

Modern Money Theory, and Interrelations between Treasury and the Central Bank: The Case of the United States

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Introduction

One of the main contributions of Modern Money Theory (MMT) has been to explain why monetarily sovereign governments have a very flexible policy space that is unencumbered by financial constraints. Not only can they issue their own currency to pay public debt denominated in their own currency, but also any self-imposed constraint on budgetary operations can be bypassed easily. Through a detailed analysis of the institutions and practices surrounding the fiscal and monetary operations of the Treasury and central bank of the U.S., the Eurozone, and Australia, MMT has provided institutional and theoretical insights about the inner workings of economies with monetarily sovereign and non-sovereign governments. In terms of theory, MMT argues that taxes and bond issues are not best conceptualized as funding sources for the Treasury, but rather as reserve draining devices to maintain price and interest-rate stability. As such they are necessary even if government issues its currency to spend. This theoretical conclusion holds even if the Treasury may be required to tax and issue bond to fund itself. Another theoretical conclusion is that merging the central bank and the Treasury in a government sector can be done without loss of generality for monetarily sovereign government. Separating the two adds complexity without adding insights (Mosler 1999; Bell 2000; Bell and Nell 2003; Bell and Wray 2003; Wray 1998, 2003a, 2003b, 2003c; Fullwiler 2009, 2013; Mitchell and Mosler 2002; Mitchell and Muysken 2008).

The paper shows that the theoretical conclusion of MMT regarding, public debt, taxes and bond issues, and the relevance of merging the Central Bank and the Treasury, can be illustrated with specific events taken from the United States. The first part of the paper shows

that the early monetary history of the United States provides a direct validation of the MMT theoretical insights. It was a period free of self-imposed constraints and the rest of the paper shows how some of the constraints are bypassed. The second part of the paper looks at the role of the U.S. Treasury in monetary policy. The third part of the paper focuses on the funding cost and mechanisms of the U.S. Treasury.

1. Fiscal Operations during the Massachusetts Bay Colonies: A Textbook Application of MMT

In the early years of the U.S. monetary system, the fiscal and monetary operations of the government were much simpler. There was no central bank, no primary market, and no debt limit. When a colonial government decided to spend, it issued its own securities to the public with a promise to take them back when tax payments were due. The governments of the Massachusetts Bay colonies issued bills of credit that:

were by their terms receivable at the treasury in payment of government dues. They were originally put forth in anticipation of taxes, and provision in the tax levy was made [...] for a tax which should furnish the means for the prompt retirement of the bills emitted. [...] A part only of these notes was destroyed on their return to the treasury. Those remaining in the treasurer's hands were made use of at a later date by the province as a currency [...] (Davis 1901, 10, 15, 18, 20)

Unconvertible bills were injected when the Treasury spent and drained when tax came due. While residents of the colonies were first skeptical about the value of the bill for economic and political reasons, they soon circulated at par:

When the government first offered these bills to creditors in place of coin, they were received with distrust. [...] their circulating value was at first impaired from twenty to

thirty per cent. [...] Many people being afraid that the government would in half a year be so overturned as to convert their bills of credit altogether into waste paper, [...]. When, however, the complete recognition of the bills was effected by the new government and it was realized that no effort was being made to circulate more of them than was required to meet the immediate necessities of the situation, and further, that no attempt was made to postpone the period when they should be called in, they were accepted with confidence by the entire community [...] [and] they continued to circulate at par.” (Ibid.)

It is straightforward to conclude that the funding capacity of the government was unlimited and that taxes were not a funding mechanism. Tax liabilities were a means to create a demand for the currency, and taxes allowed the draining of bills out of the economy, and validated the expectations of the population about taxes; thereby making the population willing to accept the bills in payment for goods and services.

The governments of colonies came to appreciate the important of setting clear expectations regarding future tax collections and in implementing collections. However, they also noted that taxes tended to drain too many bills out of the economic system compared to what was desired by private economic units. This created a dilemma for governments of colonies:

The retirement of a large proportion of the circulating medium through annual taxation, regularly produced a stringency from which the legislature sought relief through postponement of the retirements. If the bills were not called in according to the terms of the acts of issue, public faith in them would lessen, if called in there would be a disturbance of the currency. On these points there was a permanent disagreement between the governor and the representatives. (Ibid. 21)

Some knowledge of national accounting helps to solve this dilemma because, as long as the private sector desires to have a net accumulation of the bills, there is no need to retire all of them through taxation in order to maintain their value; a government deficit is an equilibrium position (Godley and Lavoie 2007). Private economic agents desired to hold bills for other purposes than the payment of tax liabilities, namely daily expenses, private debt settlements, and precautionary savings. All this is in line with MMT's theoretical conclusion that the equilibrium fiscal position is ultimately determined by the desired net financial accumulation of the non-government sector, and that government can run a deficit because its currency is desired for other purposes than taxation (Wray 2012).

