



Modern Monetary Theory: The End of Policy Norms As We Know Them?

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EXECUTIVE SUMMARY

Modern Monetary Theory (MMT) gained popularity at a time when U.S. inflation was benign, income and wealth inequality was on the rise, and progressive politicians saw a political opportunity to pass big-ticket spending programs. To the nagging perennial question, “How do we pay for it?,” MMT serves up a tasty answer. You don’t need to raise taxes or reduce other spending. You don’t need to secure low-cost borrowing. A monetarily sovereign nation, like the United States, can create more currency to buy the goods and services that the programs require.

Large new spending programs often invoke in U.S. voters fears of persistent budget deficits and rising inflation. MMT delivers the reassuring message that those fears are grounded in defunct “orthodox” economic reasoning that limits the federal government’s capabilities: we have nothing to lose but our outmoded fiscal

bromides and much to gain by replacing historic policy norms with fresh ideas. MMT explicitly ties itself to populist policies, self-labeling their plans “the birth of the people’s economy” [subtitle of Kelton (2021)]. Any sensible elected leader, whose vision is not impaired by conventional economic thought, would happily gobble up such a fiscal banquet.

MMT is the progressive counterpoint to supply-side economics. It supplants the claim that tax cuts pay for themselves with the claim that “[federal] spending is *self-financing*” [Kelton (2021, p. 87), emphasis in original]. Both claims contain a germ of economic substance. Both claims are carefully crafted to provide elected officials seemingly plausible economic grounds to support their preferred fiscal policies (though at opposite ends of the political spectrum). Both offer policymakers an ideology freed of trade-offs.

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Because economic policy is too important to be reduced to catchy phrases and clever marketing, this essay analyzes MMT economics dispassionately. It does not assess the worthiness of MMT's goals. Instead, it asks if MMT can achieve its goals without doing grave damage to America's fiscal standing and, quite possibly, its economy. The answer: probably not.

MMT suffers from several flaws:

1. It denies a fundamental concept in economics: in a society with finite resources but unlimited wants, market prices adjust to induce individuals and policymakers to make trade-offs that ultimately align supply and demand. Economics quantifies the costs and benefits of those trade-offs to inform policymakers.
2. That denial leads MMT to see no need to offer a comprehensive theory of inflation. It maintains that inflation gets triggered when economy-wide demand for resources exceeds the economy's resource limit, but has little to say about inflation and its determinants when, as it usually does, the economy operates below that limit.
3. MMT's solution to inflation from high resource utilization is to raise "taxes," without specifying which taxes. Governments have many tax instruments at their disposal – labor, sales, capital, wealth, and inflation – and each tax affects individuals and the macro economy differently. Generic advice to control inflation with higher taxes is vacuous until MMTers provide far more detail.
4. MMT does not acknowledge that even well-intentioned policymakers face incentives to use inflation to achieve employment or fiscal financing goals. Because those incentives to inflate are especially powerful for elected officials, many countries, including the United States, have adopted the norms of (i) independent central banks tasked with inflation control and macroeconomic stabilization and (ii) fiscal policies that largely pay for government spending with current and future taxes. Those policy norms have improved inflation performance and social welfare. MMT overthrows those norms to move inflation control and countercyclical policies from the Federal Reserve to Congress, to finance federal spending by creating new currency, and to subjugate monetary policy to fiscal needs.
5. It does not appreciate the central role that safe and liquid U.S. Treasuries perform in the global financial system. Neither does it apprehend the extent to which its policy proposals may destabilize financial markets and undermine the special status of Treasuries and the dollar in the world economy, a status that strengthens the U.S. economy.

The problems begin with the basic assumptions that underpin MMT. Its advocates attribute all unemployment to insufficient demand for workers and believe unemployment should be alleviated through a federal guaranteed jobs program. Weak demand frequently underlies unemployment, particularly during economic downturns. But workers themselves have a say in their employment status. During the COVID-19

pandemic, a broad cross section of workers left the labor market and voluntarily have not re-entered. From March 2020 to October 2021, labor force participation rates were depressed relative to the previous year: 2.5% for men, 2.6% for women, and 3.8% for workers 55 and older. Employers across the country have positions that remain unfilled. COVID is surely an unusual situation, but it serves to illustrate that employment outcomes are not always driven by insufficient demand.

MMT is at its weakest when addressing inflation, how it gets determined and how policies can control it. Its most common argument reduces to: inflation control is not a problem until it is. Problems arise when resource utilization reaches some limit, at which point higher taxes can keep inflation in check. But resource utilization is not the only factor that affects inflation. In late 2021, consumer price inflation hit a 40-year high of over 6%, yet compared to their pre-COVID levels, employment, capacity utilization, and industrial production are lower, while the unemployment rate is higher. Inflation is not rising because the overall economy has hit its resource limit. To be sure, supply-chain issues have driven up some prices relative to others, but these issues are not what anyone means by economy-wide resource limits. MMT's weak theory of inflation is stunning because the potential of the MMT agenda to trigger inflation is the most frequently voiced criticism of the theory [Summers (2019), Cochrane (2020), Hartley (2020), Mankiw (2020)].

The guaranteed jobs program points to a more general theme of MMT: the federal government *can* solve big problems once policymakers grasp the key tenets of MMT. Kelton (2021) identifies seven "deficits," defined in terms of both quantity and quality, that MMT can help to close: good jobs, saving, health care, education,

infrastructure, climate, and democracy. MMT promises to address each of these deficiencies by first altering policymakers' understandings of fiscal financing matters.

MMT abandons two long-standing policy norms. The first came from Alexander Hamilton in 1790 and can be summarized as "federal budget deficits beget budget surpluses," meaning that debt-financed spending is backed by future taxes. This norm has contributed to less costly financing and bestowed on U.S. Treasuries status as the world's go-to safe and liquid assets, enabling their critical role in global financial markets. The second norm evolved from the 1951 Treasury-Fed Accord to make monetary policy operationally independent. Legislation houses countercyclical policy primarily in the Federal Reserve with the mandate that the Fed achieve price stability, maximum sustainable employment, and low long-term interest rates, and facilitate financial stability.

MMT instead posits that a dollar of new government debt need not carry any assurance of tax backing. It regards Treasury securities solely as a means for the central bank to achieve its interest rate target. MMT shifts responsibility for achieving full employment and controlling inflation from monetary policy to fiscal policy. The central bank's primary tasks are to serve as the Treasury's bank and to maintain zero interest rates. Despite MMT claims to the contrary, monetary policy is completely subservient to fiscal policy, tossing aside Federal Reserve independence and the social benefits that accrue from it.

Full embrace of MMT's policy proposals and new norms – whatever they may be – carries significant risks. Those risks include higher and more volatile inflation and interest rates and

financial market instability, which would disrupt and depress real economic activity and harm most the people MMT aims to benefit.

INTRODUCTION

Fiscal policy around the world is a mess, in both theory and practice.

Some illustrations:

- Simplistic black-hat/white-hat thinking about fiscal policy – surpluses and low debt are good, deficits and high debt are bad (in German, *schuld* means both “debt” and “guilt”);
- European bond holders have been willing to pay for the privilege to lend to governments over a ten-year period through negative yields, yet governments do not find the offer too good to refuse;
- In the wake of the financial crisis the IMF lurched from urgent calls for fiscal expansion to equally urgent calls for contraction even before recovery had set in;
- Some economists and policymakers in the 2000s embraced the idea that fiscal austerity can create economic expansion;
- Political leaders regularly resurrect the old-time favorite that tax cuts pay for themselves, despite ample evidence to the contrary; and
- America’s special lunacy – to hold the federal government and the federal government’s financial standing hostage for short-run political gain – has now become routine.

Modern Monetary Theory (MMT) plunges headlong into the fiscal mess. Unfortunately, it only deepens the morass.

MMT’s logic can be neatly distilled: the act of government spending creates the necessary financing for the spending. As Kelton (2021, p. 87) puts it, “...the currency issuer’s spending is *self-financing*” (emphasis in original).

This view rests on three tenets:

1. A monetarily sovereign government can always find the means to pay for spending because, as the monopoly supplier of paper money (“fiat currency”), it can create the currency needed to finance the spending.¹
2. Taxes are payable only in fiat currency.
3. Any undesired inflation from currency creation can be counteracted by raising taxes to remove currency from circulation.

