

Money, Fiscal Policy, and Interest Rates: A Critique of Modern Monetary Theory

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ABSTRACT *This paper examines modern monetary theory (MMT). MMT is a restatement of established Keynesian monetary macroeconomics and so there is nothing new warranting a separate nomenclature. MMT over-simplifies the challenges of attaining non-inflationary full employment by ignoring dilemmas posed by the Phillips curve, maintaining real and financial sector stability, and an open economy. Its policy recommendations take little account of political economy difficulties, while its interest rate policy recommendation would likely generate instability. On the plus side, MMT's advocacy of expansionary fiscal policy is useful at a time when too many policymakers are being drawn toward mistaken fiscal austerity.*

1. Introduction

Modern monetary theory (MMT) is an approach to the origins of money, the source of value of fiat money, and the nature of the financial constraint on government. It also advances a number of policy recommendations regarding use of money-financed budget deficits, interest rate policy, and having government act as employer of last resort (ELR). MMT is associated with economists Randall Wray (1998, 2012b), Stephanie Kelton (née Bell) (2000), and Mathew Forstater (Forstater & Mosler, 2005), all of the University of Missouri at Kansas City, and financier Warren Mosler (1995). Australian economist Bill Mitchell (Mitchell & Muysken, 2008) is another contributor, although his focus has been on the employer of last resort (ELR) proposal and its macroeconomic stabilization properties. Wray (1998) provides the most comprehensive statement of MMT.¹

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¹Mitchell's work has an uneasy relationship because of his emphasis on the Phillips curve, which is in contradiction to Wray's position.

This paper argues that the macroeconomics of MMT is basically a restatement of established Keynesian monetary macroeconomics. There is nothing new in MMT's construction of macroeconomics warranting the distinct nomenclature of MMT. Moreover, MMT over-simplifies the challenges of attaining non-inflationary full employment by ignoring the dilemmas posed by Phillips curve analysis, the dilemmas associated with maintaining real and financial sector stability, and the dilemmas confronting open economies. This results in poorly conceived policy recommendations, especially for developing countries. Furthermore, MMT policy recommendations take little account of political economy difficulties.

2. MMT and the Origins and Value of Sovereign fiat Money

The core of MMT concerns how government issued fiat money (i.e., sovereign fiat money) relaxes the financial constraint on government and opens space for macroeconomic policy. That places sovereign fiat money at the center of the story.

The MMT approach to sovereign fiat money is the Chartalist approach developed by Georg Friedrich Knapp (1924), which was also accepted by Keynes (1930). Chartalist theory maintains government-issued fiat money has value because governments demand taxes be paid in sovereign money, thereby creating public demand for it.²

This idea that the demand for sovereign money is in part due to the obligation to use it to pay taxes is uncontroversial. For instance, James Tobin, one of the foremost neo-Keynesians, writes in his textbook (co-authored with Steven Golub):³

By its willingness to accept a designated asset in settlement of taxes and other obligations, the government makes that asset acceptable to any who have such obligations, and in turn to others who have obligations to them, and so on (Tobin & Golub, 1998, p. 27).

However, in addition to accepting the Chartalist explanation of money, Keynes and Tobin also hold that money derives value from its use as a medium of exchange, unit of account, and store of value. These features supported the development of money, although money was in turn captured by governments as part of state building and tax collection. Moreover, these features continue to impact the evolution of money, as reflected in the development of e-monies such as debit cards. From this perspective, state money is one form of money that is in perpetual competition with other forms of money, and the boundary of use fluctuates with legal and technological developments. However, state money is the highest form of money in that it can be used to pay tax obligations and it is also generally acceptable for discharge of private debts.

Unfortunately, MMT sets up unnecessary controversy by asserting that the obligation to pay taxes is the *exclusive* reason for the development of money.

²Wray (1998, chapter 2) provides a thorough and concise discussion of Chartalist theory.

³Wray (1998) cites this quote but it is buried in the last footnote (number 16) of his chapter on Chartalism.

Thus, Wray writes dismissively of other arguments regarding the development of money:

We all know the usual approach to money, that begins with the fantasized story about barter, the search for an efficient medium of exchange, . . . (Wray 2012a, p. 2).

Indeed, he goes further to claim that the obligation to pay taxes is the only reason for the development of markets:

Why did markets develop? Not to barter what you have but don't want, but rather to obtain the means of debt (tax) settlement (Wray 2012a, p. 6).

The critique of this extreme MMT perspective is succinctly stated by Rochon & Vernengo (2003, p. 57):

Sovereignty, understood as the power to tax and to collect in the token of choice, is not the main explanation for the existence of money, even if modern money is ultimately chartal money.

In many regards, these differences over the origins of money are peripheral to the main arguments of MMT, especially as all agree state money is Chartal. That said, they reveal two characteristics of MMT. The first is the tendency to over-simplification. The second is a polemic whereby over-simplified re-statement of theory is represented as if it were new theory through the nomenclature of 'MMT'.⁴

3. MMT and the Institutional Arrangement between Fiscal and Monetary Authorities

The central macroeconomic policy claim of MMT is that sovereign fiat money changes the nature of the financial constraint on government. In particular, there is no need for government to raise taxes in advance of spending as spending can now be financed in advance of taxes by having the central bank 'print' (i.e., create by keystroke) money. This ability to print money also explains why governments that issue debt in their own currency need never default. That is because central banks can always print money to pay debt interest and principal as government debt is just a promise to make predetermined payments of sovereign money.

Once again, all of these claims are widely understood. With regard to the capacity to finance spending without recourse to taxes this is easily seen via the government budget restraint given by

$$G - T = \theta + \beta \quad (1)$$

⁴For instance, Michael Hoexter (2013), a leading contributor to the MMT website *New Economic Perspectives*, writes: 'One of the components of macroeconomic management recommended by Keynes but theorized only later by Modern Money Theorists was ending the gold standard and transitioning to a fiat currency Abba Lerner's functional finance and later Modern Money Theory (MMT) have been the theories of fiat currency which have as yet not been self-consciously utilized within government policy or integrated into the mainstream economic teaching which still views money as a commodity among other commodities and not what it has been now for many years, a fiat money monopoly.' MMT claims in this vein are self-promoting and false.

G = government spending, T = net tax revenues after transfers and interest payments, θ = amount of budget deficit financed by issuing high-powered (sovereign) money, and β = amount of budget deficit financed by selling government bonds. This restraint is a flow-stock accounting relationship and not a budget constraint of the sort confronted by households. The former is fundamentally different from the latter because households do not have the option of issuing money that is accepted as the means of payment.⁵ For instance, setting $T = 0$ and assuming zero bond financing (i.e., $\beta = 0$), yields $G = \theta$.

