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The State spends first: logic, facts, fictions, open questions

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Abstract

The Keynesian (or Kaleckian) logic leads post-Keynesian economists to presume that a variation of State's revenues from taxes and sales of Treasury bonds are the *result* of a variation in its spending and not the other way round. In the last two decades, the exponents of Modern Monetary Theory (MMT) have been at the forefront in asserting the Keynesian (or Kaleckian) logic of this proposition filling a theoretical vacuum in post-Keynesian thinking. The question is that MMT consolidates Treasury and Central Bank (CB) so that the second automatically creates purchasing power in favour of decisions of the former to spend. Critics, however, pointed out that most institutional arrangements forbid CBs to finance directly the Treasury. After Lavoie (2013), the debate has moved forward and seen some convergence. The present paper critically reviews for unfamiliar readers an otherwise almost esoteric but fundamental discussion.

Keywords: Modern Monetary Theory, endogenous money, Keynesian theory, State spending, Chartalism, post-Chartalism

JEL classification: B5, E12, E42, E5, H6

Introduction*

The Keynesian (or Kaleckian) logic leads post-Keynesian economists to presume that a variation of State's revenues from taxes and sales of Treasury bonds *results* from a variation in its spending and not the other way round - given the other autonomous components of aggregate demand (AD) and the parameters that govern the income multiplier (or in a long-run analysis the super-multiplier).¹ The logic of this proposition is the same that post-Keynesian economists apply to investment: endogenous money creation *finances* investment (initial finance), while saving appears only at the end of the income (super)multiplier process and *funds* the so-called final finance (Cesaratto 2016). While the association between the Keynesian saving-investment nexus and endogenous credit/money is generally accepted, at least in its general terms, the proposition that "the State spends first" is not. As is well known, in the last two decades the exponents of Modern Monetary Theory (MMT) have been at the forefront in advocating the Keynesian (or Kaleckian) logic of the mentioned proposition, filling a theoretical vacuum in post-Keynesian thinking. This gap is indeed surprising, given the importance of the proposition. The proposition has perhaps been taken for granted, but it should not. The way MMT scholars have supported the proposition has however been controversial and has perhaps not helped its penetration in post-Keynesian theories. In short, the question is that MMT consolidates Treasury and Central Bank (CB) so that

the second automatically creates purchasing power in favour of the decisions of the former to spend. Critics, however, pointed out that in most institutional arrangements CBs are forbidden to finance directly the Treasury so that the mentioned consolidation is merely fictional (e.g. Gnos and Rochon 2002). Particularly after recent “constructive” criticism by Marc Lavoie (2013; see also 2005), MMT scholars have, perhaps still recalcitrantly, better articulated their explanation of the proposition by trying to fit the logic into institutional facts. It seems that this welcome attempt at clarification goes in the same direction as the one proposed by Lavoie. Yet, this has left other critics still unsatisfied.

The stance of MMT proponents is that current institutional arrangements might easily mislead as they are only fictional. For this reason, they defend the afore-mentioned consolidation as going beyond the institutional fiction consistently with the Keynesian (and Kaleckian) logic. Nonetheless, we must filter the appearances of the current institutional set-ups through the post-Keynesian logical lenses and de-construct the formal fictions in order to demonstrate that the consolidation discloses the real thing beyond the official labyrinths.² In other words, we should be able to show that the Keynesian logic that the State spends first prevails also without consolidation.

Largely, the paper is sympathetic to this Keynesian logic as one main MMT contribution to post-Keynesian economics that should become part of any genuine Keynesian (and Kaleckian) approach.

1. The proposition, the Keynesian logic and the consolidation hypothesis

The Keynesian logic is that, given productive capacity, the autonomous components of AD or *injections* in an old-fashioned jargon (typically autonomous consumption, investment, government spending and exports) determine the level of output, while induced consumption and *leakages* (saving, taxation and imports) are a result of the income multiplier process. In a long-run Keynesian logic, when capacity is a variable, investment would also become an induced component that depends on the expected rate of growth of AD according to some (flexible) accelerator hypothesis. In this “supermultiplier” approach, the autonomous components of AD - or final demand - would therefore be the drivers of long-run growth. Since autonomous spending precedes production and income distribution, purchasing power creation by some institution qualified to do so must finance it. In this regard, there is consensus among post-Keynesian economists that endogenous money creation by banks would sustain investment spending, a consensus that might also be extended to

autonomous consumption and exports, although these latter aspects are little explored yet.³ The MMT idea is to extend the same logic to State spending:⁴ in the same way as investment is initially *financed* by endogenous money and only afterwards *funded* by saving (Davidson 1986), government spending must consist of an initial spending *financed* out of newly created money and only subsequently *funded* by taxation and/or by issues of Treasury bonds (Tymoigne 2014, p. 11). Whereas, however, the mechanisms of endogenous credit/money creation in favour of the private sector are not controversial among post-Keynesians and are progressively acknowledged even by mainstream authorities (Bindsell and König, 2013; McLeay et al. 2014), the way the State finances its spending before taxing or issuing bonds is still controversial and is the object of this paper.

That the State must finance its spending before exacting taxes or collecting saving is a matter of logic. As Bougrine and Seccareccia (2002: 66) explain:

in the same way as firms [are] unable to “finance” their initial spending by future revenues that do not yet exist and, therefore, must rely on bank credit, the same would apply to the state. In both cases, when firms and the state engage in spending, there must be money creation.

Incidentally, I disagree with these authors when they suggest: “what is fundamentally at the origin of the great divide in macroeconomic policy is economists’ own competing conceptions of money” (ibid: 58). Contrary to this view, Wicksell’s theory shows, for instance, that endogenous money is fully consistent with neoclassical theory. To take another example, mainstream IS-LM model is consistent both with the Keynesian multiplier (whereby investment determine saving) and with endogenous money (horizontal LM), and even with the idea that the State spends first (inasmuch as this is a fact). The distinctive factor of neoclassical theory lies rather in the existence of a natural interest rate at which investment absorbs full-employment saving. To be sure, one of the just-quoted authors underlined long ago that outstanding marginalists acknowledged the endogenous nature of money and indicated in the natural interest rate the characteristic element of their theory and dividing mark with heterodox theories (Seccareccia 1994). The natural interest rate is grounded on the existence of a downward sloping demand curve for “capital” (or investment in flow terms). We may thus infer that the capital theory critique to the well-behaved shape of this curve, rather than endogenous money, is the decisive criticism to neoclassical theory (cf. Lazzarini 2011 for a clear review of the capital theory controversy). No doubt, however, that the temporal priority of purchasing power creation plays a more fundamental role in demand-led heterodox macroeconomic theories where there is no dualism between the monetary and real sector – neoclassical theory being practically the same with exogenous or endogenous money.

As is well known, the Keynesian logic that the State must be able to spend first has led MMT to the famous and controversial *consolidation hypothesis* that I briefly recall here. The idea is that, beyond some institutional complications or fictions, it is logic and legitimate to consider the Treasury and the central bank (CB) as a unique institution (since they both belong to the public sector), definable as the consolidated government sector. Suppose that the consolidated government sector wants to buy an aircraft of the value of 100 (measured in some unit of account) from the private sector (table 1, see Wray 2011b, case 1b). What it does is to draw an IOU in favour of the producer of the aircraft that the latter deposits at a commercial bank. Behind the IOU, the consolidated government sector has created 100 of reserves that are thus credited to the commercial bank when the cheque is deposited at the bank desk. Supposing a mandatory reserve requirement of 10%, once it has received the payment in favour of the aircraft producer, the commercial bank has 90 excess reserves that, as long as they are not remunerated, will be offered in the interbank market. To avoid an unwished downward pressure on the target short-term interest rate (e.g. the Federal Fund Rate in the US, Eonia in the Eurozone), the CB will sterilize excess reserves through an open market operation (OMO) as shown in row B of table 2.⁵ This would show that bonds are issued for monetary policy reasons – certainly not to finance spending – which also shows that consolidation of the Treasury and the CB makes full economic sense given that fiscal and monetary measures are not really distinguishable.⁶ An alternative closure shown in table 1 suggests that the spending recipient may want to use her deposit to demand 100 of T-bonds (this alternative closure is useful for comparison with other results shown below).