From these tenets flow many claims and assertions, but little analysis and evidence. Missing from the MMT literature is a fully articulated and specified macroeconomic model that applies these tenets to actual economies to interpret historical data or to make quantitative predictions of the impacts that the MMT policy agenda would have on the United States.

Popular versions of MMT present these tenets as attractive alternatives to conventional fiscal views. Gone is the nagging problem of raising taxes to finance new spending. Gone are the inconveniences of an independent central bank that does not accommodate the fiscal authority’s desires. Gone are the difficulties associated with selling government bonds or, in the United States, raising the debt limit. Little wonder that the central themes MMTers promulgate have caught fire with politicians whose goals entail big spending plans.

1. This essay follows MMT to use “currency” as a generic term for fiat currency – bank reserves on deposit at the central bank, paper dollars, and coins – not backed by precious metals or other goods and whose supply the government can control.

This essay focuses narrowly on the fiscal financing aspects of the MMT perspective. It does not evaluate the desirability of the spending programs MMTers advocate. It aims to describe key features of MMT and assess them in light of existing economic theory and the U.S. monetary-fiscal policy framework.

MMT thought is sprinkled across a wide range of media, including blogs, social media, and videos. To make the review manageable, I limit attention to the following books and scholarly papers by MMT proponents: Armstrong (2019), Fullwiler (2007, 2011, 2012, 2016), Godley and Lavoie (2007), Kelton (2021), Mitchell et al. (2019), Mosler (2012), Shipman (2019), Tcherneva (2002), Tymoigne and Wray (2013, 2015), Wray (2015, 2019, 2020). I take books and papers to be more authoritative representations of MMT than tweets and op-eds. I also draw on these critiques: Edwards (2019), Palley (2015a, 2015b), and Rondina (2020).

MMT advocates adopt a methodology that makes thoroughgoing assessment of their claims impossible. Their arguments are almost entirely descriptive, with the exceptions being the inclusion of accounting identities and an occasional paper that formalizes a highly stylized economic model. They do not offer a quantitative model of the U.S. economy, shown to fit actual data, in which the impacts of their policy proposals can be simulated and evaluated.

Quantitative analysis is the language of policymaking. It is arguably *the* most valuable contribution economics can make to the policy process. This is not ideology. It is an insistence that any economic proposals that policymakers seriously consider meet the minimal bar of economic best practice. Can the economic

framework explain observed economic data? How much will the proposed policy change inflation, consumption, employment, and so forth? The Congressional Budget Office and other agencies do this sort of analysis all the time. Macroeconomics since the 1930s has been an extended effort to develop and improve tools for making quantitative predictions of policies. MMT opts to travel its own non-quantitative road.

Given the restrictions imposed by MMT's methodological choices, this document scrutinizes the economic logic behind MMT's key tenets. I find there's many a slip 'twixt MMT claims and likely outcomes. More important from the perspective of a policymaker are the broader implications of a full-fledged adoption of the MMT approach, on which this essay elaborates.

MMT FISCAL FINANCING BASICS

MMT springs from a basic premise. Government spending programs require resources — goods and services — that can come only from the private sector. Government buys those resources by writing checks on its account with the central bank, which amounts to creating new currency in the form of bank reserves. Government can choose to soak up the new currency by raising taxes, which the private sector pays with the currency it receives from government. MMTers take this reasoning one step further: because government can create as much new currency as it desires, the government's ability to acquire resources is limited only by the total private resources available, but unconstrained by its capacity to tax or borrow.

The premise leads to a view that government can always "afford" to spend more on goods and services, because currency creation is free.

This removes trade-offs. Economists might at this point say, “Hold on. What ensures private individuals will always willingly accept currency in exchange for the resources that they value? After all, people could simply put zero value on currency, say, dollars, so an additional new dollar will buy nothing.” The MMT answer dates at least to Adam Smith: government accepts payment of taxes only in currency. That is, fiat currency is actually backed by the tax obligations the government levies against the private sector. Because tax avoidance is potentially costly, including jail time, currency is convertible into something people value, freedom from imprisonment.

But here’s the rub. Currency is denominated in units of dollars. Resources are in units of goods and services. The economy-wide price level – the consumer price index or the personal consumption expenditures deflator – converts dollars into their goods and services equivalents. An example makes the reasoning concrete. Government buys a tank from a private manufacturer and hires soldiers to run the tank. The tank is a real asset of the manufacturer, and the labor hours are real assets of the soldiers hired. These resources are in units of goods and services, while the new currency created to buy the resources is in units of dollars. The quantity of resources each new dollar can buy depends on the price level, which is determined in the market where the exchanges take place.² Government cannot choose all three objects – the level of resources bought, the supply of new currency, and the price level. Private-sector behavior matters.

MMT argues that because taxes are payable only in currency – “taxes drive money,” in Wray’s

(2015) memorable phrase – the private sector will always accept new currency in exchange for resources. Yes, but at what price level? This is a key economic question to which MMTers have not provided an answer.

MMT’s response is that if the required price level is too high, government can raise taxes to achieve any desired price level or inflation rate [Tymoigne and Wray (2015, pp. 27-28)]. But now we have come full circle to return to completely conventional economic reasoning, which holds that government spending should be financed by a mix of taxes and inflation. By extension, though MMT doesn’t go there, government can temporarily finance spending with new long-term Treasury securities that can smooth tax and inflation distortions over time. Then what is new about MMT?

They claim that once we understand the *timing* of fiscal transactions, “the whole fiscal paradigm shifts” [Kelton (2021, p. 31)]. Spending occurs first via currency creation [Mosler (2012)]. In practice, the government writes a check on its account at the Federal Reserve, so the new currency is new bank reserves. Then comes taxation, if necessary, to control inflation. But this granular, mechanical description of the timing of policy operations is a sideshow that is irrelevant to the main event.

Let’s get to the main event: economic behavior. MMT’s description of fiscal accounting can shed no light on the economic outcomes of policies. Accounting is not economics. To understand economics, we need to posit how individuals and policy authorities make decisions and how those decisions determine prices and resource allocations.

2. Identical reasoning applies to transfer payments, which are the bulk of federal expenditures. Whether transfers are in checks (Social Security benefits), electronic money (food stamps), or services (Medicaid), what matters to recipients is the real resources those transfers represent. The price level converts transfers into the resources that people value, just as it converts currency into tanks and labor hours.

Consider a simple case. The government creates enough new currency to buy the quantity of goods and services it desires. That sentence resembles statements peppered across MMT writings, but it is an incomplete description of the *economics* behind the transactions. Without describing private sector behavior, the sentence equates resources to currency. The economic question is: at what exchange rate will people willingly trade their resources for currency?

MMT's answer is that "taxes drive money" [Wray (2015)]. People accept currency because they must use it to pay their taxes. This creates a demand for currency. The price level is the rate at which currency exchanges for resources, to denominate both sides of the government spending transaction in the same units, either currency or resources. An equilibrium occurs when the price level adjusts to equate the government's demand for resources (or supply of new currency) to the private sector's supply of resources (or demand for currency).

