiscal support).

For this paper, the relevant price stability mechanism of the JG is the one purported to replace the dual mandate of central banks. MMT economists frequently contrast the standard non-accelerating inflation rate of unemployment (NAIRU) concept with their own innovation, the non-accelerating inflation buffer employment ration (NAIBER) (Mosler 1997; Mitchell 2017; Mitchell, Wray, and Watts 2019). Under the NAIRU approach, which is dominant today, central banks manage inflation via interest rates, using some form of Phillips curve reasoning to increase unemployment through higher interest rates when inflation gets too high and vice versa. Under the NAIBER approach, defined as the ratio of JG workers to total employment consistent with stable prices, the government manipulates some policy lever to ensure that the buffer employment ratio (BER) remains consistent with stable prices, analogous to the NAIRU. However, this mechanism should *not* be understood as Keynesian fine-tuning; Wray (1998c, p. 543-544) notes that the critical difference is that, rather than fine-tune the economy as a whole, policymakers would only fine-tune the BER.

In contrast to the prevailing policy regime, the policy lever for manipulating inflation

resulting from wage pressure under MMT is *not* interest rates. MMT economists argue interest rates should be set at zero (Mosler and Forstater 2005). Hence MMT advocates instead for fiscal policy as the proper lever for manipulating the JG by using it to move workers from the JG sector to the non-JG sector. 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). Mitchell and Mosler (2002, p. 250) concur: "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."[5] Mitchell (2017, p. 70) agrees: "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." In a foundational paper, Mitchell (1998, p. 552) describes the mechanism similarly:

> [I]f the private labor market is tight, the non-buffer stock wage will rise relative to the BSE [JG] wage, and the buffer stock pool drains. The smaller this pool, the less influence the BSE wage has on wage patterning. Unless the government stifles demand, the economy will then enter an inflationary episode, depending on the behavior of labor and capital in the bar- gaining environment…In the face of wage-price pressures, the BSE/ELR approach maintains inflation control in much the same way as monetarism—by choking aggre-

5. MMT economists exhibit substantial optimism 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 a discretionary increase in taxes since they never mention an entirely mechanical, rule-based tax system.

> gate demand and inducing slack in the non-buffer stock sector. In private correspondence, Warren Mosler says that "if a shrinking ELR pool is not answered with demand reducing measures, other prices will rise relative to the ELR wage and old fashioned inflation can follow."

These "demand-reducing measures" turn out to be some form of policy. "As the BER rises, due to an increase in interest rates and/or a fiscal tightening, resources are transferred from the inflating non-buffer stock sector into the buffer stock sector at a price set by the government; this price provides the inflation discipline" (Mitchell 1998, p. 552). Numerous similar explanations appear throughout the literature.

From the perspective of MMT, the JG is superior to relying solely on either unemployment benefits or UBI for several reasons. First, the JG is seen as a better tool than either one because it has the unique property of allowing people to remain employed in some capacity and thus maintain work skills and habits while they continue to look for non-JG work. On the other hand, if unemployment benefits or UBI are used, then people may become idle and drop out of the workforce entirely. Second, while all three entail large government expenditures, only the JG has some prospect of producing public goods. Neither the UBI nor unemployment insurance has any hope of producing goods and services, except perhaps funding job search for the unemployed. However, this property does need to be traded off with the JG's apparent production of public goods; presumably, JG workers will have relatively little time to search for private sector work. However, MMT economists do not preclude the continuation of unemployment insurance alongside the job guarantee program. Third, the UBI has no inflation-fighting properties, and MMT economists generally disparage the inflation-fighting properties of unemployment as socially unproductive since it relies on an "unemployment buffer stock" (e.g., Mitchell (2017)). As Mitchell (1998, p. 552) points out, "The disciplinary role of the NAIRU, which forces the inflation adjustment onto the unemployed, is replaced by the compositional

shift in sectoral employment, with the major costs of unemployment being avoided. That is a major advantage of the BSE [JG] approach."