// Table 1 //

We may complicate the picture a bit by supposing that the consolidated government sector has two branches, called Treasury and CB (table 2 is a variation of table 1 of Lavoie 2013). The first row of table 2 shows the CB creating a deposit to the government that issues a corresponding amount of Treasury bonds. The transaction is clearly merely fictional. The story would then follow lines similar to table 1. Notably, looking at the net result, if the two branches of the public sector are consolidated, the result is identical to that of table 1.⁷ Finally, as in table 1, we may have an alternative closure with the spending recipient holding 100 of T-bonds that the commercial bank buys on her behalf from the CB.

// Table 2 //

What about taxation? As is known, the MMT's Chartalist main thesis is that the State imposes taxes to be mandatorily paid in the currency it issues (high-powered money, HPM) in order to create a demand for that currency - so that when it spends, the private sector gratefully accepts it considering HPM (reserves and banknotes) as the ultimate means of settlement. In addition the State mandatorily names the other "money things" (bank deposits) in the same unit of account, often fixing a proportion between HPM and deposits.⁸ I will not enter into the disputes about Chartalism and the origin of money. I just note that although it is true that "the public uses bank money [deposits] and *not* state money [HPM] to pay taxes" (Gnos and Rochon 2002: 51, italics in the original), when we order a payment to another bank or to the State, payments are finalized through the transfer of HPM. In addition, deposits are directly convertible in State money (banknotes). Of course, HPM is not only issued after State spending, but also after the endogenous credit-money creation by the banking sector (ibid: 44-5), but this is not something MMT would oppose, as further discussed below.

According to MMT, taxes are also imposed for two other reasons: to check aggregate demand and inflation (Tymoigne and Wray 2013: 26) and for social justice (that is to rebalance income distribution). Importantly, timing of spending and tax-collection must be coordinated. Indeed, spending does increase the amount of banks' reserves, while tax collection will decrease it, so that both actions destabilize the monetary market. The Treasury must therefore synchronize and coordinate spending and tax collection with the CB (Wray 1998: 115-118, Bell 1998; Tymoigne and Wray 2013: 25).⁹ Timing harmonization between spending and taxation has nothing to do with the pre-Keynesian idea that taxes fund spending, but is related to the overlapping of monetary policy and fiscal policy. As Wray 1998: 78) put it: "the coincident timing of tax 'receipts' and government spending (...) is not an indication of a 'financing' operation but rather is required to maintain stability in the market for reserves." On the other hand, the cooperation between Treasury and CB is not a proof of the consolidation hypothesis.¹⁰

2. A further Keynesian touch

While this is standard in MMT literature (e.g. Wray 1998: Chapter 4), let us add a Keynesian touch. Government spending for the aircraft generates an income multiplier process that, given the overall tax rate, does generate fiscal receipts that, *ceteris paribus*, may or may not cover the initial spending. Eventually, the part of spending which is not "ex post funded" by tax revenues will be "funded" by private sector saving.¹¹ Given the example of table 2, the bonds issued by the Treasury

might be short-term, so that they are in part redeemed (that is the debt is partially not rolled over) once fiscal receipts begin to accrue, as shown in a simple example.

Supposing the existence of spare capacity in a closed economy, given a saving propensity $c = 0.7$ and a tax rate $t = 0.3$, a public spending of 100 would generate an additional income of 196, fiscal revenues of 58.8 and additional saving of 41.2. Therefore 58.8 of initial short-term Treasury debt will not be rolled over, while we may assume either that households' saving "funds" the bank holding of the remaining 41.2 of Treasuries, or that they buy the bonds from the bank. The example confirms that a positive tax rate limits the size of the income multiplier, so that taxes are an instrument "to restrain aggregate demand" (Lavoie 2013: 12). After the payment of the taxes, we may have a "closure" like in table 3 (which is a continuation of table 2). In row D, the private sector pays 58.8 of taxes. In row E, the Treasury uses tax revenues to buy back 58.8 of bonds. In row F, the private sector buys the residual Treasury bonds from the bank. "+/- Net worth" reminds of the "expropriation" by the government of part of the value of the aircraft through taxation. It should, however, be recalled that, likely, without the government order the aircraft would not have been produced (and income and private consumption not increased).

// Table 3 //

Table 3 might deceive readers to believe that taxation only hits the aircraft producers (workers and capitalists) (line D of table 3). This is not so since taxation hits all the newly incomes directly and indirectly generated by public spending. This follows the logic of the Keynesian multiplier that is shown in table 4, inspired by Dalziel (1996) and based on the above numerical example (Dalziel 2000, that I read after this section was written, actually proposes a similar analysis).

At $t = 0$ the State spends 100 and the aircraft producers get a deposit of 100 (as in line A of table 2). In $t = 1$ the aircraft producers pay their tax liability ($0.3 \cdot 100$), demand 49 of consumption goods ($0.7 \cdot 0.3 \cdot 100$) and save the rest (the remaining deposit is therefore 21). Producers of consumption goods receive 49 and in $t = 2$ they also pay their tax liability, consume and save the rest, and so on and so forth. What we see is that the initial deposit has 'changed hands' as a result of the income multiplier process and that, eventually, taxes hit all the newly generated income (196). As in table 3, the government can redeem 58.8 of the initially issued Treasury bonds, while the private sector can employ 41.2 to purchase the remainder (line F). In line F' of table 4 we depict

the case in which the public withdraw 10 in banknotes and the CB ends up holding 10 of Treasury bonds. In this case, the net issue of T-bonds by the consolidated public sector (Treasury and CB) is 31.2 (paying an interest rate only on this debt).

// Table 4 //

Paul Dalziel (2000, p. 10) aptly sums up the Keynesian nature of the sequence:

“the fundamental insight of the Chartalist theory of fiat-money is confirmed within this paper’s process analysis. Deficit expenditure by the public sector can be financed by the issue of fiat-money [HPM], just as deficit expenditure by the private sector can be financed by the issue of credit-money through bank advances (which then become bank deposits on the liabilities side of the finance sector’s aggregate balance sheet). Some of the new fiat-money will be retired by the payment of tax liabilities arising out of the subsequent income-expenditure multiplier process, some will be retired by the selling of interest-bearing public debt, and some will be willingly held to satisfy the private sector’s liquidity preferences... .”

3. Criticism to the consolidation hypothesis: a consensus “post-Chartalist” way out?

The reality of many institutional contexts in which it is forbidden to the CB to finance directly the Treasury has made many post-Keynesians skeptical of the consolidation hypothesis. Fiebiger (2012: 3-4), for instance, denounces that the Treasury cannot issue any currency so that its spending power is limited by the funds it collects:¹²

In reality the Treasury can ‘credit’ the accounts of the private sector by drawing on deposits no more than nonfinancial firms can ‘credit’ the accounts of workers by drawing on deposits: the process is constrained by the positive balance in the account. The Treasury cannot ‘net credit’ the accounts of the private sector through expenditures because the ‘credits’ to its own accounts are obtained by collecting fiscal receipts and, hence, by recording previous ‘debits’ against the accounts of the private sector (with a side note needed for the Fed’s holdings of Treasury debt). Matters are straightforward: if the Treasury wants to spend in excess of the balance in its account at the central bank (normally around \$5 billion) it must first collect and then draw on fiscal revenues or else its checks will bounce.