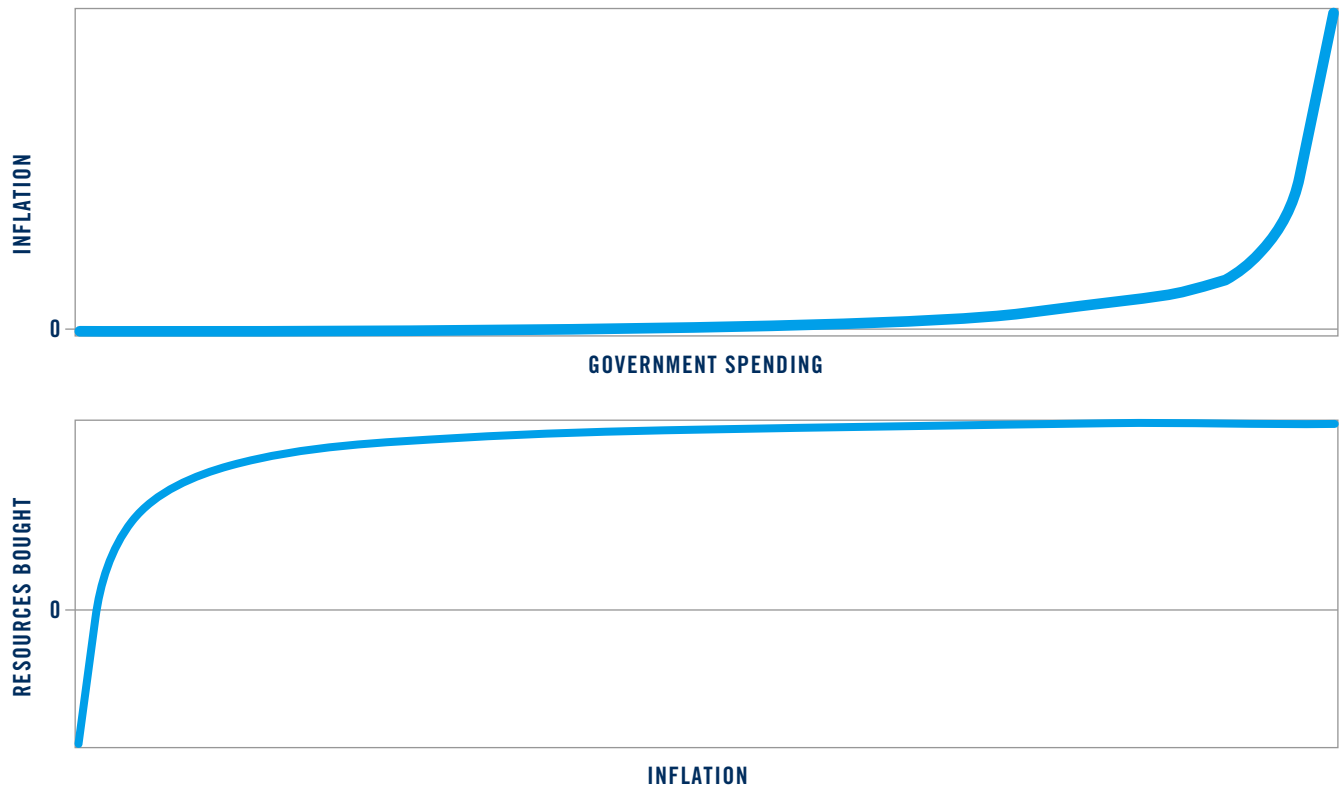
Accounting tells us the resources the government buys must equal the resources the private sector turns over to the government. The private sector turns over resources in two forms: the direct taxes it pays and the real value of the currency it absorbs.

A complete description combines market behavior — demand and supply in the market for resources — with the accounting requirements. It reveals the economic essence behind MMT's casual claims: "The ability of the government to spend is unlimited" [Tcherneva (2002, p. 128)] or "...government has an unlimited capacity to purchase and to fulfill promised future payment..." [Tymoigne and Wray (2015, p. 26)]. It is correct that the government has the ability to create as much new currency as it desires. It is also correct, to the extent that the government's promised payments are denominated in dollars, that the government can always fulfill those promises.

But these claims fail to distinguish between real goods and services and nominal new currency, a distinction that emerges from the interactions between demanders (government) and suppliers (people) in the market for resources. It is incorrect to claim that unlimited ability to create new currency translates inexorably into purchasing power. If each additional new dollar raises the price level, that incremental dollar will buy fewer resources.³

3. Appendices formalize the logic and trace through the accounting details.

FIGURE 1: GOVERNMENT SPENDING, INFLATION, AND RESOURCES BOUGHT



Relationships between government spending and inflation (top panel) and inflation and real resources bought (bottom panel). Purchasing power declines as government spending and currency creation increase. Figures assume people demand only enough currency to pay constant taxes.

Figure 1 illustrates this economic reasoning. The top panel plots government purchases along the horizontal axis and inflation along the vertical axis. Because higher spending brings forth higher currency creation, inflation rises. The key message appears in the lower panel, which puts inflation on the horizontal axis and the purchasing power, labeled “resources bought,” along the vertical axis. When the level of purchases is low, government runs a

budget surplus, retiring currency and generating deflation. At low levels of purchases and correspondingly low levels of inflation, new currency has high purchasing power and the quantity of resources bought rises rapidly, while inflation rises modestly. At high levels of inflation, each additional new unit of currency buys fewer resources, eventually leveling off at the maximum resources the government can buy without raising taxes.

MMTers accept that there is a natural limit to spending. But they regard that limit as coming from “real resource constraints” [Wray (2019, p. 6)]. Government cannot buy more than all the available resources. The graph above illustrates a different, far more binding constraint: private-sector willingness to exchange resources for currency. Paper money can buy resources, so long as the government doesn’t try to buy too many. This raises the irksome specter of trade-offs: what combinations of government spending and inflation are feasible and good for social welfare? MMT provides no answer, yet questions like this *define* the mission of economics. If we posit that spending is beneficial, but inflation and taxes are harmful, then policymakers confront trade-offs. Economic analysis quantifies those trade-offs to inform decision makers.

This reasoning highlights that MMT’s claim that spending need not entail taxes is deeply misleading. Inflation is a tax on any economic activity that is not fully protected from it. This includes savings in various forms, consumption purchases, wage earnings, investment returns, and even transfer payments that do not immediately adjust to inflation. In the model that Figure 1 depicts, the government receives both direct taxes, levied against income, for example, and inflation taxes, levied against the public’s currency holdings.

The most insidious form of inflation taxes comes from unexpected changes in inflation. In the last quarter of 2020, surveys found one-year-ahead expected inflation to be between 2.6% and 2.9%.⁴ It now looks like actual inflation in the final quarter of 2021 will come in around 6%, twice what people expected a year ago. Surprise inflation is particularly harmful because it is

difficult for most citizens to guard against and it redistributes wealth capriciously. This is why most central banks aim to keep inflation low and predictable.

TOPPLING AMERICAN POLICY NORMS

Some versions of MMT seem to call for replacing venerable U.S. fiscal and monetary norms with new ones. Norms are not policy objectives; they are patterns of policy behavior that are “customary, expected, and self-enforcing” [Young (1993, p. 57)]. Norms create stability and predictability across current and future policy choices. Norms matter because consumers, workers, and firms look to them when forming expectations of future interest rates, prices, taxes, and spending.

Wholesale adoption of MMT would overturn two norms:

1. **Fiscal policy norm.** Alexander Hamilton’s first report to Congress as Treasury secretary in 1790 sought to build a foundation for reliable and low-cost loans to the federal government by ensuring tax backing for public debt. Hamilton envisaged that a permanent stock of safe U.S. Treasuries could be the basis for a thriving financial system. That vision has been realized. With the exception of the 1830s, the United States always maintains a stock of outstanding public debt. Today Treasury securities are the cornerstone of international financial markets and serve as the world’s primary safe and liquid assets in times of turmoil. That status complements the dollar’s role as the reserve currency in global transactions. The specialness of

4. Based on surveys from the University of Michigan and the New York Fed, retrieved from FRED, Federal Reserve Bank of St. Louis.

dollars — both currency and government bonds — is a source of economic strength for the United States [Eichengreen (2011)]. The congressional practice of “finding the money” [Kelton (2021, p. 21)] to finance new spending programs — however imperfect and gimmicky the practice may be — reinforces Hamilton’s norm to inform the public that spending and its funding are not being undertaken without discussing the economic and social merits of the fiscal choices.

2. Monetary policy norm. The Federal Reserve’s objectives and operational independence have evolved since its founding in 1913. Today the Fed’s objectives, to deliver maximum sustainable employment, stable prices, and moderate long-term interest rates, and its remit, to ensure the safety and soundness of the financial system, are lodged in law. Since the Treasury-Fed Accord of 1951 — designed “to assure the successful financing of the government’s requirements and, at the same time, to minimize monetization of the public debt” [Eccles (1951)] — the central bank’s decisions are taken independently of the executive and legislative branches. That independence is not unchecked: from time-to-time Congress changes the degree of latitude it gives the Fed; the President nominates and the Senate confirms the Fed’s Board of Governors; Fed governors regularly testify before Congress.

Hamilton’s vision extended beyond his proposal for financing public debt. His second report to

Congress proposed creating a Bank of the United States. Among other responsibilities, the Bank would carry out many of the fiscal duties that the Fed now performs. Another purpose of the Bank was to place currency creation in the hands of an independent body. Hamilton had lived through an era when the Continental Congress printed money to fund the Revolutionary War and thought it imprudent to entrust elected officials with the money supply levers. Hamilton saw the combination of a secure public debt and sound money as fundamental to the country’s financial development.⁵ Hamilton’s economic reasoning anticipated 20th century research findings: an economy’s performance always depends jointly on monetary and fiscal policies, but elected officials face incentives that argue for creating separate and operationally independent monetary and fiscal institutions.