The budget restraint was a key feature of neo-Keynesian analysis of fiscal policy (see Blinder & Solow, 1973; Christ, 1968; Tobin & Buiter, 1976) and it shows clearly that governments with the power to issue sovereign money can finance deficits without recourse to taxes. The critical question is not whether government can finance spending without taxes. Everybody knows it can. Instead, the question is what are the macroeconomic consequences of doing so and should government do so? MMT analysis is deficient in answering these questions and constitutes an analytic step back compared with the earlier neo-Keynesian analyses of Blinder & Solow (1973) and Tobin & Buiter (1976).⁶

As regards government's ability to always repay debt if it so chooses, that too is clear from the budget restraint. Repaying debt implies $\beta_{\text{Repayment}} < 0$, and this can always be financed by setting $\theta_{\text{Repayment}} > 0$ such that $\theta_{\text{Repayment}} + \beta_{\text{Repayment}} = 0$. It is not just neo-Keynesians who understand this. For instance, former Federal Reserve Chairman Alan Greenspan (1997, p. 2) writes:

That all of these claims on government are readily accepted reflects the fact that a government cannot become insolvent with respect to obligations in its own currency. A fiat money system, like the one we have today, can produce such claims without limit.

Finally, the government budget restraint shows the accounting relationship whereby governments that issue sovereign money can, in principle, finance spending by printing money. However, that also requires a particular institutional arrangement between the fiscal authority and the central bank. This institutional issue has been raised by Marc Lavoie (2011) and Brett Fiebiger (2012), and Lavoie terms it the 'consolidation' assumption. Simple T-accounting shows that the central bank must be willing to provide the government with the initial money balances to finance its spending. In effect, that implies the fiscal authority and central bank act as if they were a consolidated single actor.⁷

⁵Neo-Keynesians were fully aware of this difference. For instance, Halioussos & Tobin (1990, p. 899) describe the language of 'budget restraint' as a 'misnomer' and they prefer to call it a 'budget flow identity', reflecting its purely accounting character.

⁶Judging by the absence of citation references (see for instance, Wray, 1998), MMT-ers appear to be unaware of this earlier neo-Keynesian literature.

⁷Lavoie (2011) and Fiebiger (2012) focus on the fiscal authority–central bank relationship but there is also the issue of monetary policy. Even when the central bank and fiscal authority are not consolidated, it can look as if they are. The effect of budget deficits on the money supply and interest rates depends critically on the stance of monetary policy. Thus, if an independent central bank decides to fully accommodate fiscal policy then it will produce an outcome that looks as if the central bank and

In my view, this is not the main issue in the critique of MMT, but it is still an important issue. Many countries have chosen to separate their central bank and fiscal authority. That separation involves complete independence in the case of the European Central Bank (ECB). As regards the US Federal Reserve, there is arms-length decision making independence but the Federal Reserve is accountable to Congress. The pendulum, regarding the degree of independence, shifts with the political and economic times. Over the last 30 years, spurred by the political and intellectual dominance of neoliberal economic ideas, it has swung toward increased independence. In the 1960s and 1970s the Bank of England was directly under the control of the Chancellor of the Exchequer. In the 1990s that arrangement was changed and the Bank was given arms-length decision-making independence, subject to being accountable to the Chancellor and aiming for targets that are mutually agreed with the Chancellor.

The important point is institutional arrangements vary across countries owing to differences in country choices. This is an important issue of political economy. MMT dismisses this political economy and assumes there is and should be full consolidation of the fiscal authority and central bank.

My own preference is for greater consolidation and less central bank independence, but I would stop short of full consolidation. Paraphrasing the words of former Federal Reserve Chairman William McChesney Martin, it is difficult to take away the punchbowl in the middle of the party. That is what the central bank must sometimes do, and it is something politicians may find hard to do and therefore prefer to hand-off to others.⁸ Additionally, politicians may have an incentive to use monetary policy for electoral purposes, potentially giving rise to political business cycles (Nordhaus, 1975). MMT's dismissal of these political economy considerations is part of a general intellectual weakness regarding political economy, a weakness that is also visible in its treatment of fiscal policy and the ELR policy proposal.

4. MMT and Macroeconomic Theory

MMT is in essence a restatement of well-understood accounting relations that show the potential to finance budget deficits by printing money. However, accounting relations are not enough to guide policy. There is also need for macroeconomic theory that explains the consequences of fiscal policy under alternative financing arrangements. However, there is nothing new about MMT and the theory it uses is simplistic and inadequate for the task.

Furthermore, MMT has failed to provide a formal model that explicates its claims. Given this lack of formal modeling, readers must fend for themselves and the implicit model seems to be the simple income–expenditure model illustrated in [Figure 1](#). According to this, government can push the economy to full

fiscal authority are consolidated. MMT therefore implicitly assumes both consolidation and full accommodation by monetary policy.

⁸My suggested reform of the Federal Reserve System is described in Palley (2012b) and would give the President greater influence over the Federal Reserve.

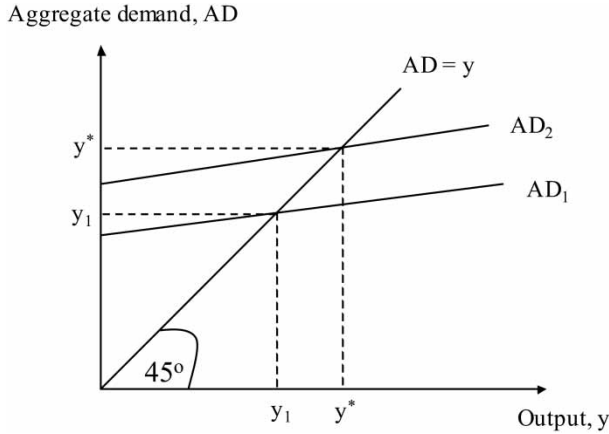


Figure 1. The macroeconomics of MMT ($AD_1 < AD_2$)

employment by increasing government spending (G) or lowering taxes (T) to raise aggregate demand (AD) to a level consistent with full employment output (y^*) so that

$$y = y^* = AD(G, T) \quad AD_G > 0, \quad AD_T < 0 \quad (2)$$

There is no finance constraint on G because of the capacity to issue sovereign money. However, once the economy reaches full employment output, taxes (T) must be raised to ensure a balanced budget satisfying the condition

$$D = G - T(y^*, t) = 0 \quad T_{y^*} > 0, \quad T_t > 0 \quad (3)$$

This balanced budget condition must be satisfied in order to maintain the value of fiat money. In a no growth economy, having the fiscal authority run persistent money financed deficits will cause the money supply to increase relative to GDP, in turn causing inflation.⁹

The policy control problem confronting the fiscal authority is to set its policy instruments (G and t) so as to hit its two targets given by $y = y^*$ and $D = 0$. There are two independent instruments (G and t) and two targets (y and D) so the control problem is feasible.