In this way, however, Fiebiger fails to acknowledge the Keynesian logic, behind the institutional appearances, that backs the statement “the State spends first”. Lavoie (2013) has instead put a “friendly” and constructive alternative proposal forward.

Lavoie takes inspiration from Wray (2011a) – unfortunately a little-noticeable blog-post (but see also Wray (2011c) - in which Wray eventually openly tackles the question. Lavoie provides a T-balance illustration, originally proposed in 2002 named “post-Chartalist view of government deficit-spending” (Lavoie 2005) - about which Bell and Wray (2002-03) looked still dismissive. Wray’s post is worth dwelling upon. With reference to the US system, Wray (2011a) first notices

that the Treasury is supposed to make payments through its account (Treasury Account, TA) at the Federal Reserve (Fed). Yet, the money must be there since the Treasury cannot make overdraft payments from its TA. Usually, tax revenues are initially held in special commercial banks accounts called Tax and Loan Accounts (T&LA).¹³ The Treasury “tries to maintain a deposit of \$ 5 billion at the close of each day”, so that whenever “it wants to replenish its deposit at the Fed, Treasury moves deposits from these banks.” Current tax receipts might however be insufficient to cover current expenditure, and indeed the government “normally runs an annual budget deficit”. Hence, to cover the gap the State sells bonds:¹⁴ “The easiest thing to do would be to sell them directly to the Fed, which would credit the Treasury's demand deposit at the Fed, offset on the Fed's balance sheet by the Treasury's debt. Effectively, that is what any bank does—it makes a loan to you by holding your IOU while crediting your demand deposit so that you can spend”. However “current procedures prohibit the Fed from buying treasuries from the Treasury (with some small exceptions); instead it must buy treasuries from anyone except the Treasury” (previous quotations all from Wray 2011a). This impediment is circumscribed in the following way:

So, instead, the Treasury sells the treasuries to private banks, which create deposits for the Treasury (*stage A*) that it can then move over to its deposit at the Fed (*stage B*). And then “Helicopter Ben” buys treasuries from the private banks to replenish the reserves they lose when the Treasury moves the deposits (*stage C*). ... The Fed ends up with the treasuries, and the Treasury ends up with the demand deposits in its account at the Fed - which is what it wanted all along, but is prohibited from doing directly. The Treasury then cuts the checks and makes its payments (*stage D*). Deposits are credited to accounts at private banks, which simultaneously are credited with reserves by the Fed. And for any reader still following along, in normal times banks would find themselves with more reserves than desired so will offer them in the overnight Fed Funds market. This tends to push the Fed Funds rate below the Fed's target, triggering an open market sale of treasuries to drain the excess reserves (*stage E*). The treasuries go back off the Fed's balance sheet and into the banking sector. (Wray 2011a; see also Wray 2001c)¹⁵

Table 5, inspired by Lavoie (2013, table 3) and Wray (2011b, case 3) illustrate this sequence of events. In this regard Wray (2011a) comments:

Recall that all these operations are required because we prevent the Fed from buying the bonds directly from the Treasury, thereby providing the Treasury with the demand deposits it needs to write checks. So it is doubly ironic that this prohibition then requires either that the Fed lend reserves to banks so they can buy the bonds, or that it buy the bonds from the banks.

Similarly Fullwiler et al. (2012: 22) consider this sequence non-sense:

Pause for just one moment to ponder that: the Treasury cannot issue IOUs directly to the government's own bank—the Fed—but must instead issue them to any other bank to obtain deposits that are then transferred to its own bank. This is a self-imposed constraint. Imagine imposing such a constraint on a private firm: it can issue an IOU to anyone except its own bank. Clearly this self-imposed constraint is anything but “natural” and cannot be useful for describing a general case for government debt operations.

Indeed, if one consolidates (nets) the situation at stage C, the situation would be the same of stage A of table 2 where the CB directly bought the treasuries (Wray 2011b: 7).

// Table 5 //

The proposed solution to the question of how the State can spend first without consolidating Treasury and CB is, therefore, not different from that of an endogenous credit/money creation in favour of the private sector, at least as far as the Treasury initially borrows from an ordinary bank as any other private subject and the CB backs the operation. Wray (2011c) openly acknowledges this:

As economists who adopt the (French-Italian) ‘Circuit’ approach have long argued, when a firm wants to spend it approaches a bank. The bank accepts the firm’s IOU (called a loan on the bank’s balance sheet) and creates its own IOU (in the form of a demand deposit). From the firm’s perspective, the loan is its debt and the demand deposit is its asset. ... Almost everything that has been said above about the finance of the spending of a private firm applies to a government. Government spending occurs simultaneously with a credit to a private bank account—that is to a demand deposit at a bank. The offsetting liability on the government’s books is a credit to the bank’s reserves at the central bank (which is the “private” bank’s asset). The government cannot ‘run out of money’ because the ‘money’ is created when it spends.

Post-Keynesian economists, e.g. Febrero (2009: 536), agree proposing to “include the state as another deficit-spending unit” (see also Bougrine and Seccareccia 2004: 67; Gnos and Rochon 2002: 51). Therefore, the distance between the neo-Chartalist view and that held by many post-Keynesian economists is more one of emphasis than of substance, as Tymoigne and Wray (2013: 29) acknowledge when they write, “Lavoie is actually on the same page and recognizes that the fact that central bank cannot directly finance the Treasury does not change the logic at play. However, he prefers not to use the consolidated government”. Noticeably, not controversial is how the State rolls over its debt, since the Fed routinely rolls over maturing treasuries (Tymoigne 2014, p. 16).

4. An even more realist view

Lavoie (2013) has brought about an acceleration of the debate. Although the reply by some leading MMT exponents has in part been rather dismissive, restating the logical validity of the consolidation hypothesis and arguing that the specific institutional contexts were duly taken into account in past contributions (Fullwiler et al. 2012: 19),¹⁶ fresh attention has been given to the

issue in line with the Wray-Lavoie way-out depicted above. In particular Fullwiler et al. (2012: 22), (see also Tymoigne and Wray 2012: 27), openly tackle the criticism

describing how operations are really done in the US – where the Treasury really does hold accounts in both private banks and the Fed, but can write checks only on its account at the Fed. Further, the Fed is prohibited from buying Treasuries directly from the Treasury (and is not supposed to allow overdrafts on the Treasury's account) and thus the Treasury must have a positive balance in its account at the Fed before it spends. Therefore, prior to spending, the Treasury must replenish its own account at the Fed either via balances collected from tax (and other) revenues or debt issuance to 'the open market'.