Today, the U.S. Treasury's fiscal operations and Federal Reserve's monetary operations are constrained in multiple ways. One of the points of MMT is to show that these constraints are self-imposed and do not change the core purpose of taxes and bond offerings; moreover, the Treasury and Federal Reserve can, and do, bypass easily these constraints. MMT concludes that the case of the Massachusetts colonies is complex enough to understand the fiscal and monetary operations of contemporary economies with a monetarily sovereign government.

2. Monetary Policy: The Role of the Treasury

2.1 Fiscal Balance and Interest Rate Stability

A fiscal deficit lowers the FFR, which tends to lower other interest rates given everything else. While this was quite controversial when first noted by MMT proponents, it is now getting more accepted (Lavoie 2013). This ought to be the case because this conclusion is not theoretical but rather factual. It comes from by the balance sheet accounting of the Federal Reserve (Figure 1).

Assets	Liabilities and Net Worth
A ₁ : U.S. treasuries A ₂ : Other assets	L ₁ : Liabilities held by banks and the rest of the domestic private sector L ₂ : Liabilities held by the Treasury L ₃ : Other liabilities and net worth

Figure 1. Simplified Balance Sheet of the Federal Reserve

L₁ is approximately the monetary base (Treasury currency held by the domestic private sector must be added), and L₂ is the outstanding amount Federal Reserve notes and Federal Reserve accounts held by the Treasury. Given that a balance sheet must balance we know that:

$$L_1 \equiv A_1 + A_2 - L_2 - L_3$$

To simply one assumes that all economic transactions involve electronic transfers of funds (no use of Federal Reserve or Treasury currency). As the Treasury spends in the domestic economy (L₂ goes down), it credits the bank accounts of non-bank economic units and the amount of reserves held by banks rises (L₁ goes up). As the Treasury taxes (L₂ goes up), the amount of reserves held by banks declines (L₁ goes down). If the Treasury spends more than it taxes (i.e. runs a deficit), there is a net increase in L₁ due to an increase in the amount of funds at the Federal Reserve accounts of banks. Surpluses lead to exact opposite effect; they drain reserves out of the banking system and so reduce the monetary base.

Given that the demand for reserves by banks is highly inelastic, in normal times any¹ excess reserve will tend to push down the FFR toward zero and any shortage of reserves will drive up the FFR rapidly. Thus, the Federal Reserve will need to offset Treasury's fiscal operations unless it targets a FFR of 0% or gives up FFR targeting. Both the Treasury and the

¹ This is a simplification. In a stable economic condition, banks may want to hold a small amount of excess reserves to avoid overdraft in interbank settlements and to meet customer withdrawals (Marquis 2002).

central bank are involved in these reserve management operations to maintain interest-rate stability.

If one focuses on a deficit, the central bank drains excess reserves by moving A_1 in the opposite direction of L_2 ; the traditional open market operations (OMOs). OMOs involve selling treasuries to banks so that A_1 declines and excess reserves are drained (L_1 declines). However, the central bank has a limited amount of treasuries that it can use for OMOs, so the Treasury must supply an adequate amount of treasuries for FFR targeting to be effective.

More broadly, a growing economy requires a growing monetary base, and so a growing amount of assets held by the Federal Reserve given the FFR target, which usually means that the amount of treasuries held by the Federal Reserve must rise. If there is a fiscal surplus, the outstanding amount of treasuries shrinks which is a problem for a central bank that performs OMOs with that instrument. In addition, if the Federal Reserve acquires a too high proportion of treasuries, it will disturb the liquidity of the treasury markets and so the foundation of financial markets. In the U.S., the Federal Reserve explicitly wants to avoid that through a cap in terms of the proportion of treasuries that it can hold relative to the amount outstanding treasuries (35% for T-bills, 15% for T-bonds) (Marshall 2002).

