

MODERN MONEY THEORY: A RESPONSE TO CRITICS

Scott Fullwiler, Stephanie Kelton, L. Randall Wray

INTRODUCTION

Over the past two decades a group of us has developed an alternative approach to monetary theory that integrates the insights of Knapp's (1924) state money approach (also called chartalist and adopted by Keynes (1930; 1914)), the credit money view of Innes (1913, 1914), Lerner's (1943, 1947) functional finance approach, Minsky's (1986) views of banking, and Godley's (1996) sectoral balance approach. In addition, most of us have used our understanding of the operation of the monetary system to propose an employer of last resort or job guarantee program to provide an anchor to the value of the currency. The approach has come to be known as modern money theory (MMT) and has been widely debated and adopted, especially on the blogosphere. Prominent economists such as Paul Krugman and Brad DeLong have taken notice and deemed it to be a theory of note, even if they do not accept all of it. Further, developers of MMT have been credited with foreseeing the global financial collapse as well as the troubles with the Euro as early as the 1990s (Wray 1998, Bell 2003).

Still, MMT has always had its critics. Somewhat surprisingly to us, some of the most vocal critics have been heterodox economists, particularly the Post Keynesians. We see nothing in the MMT approach that should be difficult for PKs to accept. Yet, in recent weeks both Marc Lavoie and Bret Fiebiger have provided critiques. It looks to us as if they have not understood our arguments. Instead of providing a point-by-point response to either of their papers, we think it will be more useful to briefly lay-out our main argument in a way that should be accessible to PKs.

We have been given only 4000 words for this task, hence, we can only hit the main points. More specifically, this response will in turn discuss the role of endogenous money and the circuit for MMT, the MMT understanding of government debt operations, and the links between the MMT approach and heterodoxy in general.

ENDOGENOUS MONEY AND THE CIRCUIT—AN ENTRY FOR POST KEYNESIANS INTO MMT

We find the French-Italian PK circuit approach particularly useful for driving home the point that the finance for spending must come from somewhere. (Graziani 1990) Most recognize that to finance a purchase one needs to use income, to sell an asset, or to borrow. At the individual level that is certainly true. Yet, the "finance" that comes from income flows as well as the receipts from sales of assets also must come from somewhere—and an "infinite regress" is not logically compelling. The typical neoclassical *deus ex machina* source of finance is saving—but if saving is in financial form it must have been generated by someone else's spending, another infinite regress. Hence, when the circuitist begins with a bank loan to finance purchase of commodities (to be used to produce commodities) all logical problems are resolved.

Spending and creation of "money" in the form of a bank deposit are linked. It is best to think of these as balance sheet entries: the bank accepts the IOU of the borrower and credits her demand deposit; the

borrower's IOU is offset by the credit to her deposit. Spending then simply shifts the demand deposit to a seller. Money is created "endogenously" to finance spending. Later, when loans are repaid, the demand deposit as well as the borrower's IOU are debited—money is destroyed. There is no magic involved, no "manna from heaven", no separation of the "real" (say, IS curve) from the "monetary" (LM curve). As Clower (1965) would remark, money buys goods and goods buy money but goods do not buy goods. Barter is ruled out as one must first obtain money—from income flows, asset sales, or borrowing—before spending. And the money must get created with an initiating purchase.

That is the idea behind the "endogenous money" approach adopted by Post Keynesians: loans create deposits. And repayment of loans destroys deposits. Many PKs go further and adopt the "horizontalist" approach: both the supply of loans and the supply of bank reserves are horizontal, at an exogenously administered interest rate. (Moore 1988) We do not need to get into this in detail here, nor does a reader have to accept a horizontal supply of deposits and loans (we don't!). The fundamental idea is that bank lending is never constrained by the deposits that flow into banks—since banks create deposits when they lend.

However, as we know, banks must meet reserve requirements, and banks use reserves for clearing. Here is where "horizontal reserves" come into play: any central bank that administers an overnight interest rate target must supply reserves on demand—for otherwise it would lose control of the interest rate. In the PK literature, it is said that CB policy always "accommodates" the demand for reserves. Given that this demand is highly interest-inelastic, there is little room for "error" by the central bank. It must accommodate more-or-less exactly the demand. We believe that this view is now widely accepted, even by the mainstream: modern central banks operate with an overnight interest rate target and accommodate bank demand for reserves in order to continuously achieve it.