The description of "how operations are really done" is similar to that of table 5 with one important addition. Dealing with the US system, the authors introduce the role of 'Primary Dealers' (PDs). These are selected banks or brokers authorized to participate in the Treasury auctions and in the Fed's OMO. They purchase government bonds at auctions to resell them later to third parties. PDs strictly cooperate with both the Treasury and the Fed in order to assure a smooth funding of the government budget and working of monetary policy. In simple terms, in auction days the Fed would pre-finance primary dealers through "repurchase agreement operations ... (in which the Fed purchases Treasury securities from primary dealers with a promise to give them back on a specific date) to ensure that sufficient reserve balances are circulating for settlement of the Treasury's auction." (Fullwiler et al.: 22; Tymoigne 2014, pp. 15-16).¹⁷ So, Tymoigne and Wray (2013: 26) comment: "While the Fed is not in that case directly buying the new issue directly from the Treasury, it uses the open market purchase to buy an existing bond in order to provide reserves needed for a private bank to buy the new security. The end result is exactly the same as if the central bank had bought directly from the Treasury." Scott Fullwiler (2011) seems the originator of this further sequence. While he employs "Social Fabric Matrix and Social Accounting Matrix Methodologies", to illustrate the new sequence, I find the T-balances much clearer. My sequence presented in table 6 is a modified version of Fullwiler's own. An appendix presents a T-version of the original Fullwiler's sequence and underlines the differences with the sequence below.

In table 6:

Stage A refers to the mentioned repos between the Fed and PDs: the Fed purchases existing T-bonds and the PD obtains a deposit at Commercial Banks.

Stage B refers to the Treasury auction: the PD uses funds received at stage A to buy a new T-bonds issue from the Treasury. The payment goes to the Treasury TA at the Fed (from which the former can execute payments).

In *stage C* the Treasury's deposit is transferred to its TA account at the Fed.

In *stage D* the Treasury eventually spends and this increases the private sector recipient's deposit at the commercial bank. We must at this point imagine that public (deficit) spending gives place to a multiplier process at the end of which the private sector's deposit consists of saving (which is precisely equal to the deficit spending, as elementary Keynesian theory would suggest).

In *stage E* the PD sells the new T-bonds to the private sector.

This enables the PD, in the final *stage F*, to reverse and terminate the Fed's repo agreement (stage A).

If we consider the final *net* situation, we see that it is not fundamentally different from the preceding, simpler accounts (see the alternative closures of tables 1 and 2).

// Table 6 //

Also in the case of table 6, we may assume that the government taxes the private sector and uses the revenues to buy back part of the Treasury bonds (as illustrated in section 2, table 3).

5. Discussion

There are further questions, though.

(i) The first is that in the representations of table 2 and 5 the T-bonds are not overtly issued to collect excess reserves, as in table 1, and therefore the typical MMT statement that government bonds are issued *specifically* for monetary policy reasons is, at least, conjectural. In this regard, MMTers have a point in arguing that institutional complications may hide simpler facts.¹⁸ After all, these technical hitches have deviously been introduced to conceal the plain truth of the CB financing government spending. Indeed, inspection of tables 2 and 5 (rows C and E, respectively) shows that the CB uses the initially issued T-bonds to drain reserves, so even if they have not been issued for this purpose (as in table 1), they end up to be “operationally” used in this way, as a referee pointed out to me. In a nutshell, (a) when commercial banks buy treasuries to finance government spending, the CB must create HPM to maintain the policy interest rate and, as a result, it absorbs the treasuries; (b) it will resell them once the State spends. If we consolidate the CB and the Treasury, we have stage (b) only: the consolidated sector spends by crediting banks accounts and sells treasuries to absorb the excess liquidity it has created (the defensive action described in table 1). In we do not consolidate we have a two stage process which, however, still includes stage (b).¹⁹

(ii) The second issue regards the cooperation between the Treasury, the Fed and the PDs to assure an ordered execution of the Treasury auctions and to avoid tensions over the policy interest rate.

Fullwiler et al. (2012: 22) argue that: “it is well-known that settlement of Treasury auctions are ‘high payment flow days’ that necessitate a larger quantity of reserve balances circulating than other days, and that the Fed accommodates the demand.” In this regard, Fiebiger critically argues that the “US Fed does not inject reserves or lend reserves so that banks can buy Treasury bonds on any significant scale” (2012: 12; see also JHK 2012: 9). This is certainly true. The reply a Fed officer provided to a specific question posed by a participant to a blog discussion confirms this skeptical stance:

It bears emphasizing that at no point in the Treasury auction process does the Federal Reserve temporarily purchase or sell Treasury securities to facilitate settlement on behalf of private investors nor does it provide credit temporarily to facilitate their purchases of Treasury securities.²⁰

Having said so, it must be recognised that MMT is neither suggesting Fed’s interventions are intended to support the participation of the PDs in Treasury Auctions, since they only aim at avoiding disruptions in its monetary policy targets; nor that PDs have overdraft privileges at the Fed (as noted in fn. 17). The Fed only intervenes to adjust the monetary base to ensure that all payments clear and the overnight rate in the interbank market hits the Fed’s targeted rate. MMTers limit themselves to stress the necessity of this intervention in ‘high payment flow days’ occurring on the occasion of the Treasury auctions. Impressive statements by Marriner Eccles, Chair of the Fed from 1934 to 1948, support this view.²¹ In a testimony before the Congress, Eccles defended a Bill that would reinstate the possibility for the Treasury to borrow directly from the Fed. This possibility had been abolished in 1935, although exemptions remained in place until 1981 (Garbade 2014; Tymoigne 2014, pp.13-14). In synthesis, Eccles maintains that, although that possibility was removed to prevent the government from increasing the public debt by letting it feel market discipline, this objective was deemed to fail since it was the Fed (and not the market) that determined interest rates. Indeed, “the Reserve System indirectly finances the Treasury through the money market” since this “is how the interest rates” are “stabilized”. Of course, the key proviso here is that the CB wants to fix a certain short-term interest rate:

... if the Treasury has to finance a heavy deficit, the Reserve System creates the condition in the money market to enable the borrowing to be done, so that, in effect, the Reserve System indirectly finances the Treasury through the money market, and that is how the interest rates were stabilized as they were during the war, and as they will have to continue to be in the future.
So it is an illusion to think that to eliminate or to restrict the direct borrowing privilege reduces the amount of deficit financing. Or that the market controls the interest rate. Neither is true.
(Eccles, 1947, p.8)

(iii) The third question is that, although Wray openly endorses the horizontalist endogenous money view (e.g. Wray 2007), Horizontalists have repeatedly accused Chartalists of a verticalist view of money creation. Rochon and Vernengo (2003: 60-1) have for instance argued that according to Chartalists:

Money is injected into the system through fiscal policy, and the banking sector leverages the initial exogenous money supply, increasing the amount of money in circulation. In other words, state money is outside (exogenous) fiat money, and bank money “can be thought of as a type of ‘leveraging’ of fiat money” (Wray, 1998, p. 111). ...The integration of horizontalism and verticalism under the chartalist banner looks surprisingly familiar and not altogether dissimilar from the standard money multiplier model of more conventional verticalist writers. For chartalists, state money is exogenous, and credit money is a multiple of the former. We believe that the basic difference between Post Keynesians and chartalists is the order in which the verticalists and horizontalists arguments appear. For chartalists, money is primarily verticalists in nature, with bank money playing a secondary role. For Post Keynesians, it is the other way round: credit money takes precedence and is the primary money creation force, whereas fiat money takes a secondary role.²²

Some misunderstanding might derive from the particular use of the term “leveraging” by Wray (e.g. 1998, p. 111): “the bank-money-supply is horizontal; it can be thought of as a type of ‘leveraging’ of the hoarded vertical fiat money.” Once an endogenous view of money is endorsed, however, HPM creation is also endogenous and it does not strictly depend on government deficits.²³ The government budget can indeed be balanced and even in surplus (Lavoie 1999, p. 371) and HPM created in response to the endogenous request from banks, a point that Wray (undated, p. 24) considers “correct.”²⁴ Moreover, if the State relies on commercial banks to finance its spending – as willy-nilly also Chartalists acknowledge – the horizontalist view of money creation is the only show in town as it regards both private and public spending. Clearly, Wray’s meaning of “leveraging” must be understood in a broad sense, stressing the hierarchical primacy of the State in producing HPM.

