

Macroeconomics vs. modern money theory: some unpleasant Keynesian arithmetic and monetary dynamics¹

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Abstract

The last decade has witnessed a significant revival of belief in the efficacy of fiscal policy and mainstream economics is now reverting to the standard positions of mid-1970s Keynesianism. On the coattails of that revival, increased attention is being given to the doctrine of modern money theory (MMT) which makes exaggerated claims about the economic costs and capability of money-financed fiscal policy. MMT proponents are now asserting society can enjoy a range of large government spending programs for free via money financed deficits, which has made it very popular with progressive policy activists. This paper examines MMT's assertion and rejects the claim that the US can enjoy a massive permanent free program spree that does not cause inflation. It also shows the proposed MMT fiscal program entails economically implausible debt and money supply dynamics that will likely trigger financial instability.

Keywords Fiscal policy, budget deficits, debt dynamics, money supply dynamics

JEL codes E00, E12, E62, E63

1. The revival of Keynesian fiscal doctrine

The last decade has witnessed a significant revival of belief in the efficacy of fiscal policy. In part, that revival has been prompted by the combination of the success of fiscal stimulus in combatting the US Great Recession of 2009 and the disastrous effects of fiscal austerity in Greece after the Greek sovereign debt crisis of 2009.

Mainstream economic theory has now embraced counter-cyclical fiscal policy effectiveness, albeit within the special context of economies trapped at the nominal interest rate zero lower bound (Christiano et al., 2011). The doctrine of expansionary austerity (Giavazzi and Pagano, 1990), which had flourished in the decade prior to the Great Recession, has now been largely rejected.² Likewise, the notion that the Keynesian expenditure multiplier is significantly less than unity has been abandoned, and there has been an upward revision of its size. Furthermore, it is now recognized that the multiplier is larger in times of recession (Batini et al, 2014). Lastly, the mainstream profession is now busy rethinking its attitude toward government debt, recognizing that there can be significant benefits from debt-financed government activity and that high levels of debt are sustainable in the long run if the interest rate is low (Blanchard, 2019). That latest development reflects a rediscovery of Domar's (1944) debt sustainability condition requiring the interest rate be less than the growth rate. In

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² Caveats still exist. For instance, some (Velasco, 2017) still argue that when fiscal policy is responsible for financial instability, fiscal austerity can be expansionary if it restores financial confidence. That argument has been invoked for austerity in Argentina and Brazil. However, the empirical record is suspect for both Argentina and Brazil, and the real problem is confidence which is better solved by other measures rather than by "bleeding the patient" with austerity.

effect, mainstream economics is now reverting to the standard positions of mid-1970s Keynesianism espoused by economists like James Tobin and Robert Eisner.

As is so often the case, there is a risk that the pendulum swings too far. Thus, on the coattails of the revival of fiscal policy, increased attention is being paid to the doctrine of Modern Money Theory (MMT) which asserts society can enjoy a range of large government programs for free via money financed deficits, all without inflation. That has made MMT very popular with progressive policy advocates.

Elsewhere (Palley, 2015a, 2015b, 2019), I have criticized the faulty macroeconomics of MMT which leads it to make exaggerated claims about the economic cost and capability of money financed fiscal policy. This paper further exposes MMT's faulty logic via an exercise in applied macroeconomic arithmetic.

Recently, progressive Democrats have called for a range of programs that include Medicare for all, expanded Social Security, free college tuition, and a Green New Deal. There is significant merit to each of these proposals and all of them can reasonably be argued for. However, there is also the question of how they will be financed. Proponents of MMT assert that financing is a non-problem and the programs can be financed by printing money and without causing higher inflation (Kelton et al., 2018). However, simple back of the envelope macroeconomic arithmetic shows that assertion to be completely implausible.