3 Time Consistency Model with a Job Guarantee

Since the MMT approach to inflation is novel and this is the first formal treatment of their proposal to manage inflation via the JG, it makes sense to consider MMT within a benchmark neoclassical model of inflation management. As with any policy without explicit rules, such as the JG, the time inconsistency problem lurks in the background. Hence, just as the neoclassical analysis of the central banking paradigm under rational expectations began in earnest with Kydland and Prescott (1977) and Barro and Gordon (1983) and continued with Rogoff (1985), we begin the formal treatment of the MMT inflation paradigm with a time consistency evaluation. To recapitulate, Kydland and Prescott (1977) consider a scenario in which inflation is high today and policymakers promise to lower inflation tomorrow. But given political preferences over inflation and deviations from the desired unemployment rate and a Phillips curve relationship, policymakers do not have an incentive to actually lower inflation sufficiently when tomorrow arrives. The public anticipates this and forms inflation expectations accordingly. Hence, given discretion over monetary policy, an inflationary bias persists.

We begin similarly by considering the response of the government to a positive inflation shock within an MMT/JG regime.[6] There are three key distinctions between this policy regime and the one considered by Barro and Gordon (1983). First, rather than a "buffer stock of the unemployed," there is now a JG. The relevance here is that with a new

6. Here and throughout the rest of the paper, we only discuss the kind of inflation that can be addressed by the JG. Our approach to the job guarantee programs relies on the presumption common in the MMT literature that it is not well-suited to address changes in relative prices such as energy or administrative costs, but is qualified to address inflation dynamics arising from changes in aggregate demand, like wage pressures. Otherwise a NAIBER-based standard could not replace the NAIRU.

program, the public should also have preferences over the size of this relative to the rest of the economy. Second, there is no longer a Phillips curve trade-off. Rather, there is a trade-off between the BER and inflation. Finally, the consolidated government no longer uses monetary policy to manipulate this relationship, but fiscal policy. Under these constraints, would policymakers restore stable prices given positive inflation? The intuitive answer is a resounding no; with discretion, the problem considered here is conceptually similar to the one considered by Kydland and Prescott (1977) and hence the fiscal authority will face an incentive to allow the BER to fall and inflation to rise.

To show this more formally, we have to build a minimal working model of the MMT economy, which is superficially very different from the one in Barro and Gordon (1983). Considering our discussion at the beginning of this section and in Section 2, a minimal list of ingredients to arrive at an analogous solution to Barro and Gordon (1983) is the following:

- A private sector and a JG sector
- Inflation dynamics
- A policy lever to change sectoral shares of the economy and hence inflation
- A relationship between the buffer employment ratio and inflation

We go through each of the above in turn to build the model and compute the equilibrium inflation rate analytically.

Private Sector and JG Sector

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

- Non-JG (private sector) with flexible prices and wages

- JG sector with fixed prices and wages

Each sector's share of total output is given by ϕ_i, $i \in \{JG, PS\}$, where JG is the subscript for the JG sector and PS is the subscript for the private sector. Mechanically, these add up to one, *i.e.*,

$$\phi_{JG} + \phi_{PS} = 1.$$

Note that these sectoral shares are endogenous and are moved by fiscal policy, a relationship which will be examined in more detail later.

Inflation Dynamics

Inflation in this economy is the weighted average of inflation in the two sectors. With no inflation in the JG sector, we can simply write this as

$$\begin{aligned} \pi &= \phi_{PS}\pi_{PS} + \phi_{JG}\pi_{JG} \\ &= \phi_{PS}\pi_{PS}. \end{aligned} \tag{1}$$

Inflation in the JG sector is fixed at $\pi_{JG} = 0$. As Mitchell, Wray, and Watts (2019, Ch. 19) 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 price rises in that sector must be zero since there is a constant price level overall (or a predictable increasing price level, which can be normalized to zero).