To begin with, according to Wray (1998, pp. 111-113, undated, p. 24) the provision of HPM to the banking system can be included in a consolidated-public-sector spending (reserves against assets) along with other expenditures - something that Lavoie (1999, p. 371) considers “logical”, but nonetheless not corresponding to “common usage”. Moreover, the lever (HPM) is still endogenous, determined by the banks’ demand for reserves, so the term “leveraging” (which entails an exogenous HPM lever) “does not seem appropriate” (ibid). “Backing” would perhaps be a more appropriate term. Secondly, MMTers are very keen on the existence of a hierarchy of moneys, with HPM on the top of it and with the State power to “monetize” other “money things”, e.g. deposits, by denominating them in the same unit of account of HPM and making them convertible into HPM (that backs them), which is the ultimate means of payment, in particular of

taxes.²⁵ This hierarchy would not be irrelevant for monetary policy, since it is by creating a market for reserves that the CB targets its overnight policy interest rate (Wray undated: p.22).

Finally, considering the broader view of the State-consolidated spending introduced above, Wray (undated, p. 24) argues that “monetary spending” supporting banks’ lending is less expansionary than fiscal deficit spending. This is so because fiscal deficits generate an asset but not a liability for the private sector, which thus satisfies its desire of net wealth — whereas credit money created by banks leaves both additional assets and liabilities in the hands of the private sector.²⁶ Also in this sense there would be a superiority of the HPM “exogenously” (or vertically) created by the State vis-a-vis that endogenously generated on banks’ request. I have some (minor) reservation in this regard. To start with, in case of productive-capacity underutilization, an increase of public deficit spending or of autonomous private spending (investment and autonomous consumption financed out of credit) has the same effectiveness in raising the degree of capacity utilization. True that deficit spending would increase net wealth for the private sector (letting any Ricardian effect aside), but from the point of view of the economy as a whole (public and private sectors) there is no net wealth creation. Moreover, it could be argued that only the accumulation of capital generates *real* net wealth - although, for accountancy reasons, the corresponding entry (say, the value of the corresponding equities) appears in the books as a liability (the reasoning could be extended to *public* investment). Having said so, I would agree with the MMT argument that, in terms of economic policy, we should not forget the different status of the two sectors, private and public. While in the case of the private sector the process of endogenous money financing of spending is passive, that is it depends on the vagaries of private spending decisions, State spending depends on the deliberate decisions of policy makers, in particular to satisfy the saving desire that at full employment is not met by private investment decisions. Moreover, the solidity of public debt in monetary sovereign countries is much higher than that, say, of households’ debt as shown by the recent GFC (as endlessly remarked by MMTers; see also Barba and Pivetti, 2008, pp. 129-131). For those who are skeptical of *laissez faire*, these are quite remarkable policy differences and in this sense the MMT emphasis on a hierarchy of money generation channels is understandable. Overall, I do not see any major divergence between Horizontalism and MMT, once a (reciprocal) effort is made to appreciate the respective usage of terms and emphasis.

(iv) A fourth, final issue regards a point made by Davidson (1986) that many production decisions are made on the base of orders or, anyway, of expected demand. In this case endogenous money

creation would finance production decisions rather than final demand (taking inspiration from Davidson and Monetary Circuit Theory, Cesaratto [2016] explores these issues). In the case of State orders, e.g. public procurement with deferred full payment, this implies that they induce production decisions financed by endogenous credit/money, income multiplier effects and tax revenues (or purchase of newly issued treasuries) that will *fund* the final State payments (or part of them). However, in no way does this sequence contradict the proposition that the State spends first. Although in this case State spending decisions operates through an expansion of private credit, this increase is nonetheless prompted by a State decision taken before exacting taxes and collecting saving.

Conclusions

This paper underlined the Keynesian logic of the MMT proposition that the State spends before collecting tax revenues and saving. Seen through the lenses of monetary payments the question is “where do the funds for taxation and bond purchases come from”, and the answer cannot but be “from the Federal Reserve” so that government spending “is done through monetary creation *ex-nihilo*” (Tymoigne 2014, p. 11). In this view, newly created CB money finances public spending - all, not only deficit spending. All spending is deficit spending, so to speak. Given the average tax rate (and other parameters), through the income multiplier (or supermultiplier), this spending generates income, saving and taxation. Liquidity is reabsorbed through tax payments (reflux) and by the Treasury which sells bonds absorbing saving. This is described by MMT, Lavoie and others as a defensive action undertaken in order to absorb excess liquidity given the policy interest rate. In terms of the terminology suggested by Keynes (1937) and used in Cesaratto (2016) with regard to investment, the CB “finance” government spending (initial finance) while taxes and saving “fund” it (final finance). The consolidation hypothesis perfectly fits the Keynesian logic of this scheme.

These propositions are a vital constituent of a Keynesian theory of output level and growth as determined by the autonomous components of AD that include government spending (Freitas and Serrano 2015; Lavoie 2015). In this sense, the present paper flanks a parallel effort made in Cesaratto (2016) to integrate some insight of the Monetary Circuit Theory into the Keynesian theory of AD-led growth. The recent debate on the MMT proposition has also seen a convergence of the MMT exponents and their (friendly) critics on the idea that the government actually spends by selling bonds bought by commercial banks backed by the CB. These advancements

notwithstanding, I believe that further research on the actual institutional mechanism through which “the State spends first” is still necessary, in particular in the Eurosystem.

Apart from some questions of emphasis, MMT and “horizontalist” endogenous-money theories are largely complementary. An effort to use a common technical language would perhaps help. I see further matters of (constructive) debate with MMT with regard to the role of the foreign constraint in economic growth, for instance about the merits of the Kaldor-Thirlwall tradition and, in relation to this, over the nature of the Eurozone crisis (a perhaps too much inflamed debate on these themes took place in 2012 between Wray and me in *Naked Keynesianism* and *EconoMonitor*). Furthermore, I have some reservations about the Stock-Flow consistent model – I am referring here to the simple three-sector-balances - that I find quite useful to detect some patterns but that, as an ex-post accounting picture, tends to hide the causal mechanisms revealed by the most traditional Keynesian (super)multiplier approach. However, a step towards a better understanding over these topics must be left to another occasion.

APPENDIX: the original Fullwiler's exposition

Referring to the A-F operations in Fullwiler (2011: 4-5),²⁷ *Stage A* of table 7 refers to the repo between the Fed and the primary dealer. *Stage B* refers to the Treasury auction: the primary dealer buys the new issue from the Treasury that receives a payment in its TA account at the Fed. At *stage C* the Treasury transfers its deposit from the TA account at the Fed to its T&LA account at COMB. In *stage D* "the Fed's repurchase agreement is reversed, as the second leg of the repurchase agreement occurs in which a primary dealer purchases Treasury securities back from the Fed" (ibid: 3). At *stage E* the Treasury transfers the deposit from the T&LA to its TA account from which it can execute payments. In the final *stage F*, the Treasury eventually spends and this increases the private recipient deposit (that for simplicity we assume is at the same TLA bank).