We adopted current norms fully understanding the alternatives that were available, including some that MMTers advocate. Hamilton certainly knew that outright default was a policy option but rejected it. And he was aware of the incentives a government faces to inflate. Norms get maintained because they serve macroeconomic objectives by imposing implicit constraints on policymakers, not out of nostalgia or ignorance.

The United States has earned a reputation for repaying, rather than inflating away or defaulting on its public debt. This reputation is sustained without the formal commitments of a gold standard, collateral or other recourse, specific streams of revenues tied to repayment, or other devices common through history. Instead, consistent application of Hamilton’s norm has anchored expectations on the safety of Treasury securities. MMT treats the possible

5. Important sources include Hamilton (1790a, 1790b), Gordon (1997), Sargent (2012).

consequences of their proposals for the Treasuries market and the broader role of the dollar in the global economy rather flippantly. Kelton (2021, p. 90) asserts "...the entire national debt could be paid off tomorrow, and none of us would have to chip in a dime." She is making the obvious point that the Fed could create enough new currency to buy all outstanding public debt. Wray (2019, p. 19) discusses a proposal to eliminate Treasury securities, which perforce eliminates all financial transactions based on Treasuries, "for better and perhaps for worse." Blithe proposals that overthrow Hamilton's norm are hard to take seriously because the authors seem unaware or unconcerned about the proposals' broader ramifications for financial stability and efficiency.⁶

MMT puts countercyclical policy and inflation control in fiscal hands, substantially rewriting the Federal Reserve Act [Kelton (2021, chapter 8)]. Proponents argue that moving interest rates around to fight inflation tends to destabilize financial markets. So, the only remaining tasks for the Fed are banking supervision, financial stability, and maintaining low and stable interest rates.

There are two good arguments for making an operationally independent central bank the first line of attack against recession and inflation. The first is pragmatic. Monetary policy is more nimble than fiscal policy: it can and does react immediately to worrisome incoming data. Hundreds of economists across the Federal Reserve System provide policymakers with theoretical and empirical input. No other American policy institutions devote comparable resources to a rigorous understanding of the economy. Although Congress did act swiftly to pass

COVID-relief legislation, the American Recovery and Reinvestment Act in response to the global financial crisis was enacted in January 2009, over a year after the recession started and the Fed had begun to lower interest rates. Many recessions come and go with no congressional action.

Federal Reserve agility permits it to adjust to a changing state of the economy. State-contingency brings policy behavior closer to the prescriptions of the optimal policy literature. An optimal policy reaction to higher inflation, for example, depends on the underlying sources of the rising prices. Is inflation due to weak productivity growth, higher production costs, strong demand, or other factors? The answer drives the appropriate policy response.

Automatic stabilizers built into the federal budget also generate responses contingent on economic conditions. In recessions, personal and corporate tax revenues fall, while unemployment insurance outlays and some transfer payments rise. These fiscal adjustments occur with no new legislative actions. But MMT rightly points to the inadequacies of existing stabilizers. Legislative reactions to economic developments, in addition to being poorly timed, tend to be clunky and inflexible. The fiscal response to COVID was spread across six bills enacted between March 2020 and March 2021, which increased spending \$4 trillion. Legislation allocates fixed sums to specific targets, and once implemented cannot easily adapt the sums or the targets to changing needs. Some of fiscal policy's shortcomings could be addressed, but some are intrinsic to a democratic legislative process. The notion that Congress could ever be light enough on its feet to effectively conduct countercyclical policies is dangerously naive.

6. Gorton (2010) and Duffie (2011) describe the roles of safe and liquid Treasuries in the U.S. financial system.

Controlling inflation takes us to the second argument in favor of maintaining the independent central bank norm. MMT would remove inflation from the Fed's portfolio to make it the purview of fiscal policy. MMT combats rising inflation with higher taxes. Increased tax bills remove more currency from private hands to temper demand for goods and services. One indisputable fact about elected officials is they have little difficulty cutting taxes but are loath to raise them. It's one thing for appointed technocrats to order "the punchbowl removed just when the party was really warming up."⁷ Now imagine a congressperson telling voters that to stave off inflation, a larger chunk of their income will go to paying taxes. Good economic and political reasons underlie tasking an independent monetary authority with inflation control.

Existing norms, including the separation of economic responsibilities between Congress and the Fed, force policymakers to confront trade-offs. You can eat your cake, or you can have it, but not both. Scarce resources leave policymakers frustrated. MMT relieves this frustration by denying the trade-offs. Government need never run out of cake. You can eat the cake and print enough currency to buy a new cake. Spending can rise without taxes. Currency can be created without inflation. If we inhabited that world, our current policy norms would never have been adopted.

If MMT rejects existing policy norms, its advocates bear the burden of enunciating the replacement norms. If public debt is to be backed only by currency creation unless inflation rises, what sustains the value of government debt? With inflation controlled by the same officials who make spending decisions, what new norm will counteract the temptation to

inflate our way out of existing debt? MMT does not answer these questions, leaving uncertain how it would replace current norms.

MMT AND INFLATION

MMT offers no single theory of how inflation gets determined. In fact, much of MMT does not distinguish between real and nominal variables. Because, as explained earlier, a central theme in MMT entails using nominal objects — government-created currency — to buy real objects — privately-owned resources — this neglect undermines MMT's message. Any theory of inflation must connect the government's demand for resources to currency supply, which together with currency demand, determine the overall price level.

I can find no theory in MMT that links supply/demand for currency to inflation. Instead, two notions of what determines inflation emerge:

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1. Inflation "...arises due to the conflictual nature of the capitalist system..." and "...ongoing inflation requires that the major combatants (firms and workers) continue to pursue increases in their nominal incomes." Inflation can be driven by both supply and demand factors, "...but in practice it is hard to distinguish between them when an outbreak of higher inflation occurs." [Quotations from Mitchell et al. (2019, p. 267).]

 2. "If there is inflation that is demand-led, the fiscal position is too loose (surplus is too small or deficit is too large); if there is non-frictional unemployment, the fiscal position is too stringent" [Tymoigne and Wray (2015, p. 32)].

6. This adage from Federal Reserve chair Martin (1955) pre-dates any established notion that monetary policy reduces inflation by raising unemployment.

I interpret the first notion as explaining routine fluctuations in inflation rates that stem from economic shocks that affect the relative bargaining power of firms and workers. Shifts in bargaining power feed into aggregate supply and demand decisions, affecting the price level. The second notion connects to an oft-repeated perspective that, in Kelton's (2021) words, MMT economists "...recognize that there are real limits to spending, and that attempting to push beyond those limits can manifest in excessive inflation" [p. 59]. Both notions treat inflation as a phenomenon driven by *real* economic factors: nominal conditions like growth in currency do not affect inflation unless and until resource utilization reaches a sufficiently high level.

Conventional macroeconomics frames the relationship between resource utilization and inflation in terms of the Phillips curve.⁸ Most theories do not treat one variable as causing the other; instead, inflation and resource utilization get determined jointly, along with other macroeconomic variables. MMT adopts a particular view about that relationship in two senses. First, MMT treats the relationship as *causal and unidirectional*, running only from resource utilization to inflation. Second, MMT envisions that the curve is flat whenever utilization is below some limit, after which it slopes upward, possibly sharply.

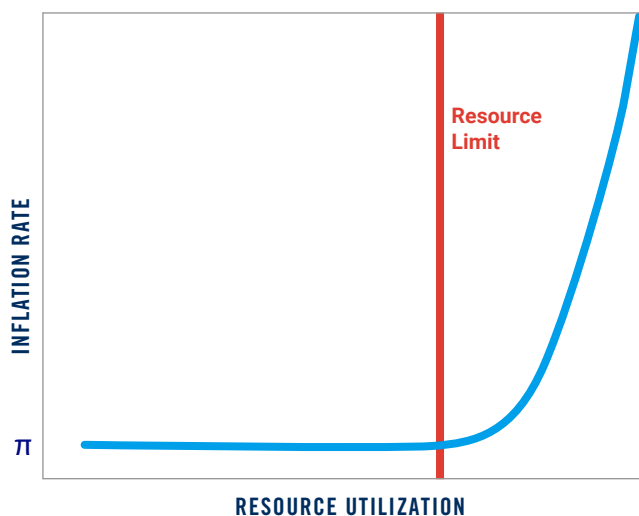
Figure 2 depicts what might be called the "MMT Phillips curve." Over a range of resource utilization below the vertical line labeled "Resource Limit," variation in utilization rates has no impact on inflation, which resides at the level marked by the Greek letter π . Once the limit is reached, pushing beyond it raises inflation. The farther the economy pushes above the limit, the more rapidly inflation rises.