All of this is old ground and not controversial (or should not be).

MMT—BRINGING THE STATE INTO THE CIRCUIT

What extension does MMT make?

1. The money of account, at least today, is virtually always a state money of account—a "dollar" chosen by the authorities.
2. The authorities issue the currency, which consists of notes and coins denominated in that money of account, and the central bank (whether it is legally independent or not) issues bank reserves in the same unit.
3. The authorities impose taxes and other obligations in the same unit, and accept their own liabilities (notes, coins and reserves, together high powered money--HPM), in payments to the state.
4. The authorities issue HPM denominated in the same unit when they spend.

5. The authorities sell other types of (generally longer term) liabilities denominated in the same unit, accepting their own HPM IOUs in payment for them.

We would thus insist that any modern circuit should begin with the recognition that the “bank money” created at the beginning of the circuit is denominated in the State’s money of account. Further, recognizing that banks use HPM for clearing (more specifically, the reserve balance portion of HPM), the circuit should also begin with HPM. We believe this is now accepted by circuitistes like Parguez and Seccareccia, who have explicitly put the State in the circuit. (Parguez 2002, Parguez and Seccarrecia 2000) The final point we often make is that *from inception* the authorities must levy an obligation (fees, fines, taxes) to ensure their HPM will be accepted, however we will not try to make this case here.

Now, the question is, where does the HPM come from? Is it manna from heaven? Is it part of humanity’s initial endowment? Clearly, the answer is no. It comes from the State, as it is a State IOU denominated in the State’s money of account. Now there are two obvious ways HPM can get into the economy: state spending and state lending. Banks cannot get hold of HPM for clearing (or, to meet reserve requirements) unless the state lends or has spent HPM into existence. Note the analogy to bank deposits: banks must spend or lend them into existence. We have already noted that among PKs there is absolutely no disagreement so far as we are aware that “loans make deposits”—the common view that banks sit and wait for a deposit to come in before they make a loan must have the logical sequence backwards. It also has to be true that the State must spend or lend its HPM into existence before banks, firms, or households can get hold of coins, paper notes, or bank reserves.

Now, we recognize that in developed countries today there is a division of responsibilities between the Treasury and the Central Bank, and that the Central Bank is in many nations nominally independent of the State. We need not quibble about the degree to which the Central Bank is legally separate (in the US, for example, there is no question that the Fed was created by an act of Congress and that it is legally subject to Congress’s will; that Congress prefers not to exercise much control over the Fed is beside the point in our view).

But as a first approximation, we prefer to consolidate treasury and central bank operations; we then separate them for further analysis. There are two reasons for this—simplicity and generality.

For most purposes, the user of HPM (bank, household, firm) could care less whether it is an IOU of the Treasury or the Central Bank. They are just about perfectly substitutable. Consolidation also lets us first explain the simple proposition that “Government” IOUs have to be spent or lent into existence—just like bank IOUs. And it allows us to postpone discussion of the particular operational details on “how government really spends and lends its IOUs into existence”, as these vary across time and nation.

While most PKs are somewhat familiar with the case of the US—which separates the Fed and Treasury—that is not the case in many nations today (where the central bank is explicitly the treasury’s “bank”) nor was it true in the past, when all of the government IOU’s were spent and lent into existence directly by treasury (remember that central banks are relatively recent inventions). To be sure, if MMT analysis had stopped there, never going beyond the simplest analysis with a consolidated treasury and central bank into something called “government”, it would have been remiss. But that has never been the case—the

earliest analyses detailed the operations between the central bank and the treasury. (Wray 1998, 2004; Bell 2000, Bell 2002, Bell and Wray 2002-3; Fullwiler 2003, 2005, 2006, 2008, 2009, 2010; Fullwiler and Wray 2011)

In the next section we will turn to those details. Let us first summarize the simplest, most general case. The issuer of the currency must supply it *first* before the users of the currency (banks for clearing, households and firms for purchases and tax payments) have it. That makes it clear that government cannot sit and wait for tax receipts before it can spend—no more than the issuers of bank deposits (banks) can sit and wait for deposits before they lend. Government spends or lends HPM into existence, and receives back what it spent or lent when taxes are paid or debts to government are repaid. That also means that at most, government can receive back in payments as much as it spent or lent. Over a period, of course, it might receive more or less than it spent or lent over that period. But it is impossible for government to receive cumulative payments to itself that exceed its cumulative spending and lending any more than it is possible for the banking sector to receive greater payments to retire loans than its cumulative lending—as the circuit demonstrates. It is far more likely that government will receive less—and the shortfall will exactly equal the accumulation of balances of HPM held by banks, households and firms.