Although not identified by MMT-ers, there is an interesting Tinbergen (1952)–Mundell (1962) policy instrument assignment problem that requires G be assigned to the y target and t be assigned to the D target. That is because the government expenditure multiplier is larger than the tax multiplier. Consequently, assigning t to y could cause instability. If t were assigned to y , a fall in autonomous demand would require lower taxes, which would cause a budget deficit requiring lower G . That would in turn lower y and require yet lower taxes. The implication is

⁹In a growing economy, the fiscal authority can run persistent money-financed deficits and still maintain price stability if the implied growth of the money supply equals the rate of growth of real output.

that taxes must be used to hit the budget deficit target, while government spending must be used to maintain full employment output.

This assignment requirement has unappreciated policy implications in the current era of fiscal austerity. Many European governments, aided by the IMF, are seeking to return to full employment output with a budget deficit target. Broadly speaking, they appear to be looking to cut taxes to stimulate output and reduce government spending to hit the budget deficit target. That assignment is unstable.

The income–expenditure model with a balanced budget condition (i.e., Equations 2 and 3) appears to constitute the implicit MMT macroeconomic model. We can now turn to a critique. The first thing to note is that sovereign money is absolutely central to MMT analysis as it removes the financial constraint on government spending when below full employment output. However, it is absent in the simple income-expenditure model. Let us therefore begin to introduce it.

If the economy is initially away from full employment, assuming an appropriate assignment of instruments, the government should engage in increased money-financed deficit spending. Simple Keynesian expenditure–multiplier theory then shows that the deficit must increase by

$$\Delta D = [dD/dG] \Delta G = [1 - t/m] \Delta G > 0 \quad (4)$$

$1/m$ = expenditure multiplier. If the Keynesian multiplier stability condition is satisfied, increased government spending always increases the deficit and spending increases do not pay for themselves through increased tax revenues.¹⁰ The only time expansionary fiscal policy pays for itself is with balanced budget fiscal policy, but that is ruled out by MMT, which denies the need to finance deficits with taxes. In a static economy that means the money supply would keep growing relative to output, causing inflation that would tend to undermine the value of money.

Is there a way out of this? The answer is yes and it is provided by the neo-Keynesian stock-flow consistent IS-LM analysis of Blinder & Solow (1973) and Tobin & Buiter (1976). The key is adding a Pigou real balance effect. The budget deficit increases the real high-powered (or sovereign) money supply (H), creating a real balance effect that increases AD and eventually pushes the economy to full employment as illustrated in Figure 2.¹¹

¹⁰The expenditure multiplier for a standard income expenditure model is given by $m = 1 - \alpha - \beta[1 - t]$ where α = accelerator investment coefficient, β = marginal propensity to consume, and t = income tax rate >0 . Expenditure multiplier stability requires $1 - \alpha - \beta > 0$. It can then be shown that $\Delta D < 0$ requires $0 < 1 - \alpha - \beta$. The deficit can only fall if the economy is unstable.

¹¹In terms of the Blinder & Solow (1973) and Tobin & Buiter (1976) models, the MMT experiment is identical to a money financed budget deficit with a constant interest rate. Blinder & Solow (1973) and Tobin & Buiter (1976) actually analyzed fiscal policy under more arduous conditions when the monetary authority holds the high-powered money supply constant. Their analysis shows fiscal policy is still expansionary (although Post Keynesians would also argue this is a fictional experiment as monetary authorities do not target the high-powered money supply). In both cases the economy settles at a stable equilibrium characterized by a balanced budget ($D = 0$). The MMT experiment

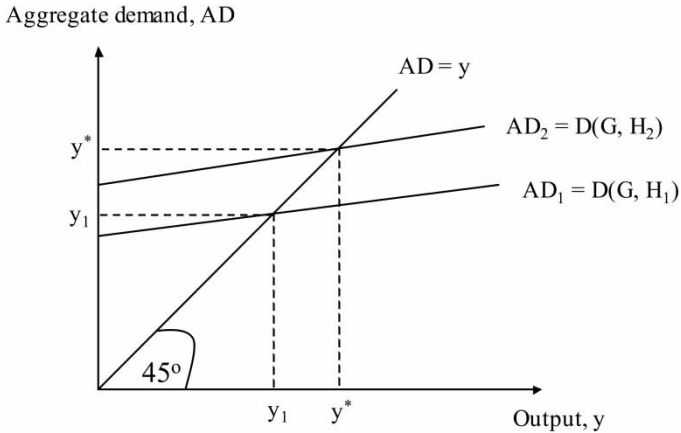


Figure 2. The MMT macroeconomic framework with a Pigou real balance effect ($AD_1 < AD_2$, $H_1 < H_2$)

There are several things to notice. First, the macroeconomics of MMT is a primitive version of neo-Keynesian stock-flow consistent IS-LM analysis. This IS-LM analysis of the effectiveness of fiscal policy is completely unacknowledged in the MMT literature, which is essentially the reinvention of an inferior wheel. Stock-flow consistent IS-LM analysis captures almost everything MMT has to say regarding fiscal policy.¹²

Second, introducing the government budget restraint also captures the notion that taxes drive money.¹³ This can be seen from the following simple model of the

adds the additional requirement that the budget deficit only be balanced when the economy reaches full employment output ($y = y^*$). However, there is nothing theoretically new.

¹²MMT's failure to acknowledge this neo-Keynesian IS-LM literature reflects a complicated sociology. First, the IS-LM stock-flow consistent literature is quite mathematical and MMT-ers have tended to exhibit an aversion to mathematical modeling on grounds that such modeling is an exercise in fiction. A second reason is that MMT is an extreme wing of Post Keynesian economics and many Post Keynesians have an allergy to IS-LM analysis. Rejection of IS-LM analysis has become a near-litmus test among many Post Keynesians. Such thinking is misinformed. Stock-flow consistent IS-LM analysis is temporary equilibrium analysis (like the income–expenditure model) conducted in output–interest rate space. IS-LM's architecture is fine but its detailed specification is subject to meaningful critique, particularly as regards the omission of endogenous money, inside debt, and inside debt effects on AD. This theological rejection of IS-LM has done great damage to PK economics by creating an unnecessary schism with neo-Keynesians and blinding Post Keynesians to the merits of the IS-LM model as a base on which they could have built. Indeed, Post Keynesian economics is now unwittingly re-inventing the stock-flow consistent IS-LM model as evidenced by the much cited work of Godley & Lavoie (2007). The principal innovation in their framework is the extension of the stock-flow consistent IS-LM model to include endogenous money, inside debt, and inside debt effects on AD.