Few macroeconomists would dispute that inflation would rise, perhaps precipitously, when demand for resources outstrips their availability. But this tells us nothing about how inflation behaves away from that extreme. In the flat region of the figure, there is no relationship between utilization rates and inflation, so resource utilization cannot determine the value π . Perhaps this is where the story about "the conflictual nature" of capitalism comes in, but it is hard to quantify such vague concepts.

MMT talks at length about the idea that the government should act as "employer of last resort" by providing a job guarantee to any person willing to work at the government's proffered wage. Price stability, Wray (2015, chapter 8) argues, would follow from this jobs program. The argument rests on the notion that the government's wage rate would impose a floor below which wages in the economy could not fall, to deliver a nationwide minimum wage. At the same time, the program's size would automatically adjust to economic conditions to ensure that spending on the program expands in recessions and contracts in booms. Automatic adjustments will keep demand in the economy from exceeding resource limits to contribute to macroeconomic stability.

A jobs program on the scale that MMT envisions requires both initial and sustained support from Congress. Given the vagaries of American politics, in practice the program may turn out to be neither automatic nor stabilizing. We saw this during the New Deal. Programs that put the unemployed to work garnered public support from 1933 to 1935, but that support had waned by 1936 and recovery from the Great Depression was incomplete in the 1930s.

8. Phillips (1954) found a negative statistical relationship between U.K. wage changes and unemployment from 1861 to 1957.

FIGURE 2: THE “MMT PHILLIPS CURVE”

Resource utilization has no effect on inflation until it reaches its limit. Beyond that limit, higher resource utilization raises inflation. π denotes the inflation rate when resource utilization is below the limit.

Inflation in an MMT economy stems entirely from a causal relationship that flows from resource utilization to inflation. In old-fashioned Keynesian terminology, in the absence of a government job guarantee or other spending programs, the economy lives in a chronic liquidity trap in which demand is inadequate and wages and prices are constant or falling. This certainly was the situation Keynes sought to understand during the Great Depression and it might have applied initially during the global financial crisis. But it's difficult to believe that the U.S. economy's typical state lies somewhere on the flat line in Figure 2.

The economic reasoning that gives rise to Figure 1 does not depend on the economy's resource limit. It applies wherever on the MMT Phillips curve (Figure 2) the economy resides. I constructed that reasoning by drawing on the MMT view that people demand currency only to meet tax obligations and that total spending equals total resources the private sector transfers to government. More

complex environments — additional motives for demanding currency or the possibility the government borrows — will alter the details in Figure 1, but not change the basic reasoning for how inflation gets determined when resource utilization is below the limit.

MMT maintains, as Kelton (2021) puts it, that “there is always slack in the form of unemployed resources, including labor” [p. 56].⁹ This view situates the U.S. economy on the flat portion of the curve in Figure 2. We know that U.S. inflation rates have fluctuated, often significantly, since 1960: inflation measured by the consumer price index ranged between 14.6% and -2.0%; excluding food and energy that range is 13.6% and 0.6%. Without offering a theory of inflation other than resource utilization, how does MMT explain 70 years of inflation experience while the economy has been in a state of perpetual “slack in the form of unemployed resources?”

The government's acquisition of real resources with nominal currency creation lies at the heart of MMT's vision for fiscal financing. More broadly, how policy actions that change purely nominal objects — currency, public debt, policy interest rates — affect the real variables that matter most for economic well-being — real interest rates, relative prices, real wages, employment, production — remains a thorny and controversial area of macroeconomic research. Macroeconomists soldier on, employing a range of imperfect remedies to the problem to try to understand economic data and address practical policy questions.

MMT doesn't lay out a theory about this vexing but critical issue. Perhaps MMTers regard nominal prices as fixed, so long as there is slack in the labor market. Their corollary that, without

9. Kelton (2021, p. 56) also states: “...the US has never sustained anything approximating true full employment” and “Capitalist economies chronically operate with insufficient aggregate demand.” Mitchell et al. (2019, p. 292) write: “...markets have not, and cannot, operate at anything approaching true, full employment on a consistent basis without direct job creation on a large scale.”

their policy proposals in place the economy is incapable of fully employing resources, leads to a view that nominal variables *are* real variables and prices cannot rise until resource utilization reaches the limit that figure 2 depicts.

That view is implausible even on the surface. Studies of historic cases of high or hyper-inflations find that rapidly increasing inflation rates caused severe economic downturns.¹⁰ Economic recovery and increased resource utilization did not begin until the inflations were ended by dramatic fiscal reforms [Sargent (1986) describes the European cases]. There is nearly universal agreement among macroeconomists that the causes of high-inflation episodes lie with fiscal policy and accommodating monetary behavior. Cures depend on fiscal and monetary reforms. MMTers are not party to the agreement.

The MMT position remains implausible upon deeper reflection. Reserve balances that banks hold at the Fed are precisely the “currency” that MMTers describe as being created when the federal government buys resources from the private sector.¹¹ Since October 2008, the Federal Reserve has paid interest on those balances, which converts reserves into a form of public debt, analogous to extremely short maturity U.S. Treasurys. That is, the \$4.2 trillion banks hold as reserves should be added to the \$17.0 trillion the private sector holds in Treasurys to make the actual public debt \$21.2 trillion.¹²

Like any asset, public debt derives its value from expected future cash flows. Those cash flows are primary budget surpluses — tax revenues less expenditures, excluding interest payments on outstanding debt. Debt’s *real* value depends

on its expected *real* payoffs. By strict application of Hamilton’s norm, any expansion in debt today would be met by future real budget surpluses large enough to pay the interest and the principal on the new debt. By the MMT rule, expansion in debt need not induce an increase in taxes unless the economy is at its resource limit. In place of taxes would be further debt expansion, either reserves or Treasurys.

Imagine that Congress passes bills that entail, say, \$4 trillion in new spending. Government acquires those resources by increasing public debt by \$4 trillion. The private sector now has \$4 trillion in new currency sloshing around, but taxes have not increased to remove that currency from public hands. What will Americans do with those new dollars? They could buy bigger mattresses in which to store the currency, but it’s more likely they will buy stuff with some of it and save the rest in bank accounts, money market funds, or mutual funds. But saving is postponed consumption, so the \$4 trillion raises current and future private demand for goods and services.

Plausible theories predict that the boost in private spending generates some mix of higher production and higher inflation, now and in the future. Hamilton’s norm tempers this demand by creating the expectation that taxes will rise in the future to pay off the new debt. Some of the savings would go toward those taxes instead of consumption. Higher taxes are also the MMTer’s solution to rising inflation, but they would deny that with the U.S. economy’s current state of slack, the \$4 trillion in new spending would raise prices. Instead, the full impact would be felt in employment and production: demand creates its own supply with no change in prices.

10. Examples include Austria, Hungary, Germany and Poland after World War I or Venezuela, Zimbabwe, and others more recently.

11. This is part of MMT’s mechanical view of fiscal finance. When the government buys goods or makes transfers, it writes a check on its account at the Fed. In the first instance, the Fed increases the relevant bank’s reserve balances with the Fed. Creation of new “currency” occurs whether or not the government has deposits with the Fed to cover the check. Only later do the Fed and the Treasury settle up. This instantaneous notion of fiscal financing is wholly irrelevant to the impacts the government’s spending has on the economy. Those impacts, as the text explains, depend on both the accounting and the behavior of economic players.

12. Numbers are for September 2021 from the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of Dallas. Privately held debt nets out the Fed’s holdings.

Certain extreme circumstances, like a Keynesian liquidity trap, could reconcile the starkly different inflation predictions from conventional theory and MMT. But it stretches credulity to claim the U.S. economy's typical state entails the degree of resource slackness we saw in the Great Depression, in which \$4 trillion in new currency won't cause the price level to budge. Without providing a theory about inflation when the economy operates beneath its resource limit, MMT has nothing to say about inflation most of the time.