Stage G in table 8 finally shows that by adding one passage to Fullwiler's A-F sequence, the final result is identical to that of table 6. In *stage G* the PD sells the new T-Bonds to the PS, while in table 6 this happens in line E. Although equivalent, I prefer the exposition of table 6 that anticipates government deficit spending at an earlier stage. This gives more centrality to the Keynesian content of the sequence, since it is government spending that generates the private saving that is used to buy the new T-Bond from the PD (line E), that can thus recover the funds to cancel the repo with the Fed.²⁸

// Table 7 //

// Table 8 //

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Footnotes

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¹ I use the term post-Keynesian in the sense of Lavoie (2014). Independently rediscovered by the Sraffian economists Bortis (1997) and Serrano (cf. Freitas and Serrano 2015), the supermultiplier is not shared by all Sraffian (Cesaratto and Mongiovi 2015, Cesaratto 2015), but is raising influential endorsement elsewhere (Allain 2014, Lavoie 2015).

² Notably, Wray (2002) and Cesaratto (2005, chapter 1), both inspired by Abba Lerner and Robert Eisner, were on the same side in debunking the Samuelsonian fictional representation of a PAYG social security scheme.

³ See Cesaratto (2016) for a tentative extension of endogenous credit/money theory to the diverse autonomous components of AD and for a discussion of various related complications.

⁴ Fullwiler et al. (2012, p. 17-18), Tymoigne and Wray (2013, p. 4) refer to the circuit approach as the standard post-Keynesian way to include endogenous credit/money in the theory of output determination, and intend to “bring the State into the circuit”. Cesaratto (2016) adopts the supermultiplier analysis as an ordered Keynesian-Kaleckian premise to the investigation of the generation of monetary aggregate demand also in view of the shortcomings of the “monetary circuit”, in particular its relative neglect of the short and long-period theory of effective demand.

⁵ The CB normally wishes to provide an amount of reserves such as to satisfy the *aggregate* banks’ liquidity needs. Banks with excess reserves will then trade them with banks short of reserves in the interbank market. In “normal times” in the Eurosystem, the ECB also offers overnight loans (marginal lending facility) at a rate that is relatively higher than the main refinancing rate (MRR), the basic rate at which it weekly provides reserves to commercial banks; and provides an overnight deposit facility at a rate that is relatively lower than the MRR. Typically, banks will profitably trade reserves at a rate (Eonia in the Eurozone) which is in the middle of the last two rates (the so-called “corridor”) and that approximates the MMR. The US system is basically similar. Government spending would inject reserves in excess of banks’ liquidity needs.

⁶ According to Lavoie (page 15 of the working paper version of Lavoie (2013)), this argument would not apply in “countries where reserves generate interest payments, usually close to the interest rate paid on short-term Treasury bills, then it is obvious that it makes little difference whether the debt is held in the form of bank reserves or in the form of Treasury bills.” In the Eurosystem, however, although mandatory reserves are remunerated at the rate on the Main Refinancing Operations (MRO), normally excess reserves held in the reserve account at the ECB are not remunerated. In normal times, excess reserves are thus more conveniently held in the “marginal deposit facility” where they get a positive remuneration, albeit lower than the rate on the MRO. Therefore, a stimulus to purchase government bonds would remain even in regimes that normally remunerate excess reserves held in the deposit facility. I said “normally” since at the time of writing, excess reserves held both in the reserve account or in the deposit facility are remunerated at a negative rate.

⁷ A reviewer suggested that a consolidation of the two branches of the private sector would not bring about much loss of information either).

⁸ As known, the basic model of monetary regulation of transactions suggests that economic subjects rely on monetary units issued by a third subject that both sides trust, that is by somebody

“higher in the hierarchy”. So private citizens trade using banknotes or transfer banks’ deposits, and banks make reciprocal payments using reserves, that is HPM issued by the CB (intra-bank payments, between customers of the same institute, do not use reserves since each bank trusts itself). In their transactions, CBs use gold or international (reserve) currencies. In recent times, interbank transactions are increasingly taking place through private payment systems based on the credibility of the counterparts. These systems concerns both petty and large payments. However, “central bank systems ... continue to be the backbone for the rest of payments” (Kahan et al. 2014: 1).

⁹ The former top ECB economist Ulrich Bindseil (2004: 46) suggests that governments may prefer to hold tax revenues at the CB, “the bank of the government”, rather than at commercial banks to avoid “the credit risk it would have to bear if it held its liquid funds in the market”. Government’s deposits with the CB represent “the most volatile and most unpredictable” autonomous factor in the CB balance sheet and, of course, the CB “has to precisely neutralize autonomous factor changes” as a “necessary condition to stabilizing short-term interest rates” (ibid: 60).

¹⁰ As Blogger JHK (2012) points out:

there is nothing special about the fact that the Fed supplies the reserves that enable tax and bond payments. ... Some neo-Chartalists emphasize the uniqueness of Fed provisioning for tax and bond settlements. But there is no such uniqueness behind Fed operational That the Fed may or may not supply extra reserves to enable tax and bond payments against the backdrop of interest rate targeting doesn’t demonstrate anything of extraordinary relevance, because the same evidence and argument applies to payment circumstances more generally.

For instance, CBs also routinely intervene to meet the seasonal fluctuations in the absorption of HPM as banknotes.

¹¹ The same terminology widely accepted for investment, initially *financed* by credit/money creation, finally *funded* by saving is used (see Cesaratto 2016). If taxes totally “fund” spending, we would be in the famous balanced budget theorem. I put “funded” among inverted commas to remark the fact that in no way State spending depends on tax revenues (or household saving). The State spends first.

¹² Similarly, JKH (2012) argues that:

Because the US Treasury is not an operational currency issuer, it obviously does not issue currency in conjunction with spending. It uses currency when it spends. ... Thus, Treasury is a depositor with both the central bank and the commercial banks, with a centralized account (two accounts currently) at the Fed and peripheral tax and loan accounts with the banks. It is an operational currency user and cash manager, making disbursements from and taking receipts into its bank deposit account(s).

¹³ I noted above that this is done in order to stabilize the amount of reserves in the banking system. Since tax payments bunch around a few main dates, if they were immediately transferred to the TA at the Fed this would mean a major fall in banks’ reserves. JHK (2012) aptly describes the T&LA as a “feeder” of the TA account at the Fed:

Tax and loan accounts constitute a feeder deposit system for the so-called Treasury general account at the central bank. These T&LA accounts exist for two reasons. First, they are convenient in terms of Treasury’s large scale cash management operation. It is more effective for Treasury to gather funds locally and subsequently import them into the central account, which in turn is the focal point of most disbursements. Second, there is a corollary benefit in terms of enabling operational co-ordination with central bank reserve management.

¹⁴ In actual, “the State spends first” does not refer to deficit spending only, as if tax receipts *funded* the rest of government spending. The question under discussion regards government spending *tout court*. Even if the government is in surplus spending logically precedes taxation.

¹⁵ In the original post-Chartalist presentation by Lavoie (2005 table 13; 2013 table 2) the State spends directly from its commercial bank account.

¹⁶ Referring to some main publications, an explicit treatment of the actual ways the government finances its spending seems hard to be found, e.g. in Wray (1998). Bell (1998) and Bell and Wray (2003) deal with this, but the reasoning looks less elaborate and clear than in Fullwiler et al. (2012) and Tymoigne and Wray (2013), at least to the present reader.