The growing fiscal surpluses of the late 1990s created a problem for the Federal Reserve. The Federal Reserve started to discuss what alternative securities it could buy if surpluses continued as predicted by the Government Accountability Office. Leaving the US for a moment, the Australian Treasury was in the same situation in the early 2000s and came to the conclusion that treasuries were crucial for a well-functioning financial industry. As a consequence, the Australian Treasury decided to continue issuing treasuries even though it was running surpluses

(Common Wealth of Australia 2003). An alternative answer to this problem is for the central bank to issue its own interest-earning liabilities (either securities or savings accounts).

Beyond the provision of an adequate supply of treasuries, the Treasury is also involved in FFR targeting through the use of the Treasury tax and loan accounts (TT&Ls). TT&Ls are accounts of the Treasury at private banks. These accounts were first set up in 1917 to receive proceeds of liberty bond issuances, and in 1948 they also began to receive tax collections. The Treasury does not spend out of these accounts. When it needs to spend, the Treasury transfers funds from its TT&Ls to its Federal Reserve general account. The Treasury general account (TGA) is the main part of L_2 (U.S. Treasury 1955; U.S. Senate 1958) and transfers of funds from the TT&Ls into the TGA drain reserves (L_2 goes up, L_1 goes down).

TT&Ls were created explicit for the purpose of smoothing the impact of Treasury fiscal operations on reserves by preventing large fluctuation in L_2 and so L_1 . For example, when the government receives tax payments, it does not immediately transfer them into its TGA but rather keeps the funds in its TT&Ls. This helps tremendously the Federal Reserve to estimate reserve supply conditions in the federal funds market, and so to know how many OMOs to do to maintain the FFR on target. Bell (2000), U.S. Treasury (1955), MacLaury (1977), Meulendyke (1998) show that the daily coordination between the Treasury and the Federal Reserve is extensive.

2.2. Treasury's Monetary Policy during the Crisis

In usual circumstances, OMOs and TT&L transfers are enough to help stabilize the FFR at its target but these tools became insufficient during the financial crisis. In December 2007, the Federal Reserve started to provide reserves to banks with liquidity problems through the

Discount Window and emergency lending facilities (Term Auction Facility first and then many others). These banks then paid their creditors, which led to excess reserves in the federal funds market. At that time, the FFR target was 4.25 percent and the Federal Reserve removed any unwanted reserves induced by the emergency loans. The goal was to maintain an amount of non-borrowed reserves consistent with the FFR target while helping financial institutions in difficulty.

In six months, the Federal Reserve sold about 40 percent of its treasuries, and it had about \$480 billion left in June 2008. The amount of treasuries available for OMOs was actually smaller because, in March 2008, the Federal Reserve started to lend some treasuries for a month through the Term Securities Lending Facility (TSLF). In June 2008, the unencumbered amount of treasuries available for OMOs was around \$360 billion. By July 2008, a period of relative calm set in and emergency borrowing at the Federal Reserve no longer grew. The Federal Reserve had been successful at maintaining the FFR around its 2% target. It was, however, evident that the Federal Reserve would rapidly run out of treasuries if more emergency borrowing occurred with a FFR target significantly above zero.

On September 15, Lehman Brothers failed and this triggered a panic. The Federal Reserve responded by providing reserves through its emergency credit lines. By October 2008, it had injected over \$1 trillion of reserves, which was inconsistent with a FFR target of 2 percent. However, draining \$1 trillion of reserves would have required selling many more assets than the amount of unencumbered treasuries that amounted to about \$250 billion in October and were potentially needed for the TSLF. Instead the Federal Reserve used two strategies. The first strategy was to progressively lower the FFR target to 1.5 percent in early October, 1 percent at the end of October, and 0 to 0.25 percent in mid-December 2008. However, before it reached that 0 percent FFR target, the Federal Reserve had to drain excess reserves to be able to maintain the

FFR on target, and this is where a second strategy was employed that involved the Treasury in two ways.