¹³The language of 'taxes drive money' is misleading. What MMT means is that taxes positively affect the demand for sovereign money. However, taxes are just one factor, not the only factor. Moreover, in an endogenous money system in which the monetary authority targets the overnight interest rate, any demand for sovereign money to pay taxes will be provided by the monetary authority. Consequently, there can never be a shortage of sovereign money to pay taxes.

money market:

$$H^s = H(y - T, i, k) \quad H_{y-T} > 0, H_i < 0, H_k > 0 \quad (5)$$

$$H^s = H_{-1} + \theta + \gamma \quad (6)$$

$$\theta = G - T - \beta \quad (7)$$

where i = nominal interest rate, k = bank reserve requirements, γ = open market injections of the central bank. Equation 5 is the money market equilibrium condition that has money supply equal money demand.¹⁴ Equation 6 describes the evolution of the money supply, while Equation 7 is a re-arrangement of the government budget restraint.

Substituting Equations 6 and 7 into 5 and re-arranging yields

$$H_{-1} + G - \beta + \gamma = H(y - T, i, k) + T \quad (8)$$

The left-hand side of Equation 8 represents the high-powered money supply, which is determined by last period's supply, government spending less that part financed by bond sales, plus open-market purchases of bonds by the central bank. The right-hand side consists of private sector demand for high-powered money plus tax payments so that tax payments increase ('drive') money demand.

Third, the Blinder & Solow (1973) stability analysis of money-financed fiscal policy emphasizes the role of the Pigou real balance effect in closing the budget deficit. Expansionary fiscal policy always increases the budget deficit. Unless policy is reversed, closing the deficit requires increased AD that raises income and tax revenue. That is accomplished via the Pigou effect that results from the increase in the money supply caused by the deficit. However, as is now being shown by the response of the economy to the Federal Reserve's quantitative easing (QE) programs, this effect can be very slow.¹⁵ Consequently, the increase in the money supply over the duration of the return to full employment can be very large. That poses a significant policy challenge for future financial stability and future inflation that MMT is dismissive of. The next section discusses this and other issues.

5. Further Over-Simplifications and Omissions of MMT

The previous section explored the macroeconomic theory behind MMT and showed there is nothing new. In fact, MMT is an inferior rendition of the analysis of money-financed fiscal policy contained in the stock-flow consistent IS-LM analysis of Blinder & Solow (1973) and Tobin & Buitier (1976). This section explores some additional critiques.

¹⁴The money demand function could also include T as a separate argument with $H_T > 0$.

¹⁵The Federal Reserve's QE programs have directly monetized part of the budget deficit via government bonds purchases. The Federal Reserve has also purchased agency-backed mortgage backed securities (MBS). Since such securities are very close portfolio substitutes for Treasury bonds, their purchase is tantamount to deficit monetization.

5.1. Prices and Inflation

The central policy assertion of MMT is the non-existence of financial constraints on government spending below full employment. The claim is government can issue money to finance non-inflationary spending as long as the economy is below full employment. Moreover, policy can push the economy to full employment with zero inflation:

The primary policy conclusion that comes out of this analysis is, perhaps, shocking, but it can be stated simply: it is possible to have truly full employment without causing inflation (Wray, 1998, p. viii).

How this is accomplished is a puzzle. Although full of boilerplate disclaimers about the need to take account of inflation, Wray's analysis contains no explicit model of inflation, how inflation impacts the economy, or how that impact complicates policy.

Once again, the lack of formal modeling requires reading between the lines to find the MMT approach to inflation. That approach seems to be an 'on-off' model in which the economy is initially below full employment and then hits the full employment barrier. That corresponds to an economy with an L-shaped aggregate supply (AS) schedule as shown in Figure 3. Below full employment, the inflation switch is 'off' and expansions of AD generate pure output gains with no price level or inflation effects. At full employment, the inflation switch is 'on' and expansions of AD generate pure price level increases with no output effects.

The problem is this is not the way the macro economy works. Instead of a single sector, the economy is better characterized as a multi-sector arrangement with some sectors at full employment and others below. In this case, the price and output effects of expanding AD depend on the mix of sector conditions. This is illustrated in Figure 4 for the case of a two-sector economy. The AS schedule is horizontal when both sectors are below full employment. It is positively sloped when one sector is below full employment and the other is at full employ-

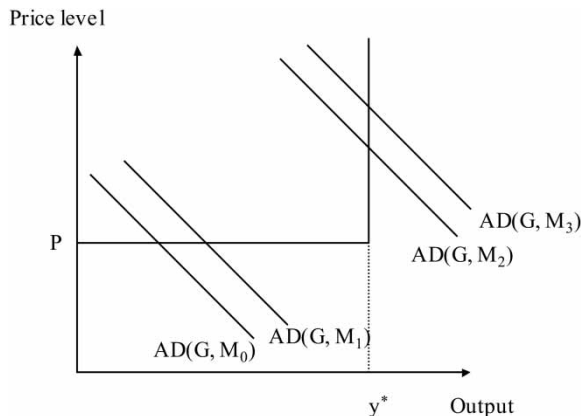


Figure 3. The implicit MMT model of price level and output determination ($M_0 < M_1 < M_2 < M_3$)

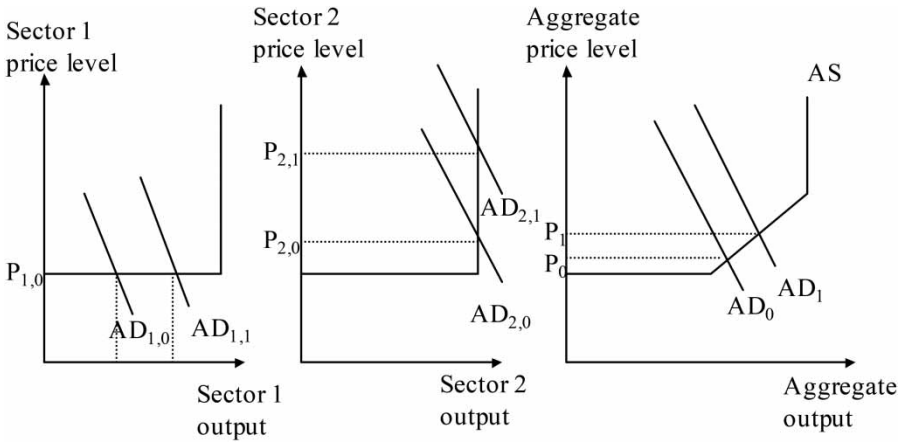


Figure 4. The AS schedule for a two-sector economy

ment; and it is vertical when both are at full employment. The economy’s price level–output response therefore depends on the mix of sector conditions.