¹⁷ “The basic objective of a government debt manager – a Bank of England handbook on PDs writes – is to cover the government’s borrowing needs as cheaply as possible. To accomplish this objective, both primary and secondary markets need to be broad and efficient and the secondary market ...deep and liquid. ...In return for a set of obligations, such as making continuous bid and offer prices in marketable government securities or submitting reasonable bids in the auctions, [PDs] receive a set of privileges in the market” (McConnachie, 1996, p. 6). PDs are said to be used in Canada, France, Italy, Spain, the UK and the US. In other countries such as Australia, Germany and Japan “there are no formally designated [PDs], although in these countries a group of firms do collaborate in the allocation and proper development of the market in an informal way” (ibid, p.7). Among the privileges, a most important one “is probably the facility to borrow stock and/or money, normally from the central bank (...). It is certainly desirable that market-makers should have the facility to borrow money when they need to in order to discharge their market-making function” (ibid, p. 18). In the US, the PDs cannot borrow funds from the Fed. Nonetheless, they are the only institution authorised to deal directly with the New York Fed in its open market transactions – repo and outright market operations (World Bank, 2010, pp. 26-7). In 2008-2010 in response to the severe strains in the market and the resulting liquidity pressures faced by the PDs, the Fed established the Primary Dealer Credit Facility (PDCF). The PDCF functioned as an (fully collateralised) overnight loan facility for primary dealers, similar to the way the Fed's discount window provides an ultimate source of funding to the banking system (Federal Reserve 2013).

¹⁸ Fullwiler et al. (2012: 24), for instance, argue that: “Unfortunately, and most importantly, the added complexity is counter-productive because it leads to poor understanding among economists, poor modelling, and bad policy choices”.

¹⁹ A referee also suggested that those who argue that “‘Governments that issue theory own currency cannot default because they create their own money’ has at least implicitly endorsed consolidation”. See e.g. Paul De Grauwe (2015) who argues that member countries of the eurozone “could no longer guarantee that the cash would always be available to roll over the government debt”. What De Grauwe and others imply is that the government should act as a lender of last resort whenever a crisis of confidence increases the liquidity preference of the public. Looking at this through the MMT lenses, it means that the monetary authorities - the CB and a cooperating Treasury) reverse the defense action undertaken to absorb excess liquidity (which is not in excess anymore given the higher liquidity preference). Implicitly, therefore, those who invoke these measures admit the consolidation hypothesis that the CB initially financed government spending and that monetary authorities issued Treasuries to absorb excess liquidity, ready to repurchase them if the liquidity preference changes.

²⁰ Reply to a letter to Chair Janet Yellen reported by Modern Money (2015, comment, 26/08/2015, 12:53 pm)

²¹ Eccles was not a formal trained economist; its personal and professional experiences during the Great Depression made him a Keynesian, one would say, a Lernerian ante-litteram. On the complex figure of Eccles, see Grugn Moe (2013). According to Mike Norman (2012), Fullwiler was the first to quote Eccles in the context of the present debate.

²² See also Gnos and Rochon (2002: 42); Febrero (2009: 536); Lavoie (2013: 6).

²³ Wray (undated, p. 23) argues that “private money things [deposits] are endogenously created as a leveraging of HPM”. This sounds an oxymoron, although the author clarifies two line below that, “The central bank supplies reserves on demand.”

²⁴ See e.g. Wray (2007, p. 12): “state liabilities (HPM) are destroyed when they return to the state, mostly in tax payments or bond purchases by the non-government sector. ...Moore’s fundamental point remains: at the end of the day, the quantity of HPM remaining in private hands (as bank reserves and as cash) is demand-determined, and is not a discretionary variable from the point of view of the central bank that is targeting an overnight interest rate.”

²⁵ “Private creation of money things can be characterized as a ‘leveraging’ of HPM precisely because they are convertible” (Wray, undated, p. 24)

²⁶ “While we do not normally include central bank or treasury purchases of gold or foreign currency as a part of “spending”, it has the same impact on the quantity of outside HPM held by nongovernment sectors as any other kind of government spending. However, the impacts of lending (by the treasury or the central bank) are perhaps less expansionary than fiscal deficits because provision of HPM through lending does not directly increase nongovernment sector income, nor does it increase ‘net saving’ or ‘outside wealth’.” (ibid)

²⁷ The verbal description of the stages is the following (Fullwiler 2011: 3-4):

The six transactions for Treasury debt operations for the purpose of deficit spending in the base case conditions are the following:

A. The Fed undertakes repurchase agreement operations with primary dealers (in which the Fed purchases Treasury securities from primary dealers with a promise to buy it back on a specific date) to ensure sufficient reserve balances are circulating for settlement of the Treasury’s auction (which will debit reserve balances in bank accounts as the Treasury’s account is credited) while also achieving the Fed’s target rate. It is well-known that settlement of Treasury auctions are “high payment flow days” that necessitate a larger quantity of balances circulating than other days ...

B. The Treasury’s auction settles as Treasury securities are exchanged for reserve balances (...), bank reserve accounts are debited to credit the Treasury’s account (...), and dealer accounts at banks are debited (...).

C. The Treasury adds balances credited to its account from the auction settlement to tax and loan accounts (...). This credits the reserve accounts of the banks holding the credited tax and loan accounts (...).

D. (Transactions D and E are interchangeable; that is, in practice, transaction E might occur before transaction D.) The Fed’s repurchase agreement is reversed, or, otherwise stated, the second leg of the repurchase agreement occurs in which a primary dealer purchases Treasury securities back from the Fed. Transactions in A above are reversed.

E. Prior to spending, the Treasury calls in balances from its tax and loan accounts at banks. This reverses the transactions in C.

F. The Treasury deficit spends by debiting its account at the Fed, resulting in a credit to bank reserve accounts at the Fed and the bank accounts of spending recipients

(...).

²⁸ In table 6 I have thus also simplified the ping-pong between the T&LA and TA accounts of the Treasury that characterizes Fullwiler account.

	Consolidated government sector		Commercial Bank		Private sector (spending recipient)	
	<i>Assets</i>	<i>Liabilities</i>	<i>Assets</i>	<i>Liabilities</i>	<i>Assets</i>	<i>Liabilities</i>
A <i>The gvt spends</i>	(Aircraft +100)	Reserves (commercial bank) +100	Reserves +100	Deposit (aircraft producer) +100	Deposit +100 (Aircraft -100)	
B <i>Drain of excess reserves</i>		Reserves - 90 T-Bonds +90	Reserves - 90 T-Bonds +90	Deposit 100		
Net	(Aircraft 100)	Reserves 10 T-Bonds 90	Reserves 10 T-Bonds 90	Deposit 100	Deposit 100 (Aircraft -100)	

Alternative closure

B' <i>The PS buys T-Bonds</i>		T-Bonds +10	Reserves -10 T-Bonds -90	Deposit -100	Deposit -100 T-Bonds +100	
Net	(Aircraft 100)	T-Bonds 100			T-Bonds +100 (Aircraft -100)	

Table 1 – The consolidation view I

	Government		Central Bank		Commercial Bank		Private sector	
A <i>Sales of Treas. to the CB</i>	Government deposit (@CB) + 100	T-Bonds +100	T-Bonds +100	Government deposit + 100				
B <i>The CB credits Com.b. and the gvt spends</i>	Government deposit (@CB) - 100 (Aircraft +100)			Government deposit -100 Reserves +100	Reserves +100	Deposit (aircraft producer) +100	Deposit +100 (Aircraft -100)	
C <i>Drain of excess reserves</i>			T-Bonds -90 (Treasury Bonds 10)	Reserves -90 (Reserves 10)	Reserves -90 Reserves 10 T-Bonds +90	(Deposit 100)		
Net	(Aircraft 100)	T-Bonds 100	Treasury Bonds 10	Reserves 10	Reserves 10 T-Bonds 90	Deposit 100	Deposit 100 (Aircraft -100)	