For all their emphasis on raising taxes to control inflation, MMT is oddly mum about *which* taxes to raise. Wray (2015, chapter 5) discusses a wide variety of taxes to induce microeconomic changes in citizens' behavior, like reduce smoking or pollution. But he doesn't connect the setting of those taxes to inflation control. Sales, labor, capital, and wealth taxes affect different segments of the population and the performance of the macro economy, including inflation, differently.

Because all taxes, including inflation taxes, distort behavior, dynamic public finance research focuses on how to balance those distortions to best achieve policy objectives and fund the government. By treating taxes generically, primarily as a means to remove currency from private hands to control inflation, MMT grossly simplifies the policy problem to deliver no actionable advice.

Without a comprehensive theory from MMT, it's impossible to evaluate the macroeconomic consequences of \$4 trillion in fresh spending. This brings us to a manifest failing of MMT: its unwillingness to produce quantitative predictions of the proposed policies. Policymakers require numerical predictions of policy effects, along

with measures of the uncertainty surrounding those predictions. The job of economists is to provide decision makers with an analytical framework to assess a menu of options and predictions. Everyone in the business understands the difficulties inherent in making quantitative predictions about the macro economy. But those predictions are the language of policy analysis. As long as MMTers refuse to adopt the language and to place their predictions alongside those of their critics, policymakers will be unable to evaluate their claims for their proposals. And "heterodox" economists will be unable to communicate with and convince macroeconomists of other persuasions.

MMT AND POLITICAL ECONOMY

Behind MMT's rejection of existing policy norms in favor of sweeping restructuring of monetary and fiscal policies lurks a puzzle. MMTers write as if they and they alone have uncovered the truth about how fiscal and monetary policies affect the economy and how those effects can be harnessed to benefit society.¹³ Kelton (2021, chapter 1) writes that if only the rest of us had fewer scales over our eyes, we too would have a "Copernican moment" that will shift our understanding of the "fiscal paradigm." She bemoans the U.S. Congress's self-imposed constraints, like the debt ceiling, pay-as-you-go, and Congressional Budget Office scoring of fiscal proposals. She encourages policymakers to reverse the dictum of "taxing and borrowing precede spending," which she attributes to Margaret Thatcher, to become "spending before taxing and borrowing."

Missing from this critique is any serious effort to understand why we arrived at existing policy arrangements. Why did Congress delegate countercyclical policy and inflation control to the

Federal Reserve? Why would elected officials voluntarily adopt procedures that constrain their fiscal actions? MMT's answer to this puzzle is that policymakers have been duped by ignorant economists suffering from groupthink.¹⁴

Macroeconomic policy research seeks to understand the incentives that policymakers face when they take a sequence of decisions in a dynamic economy. Policymakers today have only limited ability to tie the hands of future policymakers (including themselves!), so they cannot credibly commit to future actions. Individuals and firms understand this and base their expectations and decisions on the incentives policymakers will face tomorrow. Policy institutions have evolved, in part, to attenuate the tendency of well-intentioned policymakers to renege on earlier promises.

A non-economic example solidifies the reasoning. The best long-run outcome would be for people not to build homes in floodplains. To discourage building, government announces that it will not bailout anyone who builds and suffers flood damage. Homeowners' decisions depend on what they believe the government will actually do when the floods come. It turns out the government's announcement is not credible: when floods hit, the public inevitably calls for government actions and *at the time* it is optimal for the government to step in with bailouts. Because homeowners understand the government's incentives in the event of a flood, they continue to build in floodplains. Government is not behaving badly when it reneges on its initial announcement. But the best policy before

the flood differs from the best policy after the flood because private-sector actions affect policymakers' incentives.

Interactions between private behavior and government incentives also affect monetary policy. If government could, it would commit always to maintain inflation at its target rate. Commitment yields the highest social welfare. Unfortunately, when the policy decision gets made each period, government has the incentive to stimulate the economy to drive unemployment lower, pushing inflation above target. Understanding this incentive, individuals and firms anticipate the inflation and adjust their behavior to eliminate any beneficial reduction in unemployment. The outcome is inflation that is higher, no improvement in unemployment, and social welfare below its commitment level.¹⁵

Congress delegated inflation control to an independent Federal Reserve partly to reduce the inflation bias that elected officials have the incentive to create. The Fed's independence, governance structure, and objectives make it less susceptible to reneging on its commitment to an inflation target.

Identical logic applies to spending and tax decisions. Re-election prospects provide politicians with powerful incentives to stimulate economic activity heading into an election. Those incentives create well-documented "political business cycles," which operate separately from the usual economic business cycles [Drazen (2000, chapter 7) reviews the research]. Social welfare declines for two

13. At times the tenor of their arguments becomes haughty, as illustrated by the subtitle of Mosler's (2012) book: "What Everyone Thinks That They Know About Monetary Policy Is Wrong." Kelton (2021, p. 24) calls Mosler "the father of MMT."

14. Kelton (2021, p. 23) writes that "the economics profession [has] largely lagged behind" in its understanding of fiscal matters and describes the constraints Congress has adopted as "... rooted in a flawed understanding of how the federal government actually spends."

15. Classic references include Kydland and Prescott (1977) and Barro and Gordon (1983).

reasons. First, political cycles generate additional economic instability and tend to produce budget deficits unrelated to macroeconomic needs. Second, the political incentives may conflict with economic stabilization needs, leaving economic business cycles unattended.

Congress has addressed these political incentives in two ways. It has chosen to put conventional countercyclical policy largely in the Fed's portfolio. Aside from automatic stabilizers built into the tax code and spending programs, Congress has opted to make monetary policy the first line of attack against recessions. Fed independence permits monetary policy to adopt a longer-term perspective that aligns better with the horizons over which policy affects the economy, which yields outcomes closer to commitment.

In the Federal Reserve Act, Congress specifies monetary policy's objectives. Although Congress does periodically alter the Act, it only rarely changes the Fed's goals. Legislation imposes on monetary policy a stable set of objectives that is sorely missing from fiscal policy. Stable objectives contribute to a stable economy.

A second way Congress has sought to counteract political incentives is through self-imposed constraints and procedural rules. These restrictions are informal and subject to change. But they serve the purpose of instilling some stability in fiscal policies when policy objectives vary with the political party that controls the White House, the Senate, and the House of Representatives. The restrictions help to reorient elected officials away from short-run considerations. No doubt this solution is far from perfect. It's probably much less effective than creating a fiscal analog to the Fed, but it reflects policymakers' awareness of their short-run focus. Constraints and rules do not stem from

policymakers' ignorance or brainwashing about how fiscal finance operates, as MMTers claim. They are rooted in a very real problem endemic to democratic fiscal policymaking.

Nothing that MMT proposes would affect these political incentives and dynamics. The dynamics grow from a basic economic reality: resources are scarce and desires are limitless. This reality creates trade-offs. Policymakers adopt rules governing their behavior because they understand the incentives and constraints they and future policymakers face.

MMT sheds no new light on fiscal policy. It repackages and relabels well-understood economics, then sells it as novel and liberating to policymakers. MMT could make a meaningful contribution by *solving*, rather than ignoring, the political economy problems that prevent fiscal policy from serving as a more efficacious arm of macroeconomic policy. Fiscal policy has the tools. It has the constitutional authority. But it is saddled with incentives and constraints that preclude conjuring the political will to deliver on its potential.

MMT: CONTRIBUTIONS & RISKS

Fiscal policy debates are always politically charged and insufficiently informed by economic analysis. And even when well-informed, policymakers may opt not to follow the economics. Progress would come from changing the terms of debate: first, to give rigorous economic analyses center stage; second, to give policymakers input from a variety of economic perspectives. MMT, unfortunately, chooses to follow a long-standing tradition that offers loose economic reasoning to support a political agenda. Although the MMT agenda may include worthwhile proposals, its goals will not be realized without credible supporting economic analysis.

What does MMT bring to the policy table that isn't already there? It gets pitched as offering a more general view than conventional analysis. In fact, the MMT view is far narrower because it takes off the table a host of policy options that conventional analyses routinely consider. What MMTers disparagingly call "orthodox" economics is rich in its examination of how best to finance government spending. Such analyses consider a range of different revenue sources — including currency creation — and include a role for government borrowing to smooth the distortions that any source of financing necessarily creates, particularly during periods of temporarily high spending (like wars or COVID relief).