Finally, not only must government spend or lend its HPM into existence before it can receive HPM in taxes, but logically government also must spend or lend HPM before government can borrow HPM. This might sound a little strange. But—again recalling the circuit—can banks in the aggregate borrow deposits before banks have created them? No, they must lend or spend (buy assets) by creating deposits before deposits can exist. Once deposits exist, a bank can “borrow” them—issue some non-deposit liability to obtain a deposit. To be clear, a bank that has created a deposit liability on itself will not “borrow” its own deposit, but it can induce one of its depositors to give up the deposit in favor of some other bank liability—say, subordinated debt or short-term commercial paper. It can also sell such debt to depositors of other banks, in which case it will receive a clearing drain in its favor. This normally will take the form of a credit to its reserve account at the central bank, but it could be a deposit in a correspondent bank (“country” banks in England kept deposits in “city” banks in London that could be used for clearing before the creation of the Bank of England, for example).

In the case of government, its borrowing is a substitution of its HPM liabilities for bills and bonds liabilities. It must first spend or lend the HPM into existence before it can “borrow” its HPM liabilities in exchange for bills and bonds. Exactly how that is done is a matter for the next section, and can vary over time and across nations. It will typically involve the central bank today because the HPM liabilities submitted to buy “treasuries” will mostly be reserve liabilities of the central bank. However, the final result would be the same if the treasury were to sell its bonds for its own metal coins—or for its own wooden tally stick debts (as governments did before the mid 19th century).

OPERATIONAL DETAILS OF GOVERNMENT DEBT OPERATIONS

For the purposes of the simplest or most general explication, it is convenient to consolidate the treasury and central bank accounts into a “government account”. To be sure, the real world is more

complicated: there is a central bank and a treasury, and there are specific operational procedures adopted. In addition there are constraints imposed on those operations. Two common and important constraints are a) the treasury keeps a deposit account at the central bank, and must draw upon that in order to spend, and b) the central bank is prohibited from buying bonds directly from the treasury and from lending to the treasury (which would directly increase the treasury's deposit at the central bank). But, as Paul Davidson has frequently noted, the appropriate general case is the one that makes the fewest assumptions while enabling analysis or understanding of the fundamental or "true" nature of the object of inquiry. We argue that the appropriate general case is the consolidated Treasury/Central Bank, but the reader should not confuse this attempt at defining a general case with a description of actual operations for any particular country. Unfortunately, this is precisely what our critics do, repeatedly.

Beginning with the simple or general case, consider a consolidated government (central bank plus treasury) running a deficit. The basic transactions could be listed as the following:

1A. The government's spending credits bank accounts with reserve balances (HPM). These accounts are liabilities of the government/central bank.

2A. Banks credit the deposit accounts of the spending recipients. So, overall, the increased reserve balances have raised bank assets while the increased deposits have increased bank liabilities by the same amount. Further, because spending to the private sector is greater than taxes drawn from the private sector, the private sector's net financial wealth has increased. The change to the government's financial position is necessarily the opposite—its net financial wealth has been reduced (i.e., the equity on the liability/equity side of the government/central bank balance sheet has been reduced). This is the basic Godley sectoral balance identity many are familiar with.

3A. Absent interest on reserve balances, the government/central bank issues bonds or offers time deposits to drain or otherwise replace the reserve balances (HPM) created by the deficit if they are not consistent with banks' demand for reserve balances at the targeted interest rate. This is the Horizontalist recognition that if actual reserves deviate from desired balances, the central bank must drain reserves to hit its interest rate target.

Viewed this way, it is clear that the general case suggests the nature of a government deficit can be understood in three parts—

(i) the government is not constrained in its spending by its ability to acquire HPM since the spending *creates* HPM as in 1A and 2A. Spending does not require previous tax revenues and indeed it is previous spending or loans to the private sector that provide the funds to pay taxes or purchase bonds.