As has long been known by Keynesians (Blinder and Solow, 1973), money financed deficits can be used to finance programs when the economy is away from the full employment - inflation boundary. However, that space will be temporary to the extent deficits increase real financial wealth and automatically drive the economy to full employment, at which stage there will be an inflationary gap. In a static economy, once the economy gets to full employment, policymakers are compelled to run a balanced budget if they want to avoid inflation.³ There is a money financed free lunch as long as the economy is below full employment, but the free lunch inevitably disappears. If programs are permanent, they ultimately have to be paid for with taxes or they will generate inflation.⁴

Furthermore, not only will the proposed programs likely trigger high inflation, they will also generate economically implausible debt and money supply dynamics that stand to trigger financial instability. Financing government spending by increasing the monetary base is the headline policy recommendation of MMT. However, the monetary base is actually quite small compared to GDP, which limits the ability to use that financing option without triggering economic disruptions.

2. Some unpleasant Keynesian arithmetic: macroeconomic and budget deficit impacts

Table 1 details the implied direct GDP cost of Medicare for all, free college tuition, and the Green New Deal. According to the Centers for Medicare and Medicaid Services, private

³ If there is a conventional Keynesian Phillips curve the economy will experience inflation before what is reasonably deemed full employment.

⁴ There is more leeway in a steady state growing economy in which case the deficit can be such that that stock of real wealth (W/P) grows at the rate of per capita real output growth. If inflation is accepted, then the deficit can be such that the stock of nominal wealth grows at the rate of per capita real output growth plus the target inflation rate.

sector healthcare expenditures were 8.6 percent of GDP in 2017.⁵ Private sector expenditure on tertiary education was 1.7 percent of GDP in 2014.⁶ The Green New Deal has not been costed, but if it were the equivalent of the Marshall Plan it would cost 2 percent of GDP.⁷ Together, that implies an AD injection equal to 12.3 percent of GDP. If the private sector saves 10 percent of the expenditures it is relieved of (i.e. healthcare and tertiary education), there would be an offsetting saving leakage equal to 1.0 percent of GDP. The net AD injection is therefore 11.3 percent of GDP, which would then be subject to an expenditure multiplier effect. Assuming a multiplier of 1.5, that implies a final increase in AD of 17.0 percent of GDP.

Table 1 AD effect of proposed policy proposals

	Percent of GDP
(1) Medicare for all	8.6
(2) Free college tuition	1.7
(3) Green New Deal	2.0
(4) Total AD injection (=(1)+(2)+(3))	12.3
(5) Relief saving (= [(1)+(2)] x 0.1)	-1.0
(6) Net AD injection (=(4)-(5))	11.3
(7) Final increase in AD (=(6) x 1.5)	17.0

Table 2, shows the back of the envelope calculation regarding the impact on the budget deficit. The budget deficit in fiscal year 2018 was 3.9 percent of GDP, to which the MMT policy programs would add 12.3 percent of GDP. Assuming an average marginal tax rate of 25 percent, tax revenues would increase by 4.3 percent of GDP.⁸ Consequently, the net increase in the deficit would be 8.0 percent of GDP, implying an overall deficit of 11.9 percent of GDP.

⁵ See NHE Fact Sheet, <https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nhe-fact-sheet.html>

⁶ See Statista.com, <https://www.statista.com/statistics/707557/higher-education-spending-share-gdp/>

⁷ See Eichengreen (2010).

⁸ According to the FRED data base of the Federal Reserve Bank of St. Louis, US federal receipts have averaged 17.2 percent of GDP over that past five years (2014-2018). In 2018 they were 16.2 percent of GDP. The average tax rate is therefore approximately 17 percent. The assumption of a 25 percent marginal tax rate reflects the presence of built-in progressivity in the tax code.

Table 2 Budget deficit effect of proposed policy proposals

	Percent of GDP
(1) Deficit in 2018	3.9
(2) Effect of program spending on the deficit	12.3
(3) Induced tax revenues (= 0.25 x 17.0)	-4.3
(4) New budget deficit (=(1)+(2)-(3))	11.9

3. Unemployment rate and inflation impacts

Turning to the labor market, assuming an Okun coefficient of 0.5 implies that producing an additional 17 percent of GDP would reduce the unemployment rate by 8.5 points. Since the US currently has an unemployment rate of 3.9 percent, that is not possible. The implication is the economy would be pushed far beyond full employment.