First, as shown in Figure 2, Treasury transferred funds into its TGA that went from \$5 billion in 2007 to \$35 billion in 2008 and eventually \$110 billion in 2009. Most of the funds came from its TT&Ls that went from \$70 billion in 2007 to \$39 billion in 2008 and \$2 billion in 2009. However, the drainage of \$30 billion of reserves in 2008 and another \$80 billion in 2009 was not big enough to offset the \$1 trillion injection of reserves (Figure 3). Given that the Federal Reserve was unwilling to sell its remaining unencumbered treasuries, it asked the Treasury to issue T-bills for that purpose:

Today [September 17, 2008], the Treasury Department announced the initiation of a temporary Supplementary Financing Program. The program will consist of a series of Treasury bill auctions, separate from Treasury's current borrowing program, with the proceeds from these auctions to be maintained in an account at the Federal Reserve Bank of New York. Funds in this account serve to drain reserves from the banking system, and will therefore offset the reserve impact of recent Federal Reserve lending and liquidity initiatives. (New York Federal Reserve Bank Website)

The Treasury issued the following statement:

The Treasury Department announced today the initiation of a temporary Supplementary Financing Program at the request of the Federal Reserve. The program will consist of a series of Treasury bills, apart from Treasury's current borrowing program. (U.S. Treasury Website)

The outstanding amount of supplementary-financial-program (SFP) bills rose rapidly to \$560 billion at the end of October 2008 and stayed there for a month. All funds obtained were put into a Treasury Special Funding Account (TSFA) at the Federal Reserve. After November, the amount

of SFP bills declined quite dramatically, which led to instability in short-term markets. The Federal Reserve asked for more assistance but the Treasury was reluctant to help because a growing debt ceiling debate in Washington, DC (Ramanathan 2010). Ultimately, the Treasury agreed to roll over \$200 billion SFP bills, even though at the end of 2009 and beginning of 2010 their outstanding amount dropped to almost zero. After February 2011, the outstanding of amount of SFP bills progressively declined and by August 2011 all SFP bills had matured.

Overall, the Treasury helped drain up to \$610 billion of reserves in October and November 2008 via the TT&L transfers and the SFP bills. While Treasury operations were not enough to bring the FFR close to its target (the FFR that was consistently 600 basis points or more below target (Figure 4)), they prevented a complete fall of the FFR to zero. In theory, the SFP bill rate provided a floor to the FFR as T-bills trade at a rate below the FFR, but the FFR fell below the rate on SFP bills because not enough of them were supplied to financial institutions with excess reserves. With the introduction of interest payment on reserves on October 9 2008, SFP bills became theoretically redundant; however the Treasury kept issuing them:

There were several reasons for not eliminating the Supplementary Financing Program at the end of 2008. First, SFP bills soaked up a nontrivial quantity of excess reserves. Second, higher SFP balances, like higher TGA balances, reduced the volume of reserves on which the Federal Reserve had to pay interest and were, therefore, fiscally beneficial to the Treasury. And third, the Supplementary Financing Program provided market participants with additional quantities of a short-term, credit risk-free instrument that was unusually attractive in the midst of the crisis. (Santoro 2012, 8)

If one focuses on the first reason, even though the interest rate on reserves is supposed to provide a floor for the FFR, this only applies if all entities with reserves can get an interest-paying

account at the Federal Reserve, which is not the case for government-sponsored enterprises and some international institutions (Kahn 2010). SFP bill issuance helped to manage interest rates. The third reason for issuing SFP bills was similar to the conclusion reached by the Australian Treasury in the 2000s.

From what the preceding sections have shown, one can conclude that the Treasury has issued securities for other purposes than funding itself. One reason is to provide a means of payment to the country, another is to help the central bank in its interest-rate stabilization operations, and third one is to help financial institutions meet their capital requirement and to provide a foundation upon which all other securities are valued by providing a proxy for the risk-free rate. MMT argues that these reasons for issuing treasuries issuance are much more relevant in a monetarily sovereign government because they do not result from a self-imposed constraint. They respond to a genuine need of the economic system unless interest is paid on reserves, and there is wide access to Central Bank accounts.

Figure 2. Treasury Accounts, Yearly Average (Billions of Dollars)

Source: Financial Management Service (United States Central Summary General Ledger Account Balances)

Figure 3. Federal Reserve Balance Sheet and Injection (+) and Drainage (-) of Reserves (Trillions of Dollars)

Source: Federal Reserve Board of Governors (H4.1, Table 1 and 1A)

Note: Encumbered treasuries include treasuries lent overnight and through the TSLF.