Conventional analyses find that the best mix of tax and inflation financing varies considerably with economic conditions, including the level of public debt, the maturity structure of that debt, the prevailing inflation rate, real interest rates, economic growth rates, and the sensitivity of private sector decisions to tax rates.¹⁶ MMT's simple plan to finance spending only by currency creation is child's play compared to the complexity of actual economic analysis and policymaking. Mainstream economists analyze new economic phenomena all the time. They aren't tethered to defunct theories. We have brought quantitative models fit to data to bear on the issue of fiscal finance and have chosen to follow the science.

The United States faces big problems, some of which could be alleviated by large federal spending programs. So why not give MMT a shot?

Unless and until MMTers articulate their views in models that produce quantitative predictions, we cannot systematically evaluate their proposals.

This inability makes embracing the MMT program risky even at first blush.

Edwards (2019) argues that populist MMT-like policies were tried in Chile, Peru, Argentina, and Venezuela. Outcomes were not promising. All four countries experienced rapid inflation, large currency devaluations, and lower real wages. Latin American experiences may not transfer directly to the United States, but it's foolhardy to dismiss this evidence out of hand.

More pernicious risks loom in the overthrow of Hamilton's norm to back public debt with future taxes. The U.S. government's reputation for honoring debt obligations by generally repaying those debts with tax revenues has strengthened the American economy.¹⁷ As Hamilton hoped, the reputation assures the government credit at low interest rates, even during national crises. Safe, liquid Treasury securities serve as collateral in global credit markets. Doubts about the real rates of return on Treasuries threaten that role and the "specialness" of the U.S. dollar in world trade and financial markets.

Runs on banks or currencies are sudden and unpredictable. So, too, would be a run on U.S. Treasuries. Consider first the \$17 trillion held by the public. News that henceforth interest and principal on outstanding bonds will be repaid by creating new reserves, rather than raising taxes, will immediately raise expected inflation substantially. Because interest payments and face values are in dollars, their real value — or purchasing power — will decline. Treasuries become hot potatoes that holders try to shed if they can find suckers to buy them. Any value Treasuries have as collateral for loans evaporates. Credit chains collapse and the

16. See, for example, Barro (1979), Lucas and Stokey (1983), Sims (2013), or Leeper and Zhou (2021).

17. Detailed analyses of exactly how debts historically have been repaid leads to the modifier "generally" [see Hall and Sargent (2011, 2021)].

resulting capital losses to the public will contract demand sharply.

What about new issuances of Treasurys? Without any real backing – new taxes – new Treasurys amount to expanding the current stock of currency with a promise to pay it with a further expansion. But people have no need for additional currency because taxes are unchanged. With no new currency demand, the new Treasurys have no value and people will refuse to trade resources for the government's IOUs, dashing Hamilton's dreams.

Why not give MMT a shot? Because doing so runs the risks of creating high and volatile inflation and destroying the Treasury market and the credit creation that flows from that market. The damage will fall disproportionately on vulnerable citizens least able to hedge against the risks.

CONCLUDING REMARKS

Dynamic democracies should periodically reconsider existing policy norms to evaluate if they continue to serve policy goals well. If MMT seeks to change long-standing policy norms, the onus is on its advocates to persuade us that old norms do not serve us well and to communicate precisely what new norms will prevail and how they will affect the economy's performance.

Policy proposals as sweeping as the ones MMT advocates demand objective and thorough evaluation. Evaluation consists of several steps.

1. Specify complete and coherent models whose quantitative and empirical implications can be assessed by the economics community at large. Results must be communicated in the quantitative language of policy analysis.
2. Answer practical questions about how to operationalize the proposals. For example, if inflation control is given to Congress, how will that body raise or lower taxes in the timely manner needed to maintain low and stable inflation?
3. To improve on past fiscal policymaking, MMT advocates must build a professional consensus in favor of their proposals. Because there are conventional economic interpretations of many of the ideas, it is reasonable to expect good MMT ideas to rise to the surface.

Until MMTers are ready to take these steps, their ideas must remain in the realm of guess and conjecture. In the meantime, we should apply to economic policy the basic principle we apply to health policy: follow the science. Economic science, such as it is, provides no support for MMT's central claims. Economic history unwaveringly points away from MMT's fiscal financing plans.

APPENDICES

Financing Basics

Government levies taxes in the amount T_t in period t and taxes are payable only in currency. Suppose tax payments are the only reason people hold currency, which pays zero interest and is otherwise of no assured value. Then currency demand is

$$M_t^d = T_t$$

where the d superscript denotes demand. People hold exactly enough currency to pay their direct taxes, T_t , which are denominated in dollars. We can rewrite this as the demand for real currency by dividing both sides by the price level $\frac{M_t^d}{P_t} = \tau$, where τ is direct tax liabilities expressed in terms of goods and services, assumed to be constant for now.

Government prints up $(M_t - M_{t-1})$ new units of currency to buy g_t units of goods and services from the private sector for government use; each unit of goods costs P_t units of currency. Government spending is a real variable because it reflects resources, not currency. Spending gets financed by direct taxes and currency creation and satisfies the accounting identity

$$\tau + \frac{M_t^s - M_{t-1}}{P_t} = g_t$$

The s superscript denotes the supply of currency the government has created in period t .

Equilibrium is where currency demand and supply are equal, $M_t^d = M_t^s = M_t$. Combine the two expressions to reveal how any excess of government spending over taxes is financed

$$\frac{M_t - M_{t-1}}{P_t} = \frac{M_t}{P_t} \left(1 - \frac{M_{t-1}}{M_t}\right) = \tau \left(1 - \frac{M_{t-1}}{M_t}\right) = g_t - \tau \quad (1)$$

Expression (1) records how the demand for currency induced by taxes, together with the growth rate of the currency stock, M_t/M_{t-1} , raise sufficient revenue to finance the primary budget deficit, $g_t - \tau$. Expressions like this appear throughout the macroeconomics literature, for example, in the classic paper about fiscal finance by Sargent and Wallace (1981), and have a straightforward interpretation: the tax base (M_t/P_t) times the tax rate $\left(1 - \frac{M_{t-1}}{M_t}\right)$ equals revenue used to cover any budget deficit, $g_t - \tau$.

That straightforward interpretation reveals that while MMT downplays financing spending with direct taxes, it leans heavily on using inflation taxes levied against currency holdings to generate revenue. To see this more clearly, when real taxation is constant at τ , currency growth equals inflation, $M_t/M_{t-1} = (\tau P_t)/(\tau P_{t-1}) = P_t/P_{t-1} = 1 + \pi_t$. Substituting for money growth gives this expression for the inflation tax rate

$$\frac{\pi_t}{1 + \pi_t}$$

The inflation tax rate is just the ratio of the net inflation rate – numbers like 5% – to the gross inflation rate – numbers like 1.05.

This tax rate reaches its maximum of 100% when inflation is infinite. Zero inflation makes the tax rate zero; when inflation is negative, the government is subsidizing – paying a positive return on – currency holdings.

Because the tax rate reaches a maximum, so do the revenues from an inflation tax levied against private sector currency holdings. In this simple setting, that maximum implies there is a limit

to the level of government spending: it cannot exceed twice the level of direct tax revenues, 2τ . This means the primary deficit – exclusive of interest payments – cannot exceed the level of direct revenues, which over the period since 1947 was about 17% of GDP.

This gives us an expression for the net inflation rate in terms of fiscal variables

$$\pi_t = \frac{g_t - \tau}{2\tau - g_t} = \frac{g_t - \tau}{\tau - (g_t - \tau)} \quad (2)$$

The natural limit on the size of government spending means the denominator is always positive. Inflation rises with government spending and falls with taxes. This derivation is the basis for Figure 1.

This little derivation embodies the three tenets of MMT to obtain the inflation implications. Because the sovereign accepts only currency is payment of taxes, the level of taxes ensures there is always some demand for real currency. Money holders cannot dodge the inflation tax on currency and some level of government spending can always be financed by new currency creation. But contrary to claims in some of the MMT literature, there is a natural limit to the size of government spending. That limit can be raised, but only by raising direct taxes.

It is incorrect to claim that unlimited ability to create new currency translates inexorably into purchasing power. If each additional new dollar raises the price level, that incremental dollar will buy fewer resources. This is what expression (2) for inflation summarizes. Inflation rises with the primary deficit, $g_t - \tau$, but it does so at an exponential rate as spending approaches its natural limit.

Accounting for Spending

This appendix outlines accounting flows from the model in the appendix about Financing Basics using a numeric example.¹⁸

In an economy where real taxes are 25% of GDP and the government aims to purchase 40% of the household's real assets, we have $\tau = .25, g_t = .4$. GDP is normalized to 1 so that all real variables can be interpreted as shares of output.