Figure 4 shows that both prices and output increase in response to increased AD when one sector is below full employment and the other is at full employment. Exactly when prices start to increase will depend on the distribution of sector conditions, and prices may start to increase when aggregate output is quite low if demand is very asymmetrically distributed across sectors. Spending is an aggregate instrument and raises demand in all sectors. This is true for even targeted sector spending since the induced multiplier effects will ramify throughout the economy.

When converted to a dynamic frame, the price level–output trade-off becomes an inflation—unemployment trade-off captured by a standard Phillips curve of the form

$$\pi = f(u) + \lambda \pi^e \quad f_u < 0, \quad 0 < \lambda < 1 \quad (9)$$

where π = inflation, u = unemployment rate, λ = coefficient of inflation expectations feed-through, and π^e = inflation expectations.

The issue of the Phillips curve trade-off is central to macroeconomics and policy. MMT analysis, based on an aggregate income-expenditure model, offers a false choice of unemployment versus full employment with price stability that fails to address the dilemmas posed by the Phillips curve.

The significance of the Phillips curve is that inflation is not an ‘off-on’ phenomenon. Instead, it will be positive a considerable way away from policy-makers’ employment target and it is likely to increase as employment approaches the target. Policy needs to take account of this. That may mean changing the composition of deficit financing and shifting away from money finance to bond finance.¹⁶ MMT ignores such considerations.

¹⁶Phillips curve analysis imposes a trade-off between inflation and unemployment. My experience of MMT-ers is that they apply an extreme discount on inflation and view it as essentially costless econ-

5.2. *Inflation and Money-financed Budget Deficits*

Money-financed budget deficits increase the supply of high-powered sovereign money, which embodies latent purchasing power. Even if not activated immediately, high-powered money may be activated at a future date and it can be difficult to deactivate it in non-disruptive fashion. Moreover, deactivating it is especially difficult given that MMT advocates abandoning activist interest rate policy (about which more below).

The Phillips curve can be augmented to include the additional inflationary dangers of the excessive issue of high-powered money

$$\pi = f(u) + \lambda(h)\pi^e \quad f_u < 0, \lambda_h > 0, 0 < \lambda(h) < 1 \quad (10)$$

$$\pi^e = \pi(h) \quad \pi_h > 0 \quad (11)$$

where h = ratio of nominal high-powered money to potential nominal GDP. Increases in the h potentially impact inflation via two channels, both connected to expectations. First, it may increase the coefficient of inflation expectations, leading to greater feed-through of inflation expectations into the Phillips curve inflation process. Second, it may directly raise inflation expectations.

The power of these expectation effects is likely to be highly contextual. In times of deep recession when there is significant excess supply, such effects are likely to be relatively minimal. However, they are likely to become greater as the economy strengthens. Furthermore, these expectation effects may be volatile and subject to unpredictable change associated with shifts of confidence, etc.

Equation 10 is intended to be illustrative of how high-powered money might affect the inflation process. Modeling and predicting inflation is notoriously difficult, and the role of liquidity in driving inflation is especially difficult because of the long and variable lags associated with the effects of changes in liquidity. Liquidity may lie inert for long periods and then suddenly become activated by changes in psychology induced by small changes in economic activity.

That is not an argument against expansionary fiscal policy in times of recession, but it is an argument against exclusive reliance on money-financed deficits. Even in times of recession there are good reasons to use a combination of money-financed and bond-financed deficits. The former injects high-powered money, while the latter takes advantage of lower interest rates resulting from recessionary conditions. That means the government can finance deficits at relatively low cost and with reduced danger of subsequent liquidity blowback. As the economy moves out of recession, liquidity blowback concerns become even more prominent, speaking to the need to shift the composition of deficit financing toward increased bond financing.

omically. In this regard, I have heard a leading proponent of MMT claim inflation below 40 per cent is costless.

5.3. Financial Instability and Money-financed Deficits

Future inflation has been the traditional concern of money-financed deficits that generate large liquidity build-ups. The string of asset price bubbles in the 1990s and 2000s that culminated with the financial crisis of 2008 has made economists and policymakers aware of the dangers of asset price bubbles and financial fragility. Those dangers provide another reason for caution about financing deficits with money even in times of weak economic activity, and especially in times of more normal economic activity.

Whereas general price inflation is unlikely in times of weak economic activity, asset price inflation can occur at any time. As with general price inflation, modeling the relation between liquidity build-ups and financial instability is extremely difficult. That relationship is not mechanical or fixed in form. Instead, liquidity is akin to latent financial energy that can accumulate, leading to the greater danger of unanticipated combustion. However, because the danger cannot be deterministically modeled, that does not mean it should be ignored. Yet that appears to be the implicit recommendation in MMT's policy of exclusive reliance on money-financing of budget deficits.

5.4. Open Economy Considerations and Money-financed Deficits

As with the discussion of inflation, MMT writing (again see Wray, 1998) talks about the need to take account of open economy and exchange rate concerns, but nowhere is there formal treatment of these considerations and how they might constrain the use of money-financed budget deficits. As with inflation, taking account of open economy considerations introduces significant complexities and constraints regarding the use of money-financed budget deficits.

Such deficits increase the supply of high-powered money and the money created must be willingly held. Some of the increase in supply will be directed to the acquisition of foreign money balances and purchases of imports, which will generate exchange rate depreciation. That in turn can amplify inflation and inflation expectations, and also foster financial instability.

With regard to real output effects, there is a long literature, initiated by Krugman & Taylor (1978), about the possibility of contractionary devaluation, where exchange rate depreciation lowers economic activity. The likelihood of such an outcome depends on the characteristics of the economy such as the price elasticity of import and export demands; the extent of reliance on imports; availability of substitutes for imports; the nature and structure of domestic production; and the extent to which increased import prices feed through into domestic prices.