Figure 4. Amount of Reserves drained by Treasury Operations, and Deviation from FFR target

Sources: Federal Reserve Bank of New York, Federal Reserve Board of Governors

Note: Some FFR targets are shown at the top of the graph. Each separation represents a change in the target.

3. Funding of the Treasury

One central point of MMT is that Treasury spending always involves monetary creation as private bank accounts are credited, while taxation involves monetary destruction as bank accounts are debited. The question becomes how the Treasury acquired the funds it has on its TGA; the answer is through taxation and bond issues. While usually economists stop here, MMT goes one step further and wonders where the funds for taxation and bond purchase came from; the answer is from the Federal Reserve. This must be the case because, leaving aside TT&Ls, taxes and bond issuance drain reserves so the Federal Reserve had to provide the funds. The logical conclusion is then that reserve injection has to come before taxes and bond issues. More

broadly, the theoretical insight that MMT draws is that government spending must come first, i.e. it must come before taxes or bond issues. Spending is done through monetary creation ex-nihilo in the same way a bank spends by crediting bank accounts; taxes and bond issues lead to monetary destruction.

As the following shows, in practice, injections of reserves related to the Treasury have come in several forms: monetary creation by the Treasury, funding of the Treasury by the Central Bank, funding of primary dealers by the central bank, and maturation of treasuries. The injection of reserves allows banks to buy treasuries or to complete tax payments.

3.1 Funding Constraints and Means to Bypass Them

Under the current budgetary procedures, the Treasury must issue securities to economic units other than the Federal Reserve to be able to fund a deficit (provided there are not enough funds in the TGA and TT&Ls). The Treasury has at least four ways to bypass this budgetary procedure. The first one is to issue its own monetary instrument. The second way is to allow banks to buy treasuries by crediting TT&Ls. The third way is to allow the Federal Reserve to provide a direct emergency or regular credit line to the Treasury. The fourth way is to have the Federal Reserve indirectly provide funding to the Treasury through banks. The Treasury uses, or used, all these different techniques.

If one focus on the first three methods to bypass the financial constraint, in the past the Treasury was responsible for a large quantity of the money supply and, up until the 1960s, it printed United States notes. Of course, coins are still issued by the Treasury and it could stamp coins of any denomination. Beyond the issuance of monetary instruments, in the 1950s, the Treasury has also issued Tax Anticipations bills similar to the one issued by the Massachusetts

colonies. The bills were accepted at face value for payments of income and profit taxes on a specific date. In addition, the Treasury allowed banks to pay for the new bills by crediting the TT&Ls:

The Treasury, on several occasions in the past, has permitted qualified depository banks to make payment by a credit to the Treasury's account on their own books. The purpose of this provision was to facilitate the marketing of new offerings at times when member bank reserves were subjected to abnormal pressures. (Federal Reserve Bank of Richmond 1952, 7)

A central goal of allowing TT&Ls crediting was to coordinate with the Federal Reserve in order to maintain interest-rate stability, by preventing drainage of reverses from the sale of treasuries. Monetary financing by the private banks occurred on a regular basis before 1929 through the war loan deposit accounts (the former name of TT&Ls) (Garbade 2008). This was not done at the discretion of banks. It was the Treasury telling banks if they could buy bills by crediting the account of the Treasury at the banks. The Treasury has not allowed banks do to this since October 1989 (U.S. Treasury 1989).

Beyond the issuance of monetary instruments and monetary financing by private banks, a third way for the Treasury to bypass its self-imposed financing constraints is through the direct involvement of the central bank. In the past, the central bank sometimes purchased treasuries directly from the Treasury either because an offering failed or because of a low TGA before tax receipts.

Prior to 1935, there was no restriction on treasuries purchases by the Federal Reserve. It could buy treasuries directly from the Treasury and the open market. The 1935 Banking Act

amended Section 14 of the Federal Reserve Act to prohibit the Federal Reserve from purchasing treasuries directly from the Treasury. This was quite inconvenient for the Treasury because:

Treasury has huge outpayments before tax receipts come in—we used to have securities maturing and interest due the 15th of March before the taxes came in—and in the meantime we had an overdraft, we were busted, and the Federal Reserve used to lend us money at those times (Burgess in U.S. Senate (1957, 897))

In order to bypass the 1935 constraint the Treasury used the following financial trick:

Since under this law the Treasury could not borrow directly from the Federal [Reserve], we would sell to the commercial banks, participation in this overdraft. They would have lots of money, because we just had redeemed some securities and had not collected taxes (Ibid.)