In setting up the model, we make several simplifying assumptions about inflation. First, we assume that the only inflation in the model arises from price pressures that the JG is designed to alleviate. As noted earlier, MMT economists occasionally emphasize structural problems exacerbating inflation; we do not deal with those here. Second, we make an explicit assumption about the shape of the aggregate supply curve. 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." We set up the model this way for two reasons. First, it is a good approximation of a plausible MMT model. Second, the simplicity provides policymakers an easy signal for when to alter policy to combat inflation. Therefore, an increase in inflation comes from a demand shock. Finally, we assume that the extra demand comes from either an exogenous helicopter drop or a change in money demand. Relatedly, we assume that *after* the shock, the velocity of money is constant, or at least that changes in fiscal policy do not affect velocity.

Policy Lever

Next, we require a policy lever for the government to mitigate inflation. In standard models, a Taylor Rule mechanism is implemented by a passive central bank. That solution is not an option in this case because MMT explicitly rules out nonzero interest rates (Mosler and Forstater 2005) and we are interested in the case of an active government. This leaves fiscal policy as the main mechanism by which the government can affect inflation, so we model this as a lump-sum rather than distortionary tax for several reasons. First, we want to study one particular aspect of MMT in isolation and it would distract from the analysis if some results were seemingly driven by distortionary taxation. Second, we understand that in practice governments cannot have perfect foresight over the level of tax revenue collected but we model the fiscal authority as if they do. We view this as uncontroversial largely because tax authorities tend to act as if they have a certainty-equivalent level of tax revenue, otherwise budgeting would be impossible. Third, note that our model is an adaptation of the Barro-Gordon model, which collapses a dynamic choice problem into a one-shot decision when economic dynamics are ignored and the economy is in steady

state from the start. Hence the same decision rule can be applied across all future periods, so there cannot be a concern about the level of tax revenue collected from lump-sum taxes changing over time. Finally, as noted above, there is significant textual evidence from MMT economists that this is exactly how policy is supposed to be done. 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).

The imperative for fiscal action within the JG model also follows from the game theoretic hypothesis that a rational firm may in general want inflation to be lower, but will not take the necessary steps to reduce inflation themselves. If prices and wages are rising at approximately the same rate, then there is little private incentive for firms to discard their workers and hence make themselves less competitive. This introduces the need for fiscal policy to step in and take steps to slow the private sector and move workers to the JG.

Consequently, the government's policy tool for changing the inflation rate is new taxes τ levied on the private sector. This trade-off between inflation and taxation leads to the result that taxes reduce aggregate demand and shift workers to the JG sector, which implies that sectoral shares change following a change in taxes. Let ϕ_{PS}^{0} denote the initial private sector share of the economy prior to the inflation shock and ϕ_{PS}^{SP} be the private sector share of the economy consistent with stable prices, both of which are exogenous. Following the MMT story, it must be that $\phi_{PS}^{SP} < \phi_{PS}^{0}$. Consistent with this setup, we define $\Delta\phi_{PS}^{SP} \equiv \phi_{PS}^{SP} - \phi_{PS}^{0}$ to be the required change in sectoral shares to return to price stability. With fiscal policy tool τ and exogenous parameter τ^{SP} that defines new taxes required for

stable prices, the relationship between fiscal policy and sectoral share is given by

$$\Delta\phi_{PS}(\tau) = \phi^0_{PS}\left(1 - \frac{\tau}{\tau^{SP}}\right) + \phi^{SP}_{PS} - \phi^0_{PS}. \tag{2}$$

Policy affects the real economy by shifting worker shares between the two sectors. In a stylized fashion, we assume that contractionary policy through an increase in taxes τ can bring the private sector share of the economy down from ϕ^0_{PS} toward ϕ^{SP}_{PS}. If the government chooses $\tau = \tau^{SP}$, then the first term will drop out and we will be left with $\Delta\phi_{PS}(\tau^{SP}) = \phi^{SP}_{PS} - \phi^0_{PS} = \Delta\phi^{SP}_{PS}$. This is precisely the change in the private sector share of the economy required to yield a sectoral share of ϕ^{SP}_{PS} and hence stable prices. Following the mechanism described in the previous section, this reduction in the private sector share then reduces inflation:

$$\pi(\tau) = \pi_0\zeta\left(1 - \frac{\Delta\phi_{PS}(\tau)}{\Delta\phi^{SP}_{PS}}\right). \tag{3}$$