The exchange rate is also a critical determinant of inflation, especially in Latin American economies that are highly dependent on imported inputs and capital goods. In countries such as Brazil, it is the exchange rate rather than capacity utilization that is systematically connected to inflation and inflation expectations. There is a high degree of exchange rate pass-through into the domestic price level. Moreover, inflation expectations tend to be weakly anchored, so exchange rate depreciation can quickly trigger expectations of higher inflation that

destabilize both the economy and politics. Furthermore, wages tend to be a casualty of such developments as nominal wages tend to lag prices.

Small open economies with histories of high inflation have also shown themselves to be prone to the phenomenon of currency substitution or ‘dollarization’, whereby domestic economic agents abandon the national money in favor of a more stable store of value. Dollarization shows that the store of value property is an important property of money, contrary to MMT denials of the significance of this property. From a public finance perspective, it is costly in terms of lost seignorage revenue. And from a macroeconomic perspective, it can fuel higher inflation via the process described by Cagan (1956), with flight from domestic money in search of other stores of value driving up the velocity money, and thereby generating faster higher inflation.

Finally, there is the problem of the balance of payments constraint on expansionary fiscal policy, which applies to both developing and developed countries.¹⁷ If fiscal policy succeeds in expanding AD and income, it will likely cause significant deterioration in the current account. This can be financed via foreign borrowing, but this is rejected by MMT because it exposes countries to future foreign debt problems. Without a way to finance the current account deficit, financial markets will pressure countries to reduce their budget deficit. Attempting to escape the balance of payments constraint via exchange rate depreciation exposes countries to the inflation and financial dislocation effects discussed above. Moreover, the problem is amplified if all countries try to go that route as the result is global competitive devaluation. Parenthetically, the balance of payments constraint was emphasized by Cripps & Godley (1978); their solution, import controls, is rejected by MMT.

These adverse effects speak to the significant constraints on using money-financed budget deficits in open economies. They constitute a further critique of MMT claims about the ease of attaining non-inflationary full employment.

5.5. Other Reasons for Bond Financed Deficits

In addition to the above macroeconomic arguments cautioning against exclusive reliance on money-financed deficits, there are also microeconomic efficiency arguments for why governments should also use bond finance. A first reason for bond financing is the creation of a default-free financial instrument that can be used to price other privately issued financial instruments. Inflation-indexed bonds provide the ultimate risk-free instrument as they are free of both default risk and inflation risk. Given these properties, government bonds are useful to financial intermediaries and financial markets and they help promote financial stability.

A second microeconomic reason for bond finance, implied in the work of Tobin (1961, 1969, 1982), is that bonds are a closer portfolio substitute for equities and private capital than is high-powered money. The existence of widely-held

¹⁷My thanks to Esteban Perez for pointing out the balance of payments constraint on expansionary fiscal policy and Wynne Godley’s concern with it.

bonds that the central bank can deal in therefore provides the monetary authority with an effective channel for influencing the cost of private capital without engaging in direct acquisition of private capital. That is desirable as central bank purchases of private capital can easily become a source of subsidy for some and competitive disadvantage to others.

A third microeconomic reason for bond financing is that bonds provide a means of transferring income from future to current generations.¹⁸ If future generations are expected to be better off (i.e., have higher per capita real income) owing to technological progress, government bonds provide a way of sharing some of that future bounty with the current generation.

A fourth and final microeconomic reason for bond finance is that much public spending is long-lived. That includes spending on infrastructure, health care, and education. It may therefore make sense to finance such spending with long-term financing that matches financial costs to the stream of benefits. Those who receive the financial benefits thereby contribute to covering the financial costs.

5.6. Fiscal Policy Over-Optimism?

A last issue concerns the long-term effectiveness of fiscal policy. MMT proponents can be labeled ‘fiscal policy optimists’. The same holds for neo-Keynesians. Both believe that expansionary fiscal policy can shift the economy to full employment and keep it there, regardless of such outside factors as the distribution of income. This fiscal policy optimism is open to question.

For neo-Keynesians, counter-cyclical expansionary fiscal policy is viewed as a temporary expedient designed to offset temporary declines in private sector AD resulting from shocks such as slumps in animal spirits. The assumption is animal spirits, perhaps assisted by the pump-priming benefits of policy, will eventually bounce back. The same logic holds for MMT’s confidence in fiscal policy.

Other macroeconomic perspectives are less optimistic. Kaleckian macroeconomics emphasizes the significance of the functional distribution of income, and it can be augmented to include concern with the size distribution of income across households (Palley, 2013). In the Kaleckian model, inappropriate income distribution can produce demand shortage and unemployment. In the short-term, as in the Keynesian model, expansionary fiscal policy can increase demand and remedy the problem because government spending is a perfect substitute for private spending. However, higher government spending implies higher taxes to balance the full employment budget and that may have adverse supply-side tax effects that are not present in either Keynesian or Kaleckian models.

Another problem is the tendency for government spending to ratchet up (Peacock & Wiseman, 1961). Using money-financed government spending to offset macroeconomic fluctuations might amplify tendencies in this direction, with potential attendant affects for growth and productivity.

¹⁸That is because current generations own the bonds and will therefore receive payment made from some combination of future taxes and future money issue.

These last two observations, about supply-side and ratchet effects, lead in the direction of a deeper critique of both Keynesianism and MMT. In effect, MMT claims money-financed Keynesian fiscal policy can solve the problems of capitalism and deliver full employment and price stability. Starting from a Kaleckian position regarding the centrality of income distribution for full employment, Palley (1998, 2012a) argues for a ‘structural Keynesian’ approach. The argument is that full employment requires not just Keynesian demand management, but also structural policies that address labor market bargaining power concerns and international economic concerns unleashed by globalization. There are two aspects to the argument. First, if flawed income distribution is the cause of the problem, then policy should tackle the underlying problem rather than paper over it with fiscal policy. Second, attempts to paper over it are unlikely to be successful. Over time, the problem of flawed income distribution will keep reasserting itself, causing either a retreat into stagnation or an unstable cycle of fiscal intervention.

This structural Keynesian position has been criticized as too optimistic by Foster & McChesney (2010). They reiterate the argument of Magdoff & Sweezy (1983) that capitalism has a built-in genetic tendency to stagnation with unemployment and inequality. From their analytic perspective, patches such as fiscal policy certainly cannot solve the problem; nor can more radical interventions such as those envisioned in the structural Keynesian program. That said, the Magdoff and Sweezy position shares with structural Keynesianism a skepticism about the ability of fiscal policy to solve deep-rooted structural imbalances.