By repaying some maturing securities, the Treasury provided the reserves needed by banks to purchase short-term certificate of indebtedness.

At the request of the Federal Reserve, that needed help to preserve stability in the money market, the 1942 Second War Powers Act removed the 1935 restriction subject to reapproval by Congress every two years (Board of Governors of the Federal Reserve 1942; U.S. House 1947; U.S Senate 1956). The Act allowed the outstanding amount of treasuries directly purchased by the Federal Reserve to be \$5 billion at the maximum at any time. This funding source was mainly used as an emergency source in case TGA fell too low, and was not considered a central funding source by the Treasury:

The existence of the direct-purchase authority provides us with a margin of safety which permits us to let our cash balance fall to otherwise unacceptably low levels preceding periods of seasonally heavy revenues. [...] Moreover, there is always the possibility that

unforeseen swings in our cash flows may suddenly deplete our cash balance and require a sudden borrowing. The direct-purchase authority is available to provide an immediate source of funds for temporary financing in the event of a natural emergency on a broader scale. While this has never happened, it is conceivable that financial markets could be disrupted at a time when large amounts of cash had to be raised to maintain governmental functions and meet the emergency. (Altman in U.S. House (1978, 10))

Chairman Martin provides the Federal Reserve's perspective on this funding facility for the Treasury:

The use of this authority by the Federal Reserve enables the Treasury to avoid creating unnecessary financial strains that would otherwise occur if it had to draw heavily on its accounts especially during periods immediately preceding tax payment dates. Temporary Treasury borrowing at such times, followed by prompt repayment from the proceeds of tax payments, provides a smooth operating mechanism, without the abrupt money market fluctuations that would otherwise occur. The authority could also be useful in dealing with situations resulting from a national emergency. (Martin in U.S. House (1962, 12))

One may note again that a central purpose of this funding channel was to avoid the potential adverse impact on the federal funds market from the need to replenish the TGA.

Figure 5 show that the Treasury used that funding channel relatively rarely and usually for less than a week at a time. While \$5 billion was the maximum limit set by Congress, the Board of Governors had the discretion to set that limit lower. In practice, the maximum amount of "special short-term treasury certificates" the Federal Reserve would buy varied between \$500 million and \$5 billion. The limit was set usually between \$1 and \$2 billion, but the Federal Reserve did move up the limit temporarily if needed by the Treasury. A June 8, 1979 Act (Public

Law 96-18) allowed this power of Federal Reserve Bank to lapse after 1981, but the Board kept that authority until the end of 1983 (Board of Governors of the Federal Reserve 1983).

Figure 5. Maximum amount of Special Short-Term Treasury Certificates Purchased Directly from the U.S. Treasury, Maximum Maturity (Days, Shown above Bar), and Maximum Amount Outstanding Allowed by the Board.

Source: U.S. Treasury (1978, 290), Annual Reports of the Board of Governors of the Federal Reserve System.

Note: Maximum maturity is not available for 1979

However, the end of this direct purchase program was not a problem because, from the 1980s, this funding procedure became unnecessary as the Treasury coordinated with the Federal Reserve to keep around \$5 billion in its TGA at any time, and as treasuries auctions became more successful. The Treasury took quite a long time to figure out how to properly sale its securities on the primary market. Well into the 1960s, the Federal Reserve would help by buying some bonds and notes in the primary market. A major reason why offerings were not successful had to do with the technique of issuance of bonds and notes for which auctioning was not well

established until the 1970s. T-bills were never really a problem as they immediately started to be issued at auction successfully (Garbade 2004, 2008; Hallowell and Williamson 1961).

Today, the most common way for the government to bypass the financing constraint is through a fourth artifact. Even though the Federal Reserve is not allowed to increase its holding of treasuries by participating in the primary treasuries market, it is indirectly involved in Treasury funding through three channels. First, it finances the primary dealers that participate in the treasuries auctions, and it does so by accepting treasuries as collateral for repos or by buying treasuries outright. The Federal Reserve is a major holder of treasuries with usually over 10 percent of outstanding public debt held by the public in the portfolio of the Federal Reserve (Figure 6). Second, the Federal Reserve is actively involved in setting the entire yield curve of treasuries either by focusing on short end of the curve and influencing expectation about future short-term rate, or by buying and selling long-term treasuries in the secondary market. Third, the Federal Reserve is still a major participant in the primary market because it buys treasuries to replace its maturing treasuries, which helps to ensure that refinancing of the Treasury goes smoothly (Edwards 1997).