In eq. 3, π is the realized inflation rate, π_0 is the (positive) inflation shock and $\zeta \equiv \frac{\phi^0_{PS} - \phi^{SP}_{PS}}{\phi^0_{PS}}$ is a parameter that corrects the relationship so that $\pi(\tau) = \pi_0$ if $\tau = 0$. The mechanism is straightforward: fiscal policy reduces the private sector share, which then reduces inflation.[7] To follow the MMT story, we assume that π_0 is positive; the fiscal authority wants to *reduce* inflation to its optimal level.

To get a since of the relationship visually, we plot inflation as a function of τ in Figure 1 given different initial inflation shocks. Note that for $\pi'_0 > \pi_0$, the required level of taxation to return to stable prices increases, $\tau^{SP'} > \tau^{SP}$.

7. 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.

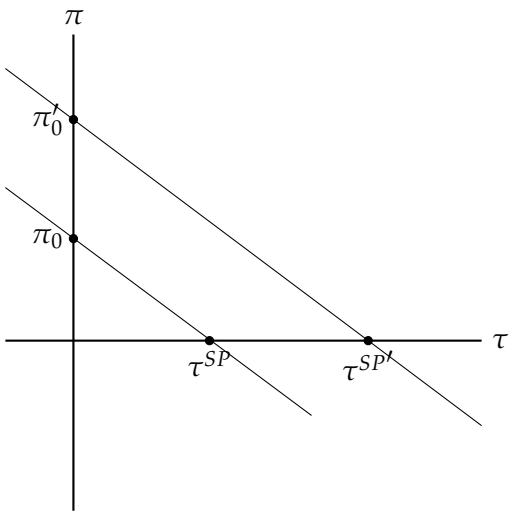

Figure 1: Taxes vs. Inflation Trade-off

Relationship between BER and Inflation

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. Therefore, $\beta \equiv \text{BER} = \text{JGE/E}$. 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. We assume a relationship between between the BER, NAIBER, and expected inflation:[8]

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

That is, the prevailing BER is a function of the NAIBER parameter η, current inflation, and the public's inflation expectations π^{e}, which are taken as given. 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

8. 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.

run. It is unclear what value ψ should take given existing MMT literature. 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. Ultimately, the extent to which the JG tends to distort the labor market will have an important impact on this parameter, but we do not model that here. We take the NAIBER as given and allow the reader to attach however much importance she wants to inflation expectations.

Note that, by combining equations (3) 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):[9]

$$\begin{aligned} \beta(\tau) &= \eta - k\left[\pi(\tau) - \psi\pi^e\right] \\ &= \eta - k\left[\pi_0\zeta\left(1 - \frac{\Delta\phi_{PS}(\tau)}{\Delta\phi_{PS}^{SP}}\right) - \psi\pi^e\right] \end{aligned} \tag{5}$$

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.

Preferences

The policymaker's preferences reflect consumers in the economy. Preferences are represented by isomisery (social indifference) curves over deviations from the desired BER

9. 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 employment ratio with respect to the NAIBER.

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. Without loss of generality, let socially desired inflation $\pi^* = 0$.[10]

$$\min_{\tau} Z(\tau) = a(\beta(\tau) - p\eta)^2 + b(\pi(\tau))^2 \tag{6}$$

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 3. We assume the policymaker knows the NAIBER parameter in order to make the implications of the model clear. In practice, this may not be the case, but the additional mathematical complexity engendered by making a different assumption would add nothing to the discussion. Moreover, policymakers today likewise do not have certain knowledge of the NAIRU parameter, but we model them as if they do anyway.