6. MMT and Interest Rate Policy

It is now time to turn to MMT’s interest rate policy recommendation. According to Wray (1998, p. 87) and Forstater & Mosler (2005) the natural rate of interest is zero. Wray (2007, p. 138) also writes that a monetary policy rule is preferred to policy discretion and that central banks should ‘set the overnight rate at zero, and keep it there. A properly programed “tin man” robot ought to do the trick’.

The logic of this interest rate policy is as follows. First, as a sovereign money issuer, government does not need to borrow money and pay interest to finance the budget deficit; it can just issue money. So why pay interest at all? Instead, just set the interest rate equal to zero and keep it there.

With the interest rate discarded, government uses fiscal policy to stabilize the economy. As discussed earlier, MMT’s implicit macroeconomic model is the income-expenditure model. Fiscal policy is therefore used to ensure that aggregate demand equals full employment output ($AD = y^*$). If $AD < y^*$, policymakers (who recognize the assignment problem discussed earlier) should increase G , financed by printing money. If $AD > y^*$, policymakers should reduce G , which reduces the budget deficit. Finally, if $AD = y^*$, policymakers need to ensure a balanced budget to prevent the money supply from continuing to increase and causing inflation. Policymakers (who again recognize the assignment problem)

should raise taxes to close the deficit.¹⁹ In this fashion, the economy is directed to full employment output with a zero interest rate. *Ergo*, the natural rate of interest is zero.

What is wrong with this story? First, as noted earlier, MMT lacks a theory of inflation and a Phillips curve. Inflation will undoubtedly be positive at full employment. With the policy nominal interest rate set equal to zero, the real interest rate will be negative. That, in turn, will spur massive borrowing, particularly to finance asset purchases, unleashing more inflation and asset price bubbles. A zero nominal interest rate at full employment is therefore likely to generate instability. The reason it does not in the MMT model is MMT's 'on-off' theory of inflation, where the inflation 'on' switch is triggered only beyond full employment.

Second, MMT's 'park it' policy approach to interest is likely to cause significant dislocation and frictional unemployment. 'Park it' policy puts the onus of macroeconomic stabilization on fiscal policy, and the assignment rule means stabilization must be done by variation of G . When $AD > y^*$, government spending must be cut, causing unemployment among government workers and suppliers. Resources need to be freed up and redirected to private sector use and that takes time. Activist interest rate policy works differently. It reins back private demand so that there is no job loss. Reining back demand is more efficient than cutting demand and relocating workers.

Third, a zero interest rate policy potentially undermines the feasibility of the welfare state. Modern social democratic states require a huge chunk of GDP to cover outlays such as governance, defense, infrastructure investment, healthcare, and education. In times when private sector AD is strong, a zero interest rate could result in excess demand requiring government spending cuts. Recall the MMT policy program requires $y^* = AD(G, T, i)$ and $D = G - T = 0$. A zero interest rate ($i = 0$) increases AD , requiring cuts in spending (G) and taxes (T). Assuming an interior solution exists, it could involve very low G .

Fourth, MMT discards the interest rate as an instrument of policy and relies on fine tuning of government spending to maintain full employment and taxes to maintain budget balance. The assumption is that spending and taxes can be adjusted rapidly and their effects kick-in quickly. Yet long ago, Milton Friedman (1961) raised the problem of inside and outside policy lags. The former represent lags regarding time taken to decide and enact policy change: the latter represent lags regarding time for the effects of policy to kick in. These inside and outside lags may be particularly problematic for discretionary fiscal policy and provide an important justification for using counter-cyclical interest rate policy to stabilize the economy. MMT opposes this with its zero interest rate 'park it' rule.

Milton Friedman emphasized the technical (time to identify and enact) dimension of inside lags. However, these lags can also be interpreted in political economy terms. Fiscal policy is a politically contested terrain that can produce policy stalemate and delay (as shown by the 2012 'fiscal cliff' conflict). That

¹⁹Ensuring $AD = y^*$ and $D = 0$ may require a bit of fiscal fine tuning with both T and G going up. Increased T closes the budget gap, while further increased G offsets any negative AD impact of increased T .

makes it difficult to rely exclusively on fiscal fine tuning to manage the economy. Tax policy is especially contested and it is particularly difficult to raise taxes in good times to control possible AD excess. Yet, that is exactly what MMT proposes with its abandonment of interest rate stabilization policy, which is to be replaced by tax policy.

Fifth, a zero interest rate policy could also pose problems in an open economy context. As noted earlier, small open economies are vulnerable to inflation and negative real income effects transmitted via exchange rate depreciation. Having a zero nominal interest rate in a world of relatively mobile financial capital, and in which other countries have positive nominal interest rates, would likely expose economies to financial capital flight and the possibility of damaging exchange rate depreciation.

A sixth reason for activist non-zero interest rate policy is that it provides an additional instrument of macroeconomic policy. The seminal analysis of William Poole (1970) shows that interest rate policy helps protect the real economy from disturbances originating in the financial sector. The logic is that financial disturbances affect interest rates and asset prices, which in turn affect the real economy. Targeting interest rates can therefore prevent financial disturbances from spilling into the real sector. However, the Poole model only incorporates cost of capital impacts on AD. If wealth effects on AD are included, there may be reason to adjust interest rates to offset the AD impact of fluctuations in financial asset prices. MMT needlessly discards that policy instrument.

Analytically, MMT's 'park it' approach to interest rates implicitly lets finance call the tune. In financial booms fiscal policy must turn contractionary, and the reverse holds in busts. This interest rate policy passivity is tantamount to believing that financial markets are stable and set interest rates and asset prices appropriately. The same belief is reflected in MMT's confidence about freely floating exchange rates. This view is inconsistent with the assessments of both Keynes (1936) and Minsky (1992 [1993]) regarding financial markets, although MMT claims to represent a Keynes–Minsky perspective.

Finally, the MMT motive for setting interest rates equal to zero is the euthanasia of the rentier. That is a good motive, but setting the nominal interest rate at zero is not the way to go. Income taxes provide a better route. Additionally, there is a case for asset-based reserve requirements that are an implicit asset tax (Palley, 2000, 2003, 2004).