Generously assuming the full employment unemployment rate is 2 percent, implies the US economy still has 1.9 percent of labor slack.⁹ Again using an Okun coefficient of 0.5, implies the economy has spare capacity equal to 3.8 percent of GDP.¹⁰ Consequently, the proposed policy programs generate a net excess AD of 13.2 percent of GDP, being the increase in AD (17.0 percent) minus spare capacity (3.8 percent). Excess demand of 13.2 percent of GDP in the context of a 2 percent unemployment rate is likely to produce high inflation.

One way to prevent such inflation would be for the Federal Reserve to spike interest rates to control AD. However, that would likely produce another financial crisis given the leveraged state of household and corporate balance sheets, and because of the high valuation of equities. It is also the case that MMT proponents (Wray, 1998) reject using interest rate policy to fine tune the economy. Instead, they recommend parking the interest rate at zero. Were that policy adopted, in conjunction with MMT's recommendation of money financing of the policy program, the inflation situation would be even more dire.

The second way to prevent inflation would be to raise taxes. Over the last five years US federal receipts have averaged approximately 17 percent of GDP. To offset excess demand of 13.2 percent of GDP, federal receipts would need to rise by 13.2 percent of GDP, constituting a 78 percent increase in the federal tax and fee take.

⁹ Some may argue the US has additional labor market slack owing to low rates of labor market participation. However, the US economy has never reached two percent unemployment in the post-war era, so that any uncounted slack is already built into the assumption of full employment corresponding to two percent unemployment.

¹⁰ The assumption of excess capacity of 3.8 percent of GDP is generous in two regards. First, it assumes a very low full employment rate of unemployment. Second, it assumes the Okun coefficient holds steady at 0.5. In reality, it is more likely the Okun coefficient deteriorates (i.e. increases) as the economy approaches full employment owing to diminishing returns and decreasing quality of marginal workers.

4. Debt and money supply dynamics

Taking a lead from Taylor (2019), we can also look at the debt and money supply dynamics implied by the proposed MMT fiscal program. Those dynamics are governed by Domar's (1944) equation of motion for the debt-to-GDP ratio, which is given by

$$(1) \quad g_{\delta} = b + [r_D - g]\delta$$

δ = debt-to-GDP ratio, g_{δ} = rate of change of debt-to-GDP ratio, b = budget deficits as a percent of GDP, r_D = real interest rate on government debt, g = real rate of growth. The necessary condition for stability is $r_D < g$. The interest rate must be less than the rate of growth so that the economy grows faster than the rate at which debt is compounding, thereby preventing the debt from overwhelming the economy.

Currently (March 2019), the long term bond real interest rate is approximately 1 percent and the Federal Reserve's projected long term real growth rate is 1.9 percent. Assuming those rates remain unchanged, the Domar stability condition is satisfied. Per Table 1, if the MMT fiscal program is enacted the budget deficit will rise to 11.9 percent of GDP. Plugging those numbers into the Domar formula given by equation (1) and setting g_{δ} equal to zero, yields a steady state debt-to-income ratio of 13.2.¹¹

That is approximately a thirteen-fold increase compared to the 2018 debt-to-GDP ratio. Such a ratio is unheard of, providing *prima facie* evidence that the MMT proposal is financially unsustainable if financed exclusively by debt. Given an initial debt-to-GDP ratio of 105 percent and a deficit-to-GDP ratio of 11.9 percent, government debt initially grows at just over 10 percent per annum and doubles in approximately 7 years.¹² Unsustainability would likely express itself in a financial crisis since it can be anticipated that financial markets will be unwilling to absorb such an increase in the stock of government debt.

Another possibility emphasized by MMT proponents is that the Federal Reserve monetizes the entire deficit. The Domar equation can be used to analyze what would happen to the monetary base-to-GDP ratio. The equation is given by

$$(2) \quad g_m = b + [r_m - g]m$$

m = monetary base-to-GDP ratio, g_m = rate of change of monetary base-to-GDP ratio, r_m = real interest rate on deposits with the Federal Reserve (i.e. the federal funds rate). The necessary condition for stability is $r_m < g$. Assuming a 0.5 percent real interest rate on money, the Domar condition is satisfied and the monetary base-to-GDP ratio eventually stabilizes and

¹¹ Taylor (2019) is more optimistic about the debt dynamics and posits the steady state debt ratio settles at 5.6. That is because he assumes a lower long term bond real interest rate of 0.5 percent and a higher real growth rate of 2.5 percent. Those two numbers are likely inconsistent, especially given his implied Keynesian demand-driven growth framework. Most importantly, they show the critical significance of parametric assumptions for Domar styled debt dynamics analysis.