Equilibrium

Substituting (5) into (6) and taking a first-order condition yields the following equilibrium solution for τ:

$$\tau = \tau^{SP}\left(\frac{ak\left(\eta(p-1) + k(\pi_0 - \pi^e\psi)\right) + b\pi_0}{\pi_0(ak^2 + b)}\right) \tag{7}$$

Plugging this into (3) gives the following result for inflation:

$$\pi = \frac{ak\eta(1-p) + ak^2\psi\pi^e}{ak^2 + b} \tag{8}$$

10. 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.

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

$$\pi^{REE} = \frac{ak\eta(1-p)}{ak^2(1-\psi)+b} > 0. \tag{9}$$

Therefore, the equilibrium inflation rate will be greater than zero, showing that even a benevolent planner would not commit to stable prices. The result is straightforward and mirrors the classic time-inconsistency results: 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.

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.[11] With commitment, the planner wants to stabilize prices. This is why we refer to stable prices as the "optimal" policy.

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

11. 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.

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 come directly from the 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.

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. 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 other social safety nets." 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.

This section makes a stronger point: the JG does *nothing* to stabilize prices. $\phi_{PS}(\tau)$ (nor any parameters relating to the determination of the JG share) does not show up in the final expression for equilibrium inflation. Therefore, regardless of whether a JG exists or what its size is

$$\frac{\partial \pi^{REE}}{\partial \phi_{JG}(\tau)} = 0.$$

We are not saying that the JG does not solve the time inconsistency problem. That is true but is not unique to the JG. As the model shows, if the JG does not exist, as previous models have implicitly assumed, we have the exact same inflation. The effect of the JG is zero on 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. 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, (9) 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 $a = b = 1$.

$$\frac{\partial \pi^{REE}}{\partial \psi} = \frac{k^3 \eta (1-p)}{(k^2(1-\psi)+b)^2} > 0 \text{ where } \psi \in [0,1] \tag{10}$$

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.

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 as-

sociated with higher productivity. Whatever the merits of the work performed within a JG program as perceived by the public, output per worker in a JG program is markedly lower than 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 productivity. This does not mean the JG is unproductive or that the jobs done by the JG are irrelevant; rather that the public would plausibly prefer workers to be in more visibly productive sectors which tangibly add to the national accounts. 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 (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, central bankers do not seek an unemployment rate below the natural rate. B. 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. The relevance of this literature is unclear in the context of MMT. Note, however, that if the public prefers a JG share of the economy different from the share consistent with stable prices, then the result goes through regardless of p. Hence it is not strictly necessary for our model to have $p < 1$, but it does illustrate the result most cleanly.

4 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, their recommendations include procyclical tax policies and countercyclical spending, such as the JG (Wray 2019b, p. 17). The JG is intended to complement these programs rather than replace them entirely. Examples include traditional taxation policies, as well as "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). For example, as incomes decline with decreased 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 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 and noting that tax policies are already procyclical, 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 the automatic stabilizers have accomplished. Second and relatedly, it is improbable 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, Auer-

bach and Feenberg (2000) and Cohen and Follette (2000) find that the impact of automatic stabilizers, while apparent, is overall relatively 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 to automatically move the BER to the NAIBER, something which would require current knowledge of the NAIBER but perfect foresight of the structure of the economy. The reasoning is simple: the structure of the economy necessarily changes over time, which implies that automatic stabilizers cannot be designed *ex ante* such that inflation is perfectly addressed in each case. Hence some form of discretion is required. This does not necessarily mean tax policy, but it does mean that at some point the fiscal authority has to make a choice.[12] 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. Semi-automatic stabilizers are fiscal rules—

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

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. 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 conduct automatic stabilizers (or semi-automatic stabilizers) based on output triggers, a suboptimal policy.

Even taking into account automatic stabilizers like a progressive income tax structure, the fiscal authority would still, on net, prefer fewer taxes than are required to move the BER to the NAIBER. Moreover, the only way to avoid this outcome, which would be to eliminate discretion, would require perfectly designing a system of automatic stabilizers. Then, the future path of booms and busts is 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.