Asset-based reserve requirements (ABRR) require financial firms to hold reserves against different classes of assets, with the regulatory authority setting reserve requirements on the basis of its concerns with each asset class. By forcing financial firms to hold reserves, the system requires that they retain some of their funds in the form of non-interest-bearing deposits with the central bank. The implicit cost of forgone interest must be charged against investing in a particular asset category, and it reduces the marginal revenue from that asset type. By varying the requirement on each asset class, monetary authorities can vary the return on each asset class and thereby manage demands, prices, and yields across asset classes.

In effect ABRR add policy instruments that supplement and strengthen interest rate policy, enhancing the ability of policymakers to stabilize and manage

financial markets. Most importantly, policy can target specific asset classes by varying the reserve requirement on that class. That enables policymakers to address concerns regarding specific asset classes without raising the general level of interest rates. Moreover, from a public finance perspective, ABRR are particularly desirable as they increase the demand for reserves (government issued high-powered money). That creates more space for stable non-inflationary money financed budget deficits. MMT-ers should therefore endorse adoption of ABRR.

7. MMT and the Employer of Last Resort²⁰

The final issue to be discussed is the MMT proposal for a government employer of last resort (ELR) to ensure adequate labor demand for full employment. The scheme has government set an ELR wage and offer an ELR job at that wage to all who want one. Figure 5 provides a partial equilibrium illustration of the ELR proposal. The ELR agency has a perfectly elastic demand for labor at the ELR wage. Private sector labor demand is constrained by inadequate AD and is equal to N_{Private} . Private sector employment is also assumed to be independent of the real wage. Labor supply is a positive function of the real wage. Given this labor market configuration, ELR employment is equal to the difference between private sector employment and labor supply at the ELR wage.

The ELR proposal rests on sound microeconomics, but there are problems regarding its macroeconomics and political economy. With regard to macroeconomics, MMT assumes that government can finance ELR by issuing money without consequence in terms of inflation, macroeconomic stability, or financial cost. The previous sections have shown that this is not the case as there are macroeconomic consequences to issuing money. As regards financial cost, a prudent government is limited in the amount of money it issues, which means ELR expenditures implicitly displace some other expenditures. That displacement may still be worth it, but the opportunity cost is non-zero.

The greater concerns about ELR are political. A first political problem concerns the relationship of ELR workers to public sector workers. The ELR wage is set below the market wage in order to avoid drawing labor out of private sector employment and contracting output. Under those conditions it is easy to imagine how anti-worker governments might try to substitute ELR workers for public sector workers, thereby undermining public sector unions and public sector pay. Moreover, weakening the position of public sector workers would likely have adverse spillover effects on the position of private sector workers. Lacking an understanding of these effects, many voters would likely support such measures on the grounds that it is unjust that one type of public sector

²⁰Arguments in this section are based on an early critique (Palley, 2001). Sawyer (2003) also argues that ELR is neither the macro nor micro economically efficient way to reach full employment, and it does not solve the problem of inflation at full employment. Seccarecia (2004) has also offered a critique of ELR that focuses on the failure of ELR to address the distributive problems of the existing system.

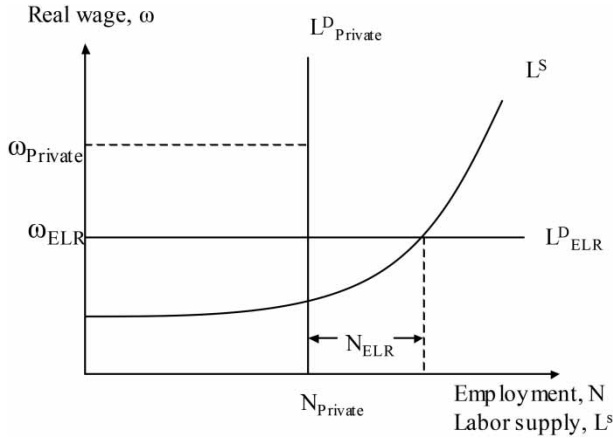


Figure 5. Partial equilibrium illustration of the ELR scheme

worker be paid less than another. Indeed, indications of exactly this type of political outcome are apparent in the UK where the Conservative government has recently proposed a variant of the ELR scheme.²¹

A second political problem concerns the relationship between the ELR wage and the minimum wage. The minimum wage is a critical element of fair and well-functioning labor markets. The ELR wage must be below the minimum wage to ensure that the minimum wage is binding and that the ELR scheme does not draw labor away from the private sector. That introduces a political tension regarding why government should employ workers at less than the minimum wage. This tension is likely to create pressure to lower the minimum wage to the ELR wage. That would hurt minimum wage workers, hurt all workers by undercutting the market's wage floor, and contract private sector output by putting minimum wage employment in competition with ELR jobs.

A third political problem is the possibility that ELR work could be used to discredit government. To the extent that ELR work is similar to work done by public sector workers, it increases the threat to public sector unions and wages. To the extent that the work is significantly different, it is likely that it will partake of unproductive or make-work activity. Such instances of make-work activity are then likely to be used by neoliberal politicians to attack government in general.

When it comes to policy there is always a need to consider political consequences. MMT is politically naive with regard to ELR. Balanced against that,

²¹See 'Million jobless may face six months' unpaid work or have unemployment benefits stopped,' *The Guardian*, Sunday 29 July, 2012. The Conservative's proposed scheme requires unemployed workers to take ELR jobs in order to receive unemployment benefits so that the ELR weekly wage effectively equals unemployment benefit. The Conservative proposal differs from the MMT proposal in that taking ELR jobs is mandatory. In the MMT proposal accepting an ELR job is a voluntary choice and workers continue to receive unemployment benefits even if they decline taking ELR jobs.

it is important not to let the perfect be the enemy of the good. Nor should fear of neoliberal reaction be a veto on progressive policy. ELR involves difficult calls of political judgment. It is not the self-evident boon that MMT-ers assert it to be.

8. Conclusion: MMT as Modern Money Tree Economics

This paper has examined the theory and policy recommendations associated with modern monetary theory. MMT is based on the simple income–expenditure model with the addition of a central bank that finances the government budget deficit. Its claims about the ease of attaining non-inflationary full employment via money-financed budget deficits ignore the challenges posed by the Phillips curve, an open economy, and financial stability. This leads to an unwarranted policy recommendation that central banks set the overnight nominal interest rate at zero and hold it (park it) there. These theoretical and policy failings are compounded by naive political judgment regarding the possibilities of fiscal fine tuning and the political economy implications of ELR for public sector employment.

In the current moment of high unemployment, MMT makes a valuable contribution as part of the rhetoric advocating expansionary fiscal policy. However, as regards macroeconomic theory, MMT adds nothing new warranting its own label. Instead, its over-simplifications represent a step-back in understanding.

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