Initial money stock and price level are chosen arbitrarily at $M_{t-1} = 1 \Rightarrow P_{t-1} = 4$. Following the model in the previous appendix, the endogenous variables are $M_t^s = 2.5, P_t = 10$. To afford $g_t = .4$, government needs to print $M_t^s - M_{t-1} = 1.5$ units of currency, which generates a 150% inflation rate.

Explicit accounting is a hallmark of the MMT literature. Originating from Lerner's (1943) functional finance framework, this is normally done either using a transactions-flow matrix [as in Godley and Lavoie (2007)] or a stock-flow consistent matrix [as in Fullwiler (2011)].

I follow the MMT literature by specifying a transactions-flow matrix for the model. Then I take multiple further steps to fully characterize the model's accounting. I show how both the government's and households' balance sheets evolve.

Table 1 displays the model's transactions-flow matrix. The matrix shows the amount of currency exchanged between the two agent types within a period in the model. The only two transactions in each period consist of taxation and government spending.

18. Written by Joe Anderson. Please contact the author for various generalizations of the following tables.

TABLE 1: TRANSACTIONS-FLOW MATRIX, EXPRESSED IN NOMINAL TERMS

	HOUSEHOLDS	GOVERNMENT	SUM
Taxation	-2.5	+2.5	0
Govt Spending	+4	-4	0
Δ Financial Deficit	-1.5	+1.5	0
Sum	0	0	0

MMT takes exception to the fact that the government budget identity implies a “tax-first” approach (that the government taxes households before its own spending) for two related, yet distinct reasons: first, money cannot be taxed without first being supplied to households. Second, taxation is not a financing tool, but a way for the government to destroy currency.

It is straightforward to re-express the government accounting identity when taxes are not used for financing but solely for currency destruction. This change produces worse economic outcomes than the model. The setup

in which taxes help to finance spending directly is more attractive than MMT’s alternative in terms of inflation outcomes.

Anti-tax-first arguments notwithstanding, the model is consistent with a transactions-flow matrix. But, if not already apparent from the sparse matrix above, the transactions-flow matrix is a poor characterization of how accounting and economics work together in a model. Much more can be gleaned from how the balance sheet of each agent type evolves over a period. I continue the accounting analysis by showing this evolution in Table 2.

TABLE 2: BALANCE SHEET EVOLUTION IN NOMINAL TERMS

MODEL	HOUSEHOLDS			GOVERNMENT		
	ASSETS	LIABILITIES	NET WORTH	ASSETS	LIABILITIES	NET WORTH
Beginning t	5	1	4	0	1	-1
Δ Money	11	2.5	8.5	1.5	2.5	-1
Taxation	8.5	0	8.5	4	2.5	1.5
Govt Spending	8.5	0	8.5	4	2.5	1.5
Consumption	2.5	0	2.5	0	2.5	-2.5
Beginning $t+1$	$10y_{t+1} + 2.5$	2.5	$10(y_{t+1} - .25) + 2.5$	0	2.5	-2.5

The period begins with households receiving an endowment of real goods $y_t = 1$ which is priced at previous-period's price of $P_{t-1} = 4$. The household brings $M_{t-1} = \$1$ of cash into the period, which shows up as government liabilities. Prices update according to the money demand function when new currency is printed (Δ Money line).

While this is a more helpful characterization of the accounting than the transactions-flow matrix, it still does not convey a complete picture of the model accounting. This is because it only shows the stocks of assets, liabilities, and net worths over time. It does not communicate the corresponding flows. Additionally, we can't see how assets are being split between cash assets and market-priced inventories. To this end, I further analyze the accounting by exploring these issues using T-accounts.

What follows is a series of T-accounts that trace the changes in households' and the government's balance sheets.

The nominal value of the endowed consumption good is recorded as inventories. Again, the household understands its tax obligation, which needs to be paid in cash. The household's and government's beginning-period balance sheets are given as:

HH ASSETS	HH LIABILITIES
Cash: 1	Taxes Due: 1
Inventories: 4	Net Worth: 4

GOVT ASSETS	GOVT LIABILITIES
Cash: 0	Outstanding Notes: 1
Inventories: 0	Net Worth: (1)

The government prints money to partially finance their spending, knowing how many real goods it will purchase and how much tax revenue it will extract. When new money is printed, market prices adjust. Assets and liabilities are revalued at market prices:

Δ HH ASSETS	Δ HH LIABILITIES
Cash: +0	Taxes Due: +1.5
Inventories: +6	Net Worth: +4.5

HH ASSETS	HH LIABILITIES
Cash: 1	Taxes Due: 2.5
Inventories: 10	Net Worth: 8.5

Δ GOVT ASSETS	Δ GOVT LIABILITIES
Cash: +1.5	Outstanding Notes: +1.5
Inventories: +0	Net Worth: +0

GOVT ASSETS	GOVT LIABILITIES
Cash: 1.5	Outstanding Notes: 2.5
Inventories: 0	Net Worth: (1)

As part of the financing of later spending, government taxes households. Taxes are paid in cash. Tax payment eliminates the liabilities on the household balance sheet and adds additional cash to the government's assets:

Δ HH ASSETS	Δ HH LIABILITIES
Cash: -2.5	Taxes Due: -2.5
Inventories: +0	Net Worth: +0

HH ASSETS	HH LIABILITIES
Cash: (1.5)	Taxes Due: 0
Inventories: 10	Net Worth: 8.5

Δ GOVT ASSETS	Δ GOVT LIABILITIES
Cash: +2.5	Outstanding Notes: +0
Inventories: +0	Net Worth: +2.5

GOVT ASSETS	GOVT LIABILITIES
Cash: 4	Outstanding Notes: 2.5
Inventories: 0	Net Worth: 1.5

Detractors of the government budget identity will point out that households are holding a negative cash balance after this transaction or that the government is taxing away currency that households don't hold. A variation of the model where the government spends first and taxes later (using taxes to destroy currency) is available upon request from the author. The altered model is algebraically similar, but economically more inflationary.

Through taxation and money-printing, the government has acquired enough cash to buy its target amount of real goods. Government spends its entire cash position to purchase goods from households:

Δ HH ASSETS	Δ HH LIABILITIES
Cash: +4	Taxes Due: +0
Inventories: -4	Net Worth: +0

HH ASSETS	HH LIABILITIES
Cash: 2.5	Taxes Due: 0
Inventories: 6	Net Worth: 8.5

Δ GOVT ASSETS	Δ GOVT LIABILITIES
Cash: -4	Outstanding Notes: +0
Inventories: +4	Net Worth: +0

GOVT ASSETS	GOVT LIABILITIES
Cash: 0	Outstanding Notes: 2.5
Inventories: 4	Net Worth: 1.5

Households and government consume their respective holdings of real goods. Inventories are exhausted as a result. Utility is realized from this consumption. Households retain all outstanding cash in the economy, which they take into the next period:

Δ HH ASSETS	Δ HH LIABILITIES
Cash: +0	Taxes Due: +0
Inventories: -6	Net Worth: -6

HH ASSETS	HH LIABILITIES
Cash: 2.5	Taxes Due: 0
Inventories: 0	Net Worth: 2.5

Δ GOVT ASSETS	Δ GOVT LIABILITIES
Cash: +0	Outstanding Notes: +0
Inventories: -4	Net Worth: -4

GOVT ASSETS	GOVT LIABILITIES
Cash: 0	Outstanding Notes: 2.5
Inventories: 0	Net Worth: (2.5)

The model is consistent with the transactions-flow matrix, the more robust balance sheet evolution and the informative T-account exercises. Notice that prices don't explicitly show up anywhere: everything is in nominal terms. The model is consistent, and informative about price changes. As a result, market re-evaluations implicitly appear in these exercises when the government prints new money.

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Leeper's research focuses on theoretical and empirical models of macroeconomic policy, with special emphasis on monetary-fiscal policy interactions and how they can influence economic activity and inflation. Recent research examines the economic impacts of government spending, the macroeconomic consequences of alternative resolutions to long-run fiscal imbalances, the American recovery from the Great Depression, and the modeling of the "fiscal limit" and sovereign risk. Leeper received a Ph.D. in economics from the University of Minnesota in 1989 and a B.S. in economics from George Mason University in 1980.

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