One can conclude from the previous points that there is nothing written in stone in terms of fiscal operations. If tomorrow nobody is willing to take treasuries, the Treasury, with or without the help of the central bank, has means to bypass that problem if it chooses to use them; it becomes a political issue not an economic issue. The theoretical implication that MMT draws from this is that one can simplify the *economic* analysis without loss of generality by assuming that the Federal Reserve directly funds the Treasury.

Figure 6. Federal Reserve Portion of the Public Debt held by the Public (Percent)

Source: Financial Management Service, Marshall (2002), <http://www.usgovernmentdebt.us/>

3.2 Cost of Public Debt

In a monetarily sovereign government, the government is able to have perfect control over the interest rate it pays on its debt. The government may choose not to use that power but it is a self-imposed constraint; it is a political design not an economic constraint. In practice, monetarily-sovereign governments chose to go half way, not perfectly controlling but also not letting interest rate go out of control. This semi-control comes in three ways. One is through the bidding process in the primary market for treasuries, another is through interest rate managements strategies describe in Section 2.2, and a third method is through debt management.

In a treasuries auction, two types of bidding are possible: competitive and non-competitive bidding. Non-competitive bids means that participants in the primary market for treasuries accept whatever discount rate is determined at the auction. This type of bidding was

introduced in 1947 to widen the market for bills among small bidders. For competitive bids, the government set up the auction to get the best possible price for its securities.

Since November 1998, all Treasury securities have been auctioned according to the uniform-price method. Each successful competitive bidder and each noncompetitive bidder is awarded securities at the price corresponding to the stop-out yield. Previously, most securities had been issued according to the multiple-price method, meaning that securities were awarded at prices corresponding to the yield of each successful competitive bid. In such auctions, bidders must be concerned with the “winner’s curse”—the tendency for a successful bidder to pay a price higher than the value assessed by other auction participants. By mitigating the winner’s curse, the uniform-price auction may elicit more aggressive bids, possibly increasing the Treasury’s revenue.

(Dupont and Sack 1999, 788)

As noted earlier, it actually took quite a few decades for the Treasury to figure out the best offering mechanism as oversubscriptions or auction failures were quite common until the 1970s. Yield-auction instead of price-auction improved further the success of auctions, as did single-price auctions.

Beyond the auction mechanisms of treasuries, the interest-rate policy of the Federal Reserve plays a crucial role in determining the level and slope of the yield curve on treasuries through its current and expected federal fund rate. Correlation between FFR and T-bills is almost perfect and correlation between FFR and T-bond rate is very high. The Federal Reserve can also decide to set the entire yield curve. For 9 years (1937-1945), the bankers’ acceptance rate (the equivalent of the FFR at the time) was set at $\frac{7}{16}$ of 1 percent (0.4375%); from 1942 to 1947, the T-bills rate was set at $\frac{3}{8}$ of 1 percent (0.375%), and T-bond rate was set almost perfectly at 2.5%

from 1942 to 1945 (Figure 7). The recent Quantitative Easing of the Federal Reserve is another example of similar yield curve targeting, albeit not as strong as during World War Two.

Finally, the Treasury may improve the control the cost of its debt by choosing the maturity it wants. If the Treasury wants to closely align its cost to the FFR, it may decide to issue only T-bills. In that case, the cost of the public debt will be under the control of the Federal Reserve. However, the Treasury usually also issues longer maturity securities, partly to fulfill the need financial-market participants for long-term default-free liquid assets, and partly to avoid frequent refinancing at higher interest rate if the FFR target goes up.

Figure 7. U.S. Interest rates in the 1930s, 1940s and 1950s.

Source: NBER, Board of Governors of the Federal Reserve System

Note: Grey area is World War Two for the United States.