Alternative closure

C' <i>The PS buys T-Bonds</i>			T-Bonds -100	Reserves -100	Reserves -100	Deposit -100	Deposit - 100 T-Bonds +100	
Net	(Aircraft 100)	T-Bonds 100					T-Bonds 100 (Aircraft -100)	

Table 2– The consolidation view II

	Government		Central Bank		Commercial Bank		Private sector	
D <i>The gvt collects taxes</i>	Deposit +58.8 Tax claim -58.8	(T-Bonds 100)	(T-Bonds 10)	(Reserves 10)	(Reserves 10) (T-Bonds 90)	Deposit(PS) -58.8 Deposit(Gvt) +58.8 (Deposit(PS) 41.2)	Deposit -58.8 (Deposit 41.2)	Tax liability -58.8
E <i>Buy back of T-bonds</i>	Deposit -58.8	T-Bonds -58.8	T-Bonds -5.9	Reserves -5.9	Reserves -5.9 T-Bonds +5.9 T-Bonds -58.8 (T-Bonds 37.1)			
F <i>PS buys T-Bonds</i>			T-Bonds -4.1	Reserves -4.1	Reserves -4.1 T-Bonds +4.1 T-Bonds -41.2	Deposit(PS) -41.2	Deposit -41.2 T-Bonds +41.1	
Net	(Aircraft 100)	T-Bonds 41.2 (Net worth 58.8)					T-Bonds 41.2 (Aircraft -100)	(Net worth -58.8)

Table 3 – A Keynesian touch

	Government		Private sector	
$t = 0$	-100 deposit (+100 aircraft)		<i>Aircraft producers:</i> +100 deposit (-100 aircraft)	
$t = 1$	-30 tax claims + 30 deposit		<i>Aircraft producers</i> -30 (to Treasury) -49 (consumption exp.) 21 remaining deposit (+49 cons.goods) <i>Cons.goods producers</i> +49 deposit (-49 cons.goods)	-30 tax liability
$t = 2$	-14.07 tax claims + 14.07 deposit		<i>Cons.goods producers</i> -14.7 (to Treasury) -24.01 (consumption exp.) 10.29 remaining deposit (+24.01 cons.goods) <i>Cons.goods producers</i> +24.01 deposit (-24.01 cons.goods)	-14.7 tax liability
$t = \dots$
<i>Net</i>	-58.8 tax claims 58.8 deposit (100 aircraft)		<i>All producers</i> -58.8 (to Treasury) 41.2 remaining deposit <i>for memory:</i> <i>consumption +96</i> <i>(-100 aircraft)</i> <i>(-96 cons.goods)</i>	-58.8 tax liabilities

Table 4 – The multiplier logic

	Government		Central Bank		Commercial Bank		Private sector	
A <i>Gov. sale of bonds to private banks</i>	Government deposit (@commercial bank) + 100	T-Bonds +100			T-Bonds +100	Government deposit +100		
B <i>The gov. moves its deposit to the CB</i>	Government deposit (@commercial bank) -100 Government deposit (@CB) + 100			Reserves -100 Government deposit +100	Reserves -100	Government deposit - 100		
C <i>Helicopter Ben replenishes banks' reserves</i>			T-Bonds +100	Reserves +100	T-Bonds -100 Reserves +100			
D <i>Purchase of the aircraft</i>	Government deposit (@CB) -100 (Aircraft +100)					Deposit (aircraft producer) +100	Deposit +100 (Aircraft - 100)	
E <i>Drain of excess reserves</i>			T-Bonds -90	Reserves -90	Reserves -90 T-Bonds +90			
Net	(Aircraft 100)	T-Bonds 100	T-Bonds 10	Reserves 10	Reserves 10 T-Bonds 90	Deposit (PS) 100	Deposit 100 (Aircraft - 100)	

Table 5 - An MMT/ post-Chartalist view I

	Government (Gvt)		Central Bank		Commercial Bank		Primary dealer		Private sector (PS)	
A <i>Repo</i>			T-Bonds (old) +100	Reserves +100	Reserves +100	Deposit (Primary dealer) +100	T-Bonds (old) -100 Deposit +100			
B <i>Sales of new Treasury bonds</i>	Deposit (@Commercial bank) + 100	T-Bonds (new) +100				Deposit (PD) -100 Gvt deposit + 100	Deposit -100 T-Bonds (new) +100			
C <i>Transfer of funds to the Fed</i>	Deposit (@Commercial bank) -100 Gvt deposit (@CB) + 100			Reserves -100 Gvt deposit +100	Reserves -100	Gvt deposit - 100				
D <i>Purchase of the aircraft and formation of savings</i>	Gvt deposit (@CB) -100 (Aircraft +100)			Gvt deposit -100 Reserves +100	Reserves +100	Deposit (PS) +100			(Aircraft -100) Deposit +100	
E <i>Sale of new bonds to the priv.sect</i>						Deposit (PS) -100 Deposit (PD) +100	Deposit (PD) +100 T-Bonds (new) -100		Deposit (PS) -100 T-Bonds (new) +100	
F <i>Repo</i>			T-Bonds (old) -100	Reserves -100	Reserves -100	Deposit (PD) -100	Deposit (PD) -100 T-Bonds (old) +100			
Net	(Aircraft 100)	T-Bonds (new) 100					T-Bonds (old) 100		T-Bonds (new) 100 (Aircraft -100)	

Table 6 - An MMT/ post-Chartalist view II

	Government		Central Bank		Commercial Bank		Primary dealer	
A <i>"Fed's repurchase agreement with dealers"</i>			T-Bonds (old) +100	Reserves +100	Reserves +100	PD deposit +100	T-Bonds (old) -100 Deposit +100	
B <i>"settlement of the Treasury auction"</i>	Government deposit @FED + 100	T-Bonds (new) +100		Reserves (Comm. bank) -100 Government deposit + 100	Reserves -100	Deposit (PD) -100	Deposit -100 T-Bonds (new) +100	
C <i>"Treasury transfer from its account at the Fed to its T&LA"</i>	Government deposit @FED -100 Government deposit @Comm. bank + 100			Government deposit -100 Reserves (Comm. bank) +100	Reserves +100	Government deposit +100		
D <i>"Second leg of the fed's repo agreement with PDs"</i>			T-Bonds (old) -100	Reserves -100	Reserves -100	Deposit (PD) -100	Deposit (PD) -100 T-Bonds (old) +100	
E <i>"the Treasury calls in balances from its T&LA (reverse of C)"</i>	Government deposit (@Comm.b.) -100 Government deposit (@CB) + 100			Reserves -100 Government deposit +100	Reserves -100	Government deposit -100		
F <i>"The Treasury deficit spends..."</i>	Government deposit (@CB) -100 Aircraft +100			Government deposit -100 Reserves (TLA) +100	Reserves +100	Deposit (aircraft producer) +100		

Table 7 – A T-balance version of the original Fullwiler's exposition

	Government		Central Bank		Comm. bank		Prim. Dealer		PS	
G						Deposit (PS) -100 Deposit (PD) +100	T-Bonds (new) -100 Deposit +100		Deposit -100 T-Bonds (new) +100	
Net	(Aircraft 100)						T-Bonds (old) 100		T-Bonds (new) 100 (Aircraft -100)	

Table 8 – Alternative closure