¹² GDP in 2018 was approximately 20.5 trillion dollars. A deficit-to-GDP ratio of 11.9 percent implies an actual budget deficit of 2.4 trillion dollars. The debt-to-GDP ratio at the end of 2018 was 105 percent, implying actual debt of 21.5 trillion dollars. Using those numbers, the initial implied rate of growth of the debt is therefore 11.2 percent.

does not explode.¹³ Plugging in the numbers, the long run monetary base-to-GDP ratio eventually stabilizes at 8.5.

According to the Federal Reserve of St. Louis, at the end of 2018 the monetary base was 3.4 trillion dollars, yielding a monetary base-to-GDP ratio of 0.17. Money financing of the MMT program therefore implies an ultimate 50-fold increase in the monetary base ratio relative to the 2018 ratio. Given an initial monetary base-to-GDP ratio of 0.17 and a deficit-to-GDP ratio of 11.9, the money supply initially grows at 70 percent per annum and doubles within 1.2 years.

Prima facie, those money supply dynamics are even more economically implausible than the debt dynamics implied by debt financing. They would almost certainly trigger high inflation in both asset markets and goods markets, as well as causing significant inflationary and destabilizing exchange rate depreciation.

The bottom line is that mathematical stability of the debt ratio or the money supply ratio is not sufficient for economic viability. That requires markets be willing to accept the dynamic paths and ratios implied by the Domar dynamics for the debt and the money supply. Unfortunately, the implied dynamics render market acceptance of MMT's fiscal program implausible. That, in turn, connects to the theoretical critique of MMT (Palley, 2015a, 2015b, 2019) which argues MMT fails to take account of such considerations. That failure is because MMT is just a conventional accounting framework and lacks behavioral content.

5. The political dangers of MMT

Political activist and media interest in MMT comes at a time of new found political confidence among progressive Democrats, as reflected in the scale and ambition of the proposed policy programs. After forty years of neoliberal dominance of social and economic policy, that scale and ambition is welcome. However, there is a grave political danger progressive Democrats may embrace MMT's claims that those programs can be had for free by printing money.

Doing so risks splashing the progressive project as economically implausible even before it has gotten off the ground. Even if that pitfall is avoided, MMT's financing recommendations will inevitably place the progressive project on the horns of a dilemma. If followed, the outcome will be significantly higher inflation and massive budget deficits, the combination of which would also likely trigger a new financial crisis. Alternatively, avoiding that outcome would require huge tax increases and fee impositions that would leave progressives politically vulnerable, both to charges of policy mendacity and to voter backlash against surprise forced tax increases.

The political dangers inherent in MMT are succinctly captured by Max Sawicky (2019):

“A story that emphasizes unlimited public spending, besides being fallacious, will impress most people as either crankish or arcane... Any existing progressive government that comes to power under such delusions is bound

¹³ The current federal funds rate is approximately 2.5 percent, and the Federal Reserve's inflation target is 2 percent. Assuming in the long run the Federal Reserve hits its inflation target and the federal funds rate is unchanged, implies a 0.5 percent interest rate on money.

to disappoint its constituents... a politically evasive monetary theory should not be the basis for a progressive movement”.

6. Conclusion: MMT is a flawed foundation for progressive macroeconomic policy

In sum, the above Keynesian arithmetic rejects the MMT claim that the US can enjoy a massive permanent money financed program spree that does not cause inflation. To avoid inflation, such a program will require taxes and fees to pay for it. Keynesians have long recognized that money financed deficits can be used to finance programs when the economy is away from the full employment - inflation boundary. However, that financing option is temporary to the extent that those deficits generate developments which ultimately drive the economy to full employment. Furthermore, MMT's proposed deficit financing of those programs, be it money or bond financed, generates economically implausible financial outcomes. The case for progressive programs rests on their own merits, which should constitute their political foundation. Financing of those programs should be rooted in plausible macroeconomics, which MMT manifestly fails to provide.

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