3.3. Public Debt and Debt Limit

Beyond the prohibition of direct financing by the central bank, another major self-imposed constraint on the budgetary operations of the Treasury is that the U.S. Congress must approve the issuance of additional treasuries if the outstanding amount of treasuries reaches a specific value (“debt ceiling”). Given that Congress usually approves a budget that is in deficit, it must also periodically vote to raise the debt ceiling but these two votes are done separately. As the current situation in the U.S. shows, if there is no agreement to raise the debt limit, a deficit-spending budget cannot be implemented because the Treasury is not allowed to issue more securities to obtain the funds needed to close its budget.

The public debt is the outstanding amount of U.S. Treasury securities (USTS). It includes both marketable securities (mostly bills, notes, bonds and TIPS) and non-marketable securities (United States notes, Gold certificates, U.S. savings bonds, Treasury demand deposits issued to States and Local Gov., all sorts of government account series securities held by Deposit Funds). The public debt held by the public is the outstanding amount of USTS held by entities outside the U.S. government. These entities include the Federal Reserve System, U.S. states and municipalities, foreign governments, and the private sector.

If one looks more closely at how the public debt is measured, one can quickly note the arbitrary nature of this measure, and that the debt limit can be bypassed easily. For example, coins are not counted as part of the public debt because:

In this context it is critical to realize that the stock of reserves, or money, newly issued by the government is not a debt of the government. The reason is that fiat money is not redeemable, in that holders of money cannot claim repayment in something other than money. Money is therefore properly treated as government equity rather than government

debt, which is exactly how treasury coin is currently treated under U.S. accounting conventions (Benes and Kumhof 2012, 6).

Unfortunately, this argument does not stand the ground of observation. The public debt does include a monetary instrument that has always been unconvertible—United States note—and two that were previously convertible but are no longer so—silver and gold certificates. The main difference between them and a Federal Reserve note is the color of the ink. Coins are similar to a United States note; both are unconvertible monetary instruments issued by the Treasury, one in paper form one in metal form.

One may note that this leads to straightforward solution to reduce the public debt: convert all outstanding red (U.S. notes), blue (silver certificates), and yellow (gold certificates) currency into green currency (Federal Reserve notes). Currently that would eliminate \$422 million of public debt. However, this would not help deal with the debt ceiling constraint because these components of the public debt are not subject to the debt limit, which leads us to another conclusion. In order to bypass the debt ceiling problem, the Treasury just needs issue zero-interest instantaneous maturity securities (US notes, coins, or even deposits) instead of interest-paying securities or zero-coupon securities with a maturity higher than US notes. Reducing the debt is equivalent to transferring funds from a time account to a demand account. Finally, the Treasury has used accounting techniques to avoid default:

The existence of a legal ceiling on U.S. Treasury debt issuance means that the Treasury could run out of borrowing authority when the government is running a deficit if the ceiling were not raised in a timely fashion. Periodically, legislation to raise the ceiling has been held hostage during disputes between the Congress and the President. So far, the Treasury has found ways to avoid default through a range of techniques, such as leaving

Treasury trust funds uninvested. Treasury debt generally trades with no allowance for default risk. (Meulendyke 1998, 232, n.15)

Conclusion

MMT has provided a theoretical framework to think about how monetarily sovereign governments operate and their impact on the economy. It shows that it is relevant for theoretical purpose to aggregate the Central Bank and the Treasury into a government sector that finances itself through monetary creation. Taxes and bond issues are central to maintain the stability of the economic system, but they are not central to the funding of a monetarily sovereign government.

This paper has provided some evidence that the self-imposed constraints on the Treasury and Federal Reserve are quite loose and have been bypassed easily when too bothering, and when the stability of the economy was a primer concern. In addition, they do not change the causalities at play and the impact on economic variables (impact on interest rate, exchange rate, balance sheets and national income), and so they are not relevant economic issues (but they may be politically relevant). Finally, the financial operations of the Treasury and the Central Bank are so intertwined that both of them are constantly in contact to make fiscal and monetary policy run smoothly. The Treasury gets involved in monetary policy and the Central Bank gets involved in fiscal policy.

This framework of thinking is important because it changes the nature of some economic debates. For example, most of the debate surrounding social security and Medicare are framed in terms of insolvency. Once one accepts that solvency is not an issue—government can always pay—one can reframe the debate in another way (Eisner 1998; Wray 2006). There is a problem with social security; it is a demographic problem not a financial problem. Payment can be made at the

time they are due just by crediting bank accounts in a matter of seconds but the needed goods and services may not be available. Producing the goods and services that an aging population need will require more, not less, government involvement.

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