5 Fiscal versus Monetary Policy: A Monetary Constitution Approach

As a performance benchmark, it is useful to compare the JG to a competing proposal, nominal GDP targeting as a mechanism for ensuring stable prices.[13] The case for NGDP targeting is by now well-known, so we will not go through it in extensive detail.[14] Briefly, the central bank would establish a target of the path of NGDP over a pre-defined period. There are different models for precisely how the central bank would achieve this target, with several different mechanisms proposed for how that would work. For the remainder of the paper, we consider Sumner's (1995) proposal that the central bank targets the price level using an NGDP futures market. Given that, the central bank would mechanically (and transparently) trade NGDP futures contracts such that changes in the money supply accommodate aggregate supply and demand shocks as well as changes in money demand, so implementation of an NGDP level target is functionally equivalent to implementation of a strict rule.

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). How well a particular system can achieve price stability depends on whether those operating the system have proper incentives and information to hit

13. Our argument below also applies to a price-level targeting rule implemented through the Treasury Inflation-Protected Securities, or TIPS, market. However, comparing the JG to price-level targeting is unfair since the only focus of price-level targeting is stable prices. NGDP targeting has the same trade-off between prices and a real variable that we assumed above for the JG. NGDP targeting and the JG also make for a fair comparison since they are speculative policies that do not currently exist.

14. See B. T. McCallum (1987), Hendrickson (2012), and Sumner (2012, 2014) for overviews.

the planned targets. Therefore, we evaluate the proposals in terms of the incentives that policymakers face and the information they have.[15]

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 choose to target the NAIBER and therefore achieve stable prices. Instead, 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. We agree that if concerns about the 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 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 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

15. 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.

enough to bind the hands of the fiscal authority to eliminate the inflation bias. 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 policymakers must weigh social goals 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 an NGDP targeting regime governed by a futures market. Though it could be operated as a contingent rule similar to the gold standard (Bordo and Kydland 1995), an NGDP target 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 bind monetary policymakers (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 minimal incentive to speak of in

such a case; the system is set up to operate automatically.

Hence, an NGDP targeting regime does not have a bias toward higher inflation due to its nature as a rule. It is important to note that NGDP targeting does not necessarily ensure stable prices; a decrease in RGDP growth will generate inflation, and an increase will generate disinflation or deflation. However, these deviations from stable prices can be symmetric around zero, whereas a fiscal JG, as a form of discretionary policy, has a bias toward higher inflation. Since NGDP targeting is unbiased, we believe it meets Buchanan's *predictability* criterion to a greater extent, *i.e.* an NGDP target 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 (Boettke, Salter, and Smith 2018, p. 544).

5.2 Information

It is well-established among economists that some rules perform better than others based on information. For example, a Taylor Rule requires more information than nominal GDP targeting; a Taylor Rule requires knowledge of the output gap and parameter calibration frequently subject to change, while NGDP targeting 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 NGDP targeting 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 one parameter: the price of the NGDP future. Given that the government has already set the target path for NGDP, the central bank would simply react mechanically to changes in the observable price of the asset. Higher prices indicate growth is too high relative to the target, whereas lower prices indicate the opposite.

Now consider the JG. Inflation control depends crucially on both the fiscal authority's desire and ability to target the NAIBER. Given the fiscal authority's will to target the NAIBER, precisely how policymakers would accomplish this is unclear. There are two discrete issues. First, the fiscal authority must know 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.[16] Consequently, it is reasonable to presume that it would suffer from the

16. 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).

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 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 from Barro and Redlick (2011) on the low end to Romer and Romer (2010) on the high end, it is not altogether clear how the fiscal authority would determine the correct multiplier and the corresponding correct policy.

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 sta-

bilizers 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, NGDP targeting may be designed such that it is entirely automatic and present-oriented; no knowledge of policy yesterday is necessary to generate stable prices today.

Therefore, in comparison to a regime that requires minimal information to maintain, a 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 as a Taylor Rule.

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 JG under a monetary constitutional framework, with a NGDP targeting as a foil. We find that, compared to NGDP targeting, a 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. Although we are confident that some proponents of MMT will be dissatisfied with our model, 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.

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