(ii) the issuance of bonds in 3A is not for financing purposes but for monetary policy purposes so that the targeted interest rate can be achieved. Note that the government actually has a few

options here. It can simply pay interest on reserve balances at the target rate, and the interest rate on the reserves resulting from the government's cumulative deficits will be equal to the target rate (aside from reserve balances replaced by the private sector's demand for currency, which earn no interest). It can issue short-term debt (T-bills) or time deposits that will generally arbitrage with the target rate. Or it can issue long-term bonds or long-term time deposits that will mostly follow the current and expected future target rates. A still simpler option is to simply set the rates it is willing to pay for short- or long-term bills, time deposits, or bonds and allow the private sector to purchase the quantities it desires while the rest of the deficit will simply remain as reserve balances. Again, clearly none of these are financing operations.

(iii) the government deficit did not crowd out the private sector's financial resources but instead raised its net financial wealth as in 2A. Again, from (ii), the "market" does not set interest rates on the debt, or at the very least the government has the option of always setting the rate on its own debt. Interest rates in the general case are clearly a matter of political economy.

One could obviously have separated the Treasury and Central Bank instead of consolidating, but this simply adds assumptions and intermediate steps without changing the nature of the operations, and would thus be less general. Indeed, it has the potential of masking the true nature of the operations, in our view, which makes it decidedly less useful as a starting point.

To continue, now consider 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".

(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.)

As a result, in the US case there are at least six transactions related to deficit operations, rather than three in the general case.

1B. The Fed undertakes repurchase agreement operations with primary dealers (in which the Fed purchases Treasury securities from primary dealers with a promise to buy them 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 reserve

balances circulating than other days, and the Fed accommodates the demand. (Note that the point here is not that the Fed necessarily engages in operations that are equal to or greater than the auction, but that the operations ensure that sufficient balances circulate such that the auction settles without the effective federal funds rate for the day moving above the target rate. This requires that the balances already in circulation plus those added via operations are sufficient to settle the auction and enable banks in the aggregate to end the day with their desired positions at the target rate largely equal to actual positions.)

2B. The Treasury's auction settles as Treasury securities are exchanged for reserve balances, so bank reserve accounts are debited to credit the Treasury's account, and dealer accounts at banks are debited. Treasury auctions can only settle via reserve balances using the Fed's Fedwire clearing and settlement system. The auction itself is an asset swap of reserve balances and thus do not affect the private sector's net wealth.

3B. 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.

4B. (Transactions 4D and 4E are interchangeable; that is, in practice, transaction E might occur before transaction 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. Transactions in A above are reversed.

5B. Prior to spending, the Treasury calls in balances from its tax and loan accounts at banks. This reverses the transactions in C.

6B. 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. This increases the net financial wealth of the private sector.

(As with the general case above, the analysis is much the same in the case of a deficit created by a tax cut instead of an increase in spending. That is, with a tax cut the Treasury's spending is greater than revenues just as it is with pro-active deficit spending.)

What MMT stresses is that regarding (i), (ii), and (iii) above, the end result is exactly as stated in the general case, even though with the procedures adopted due to the self-imposed constraint the transactions are now more complex and the sequencing is different.

Regarding (i), recall that only reserve balances can settle Treasury auctions via Fedwire and the only sources of reserve balances over time (that is, aside from various short-term effects from autonomous changes to the Fed's balance sheet) are loans from the Fed or the Fed's purchases of financial assets either outright or in repurchase agreements. The Fed normally purchases Treasury securities or requires Treasury securities as collateral for repurchase agreements (in the aftermath of the global crisis, the Fed has engaged in highly unusual purchases of a wider variety of assets, and has lent against various kinds

of assets). Since existing Treasury securities were issued as a result of a previous government budget deficit, *it is the case that the reserve balances required to purchase Treasury securities are the result of a previous government deficit or a loan (including repurchase agreements or purchases of private sector securities) from the Fed to the non-government sector.* This is true even though the Treasury must have a positive balance in its account before it can spend, and even though the Fed is legally prohibited from providing the Treasury with overdrafts in its account due to the “self-imposed constraint.”

Regarding (ii), the Treasury’s tax and loan account operations are for the purposes of aiding the Fed’s ability to achieve the target rate, as is well established in the Fed’s own literature and annual reports. And while the Treasury must issue bonds in order to replenish its own account when it runs a deficit, again as with (ii) above the interest rate on these bonds is largely determined by arbitrage against the Fed’s target rate. This suggests that the self-imposed constraint is not really a constraint at all. Recall that in the general case the government has the choice of spending with no bond sales while it pays the target rate on reserve balances or issuing debt at essentially the central bank’s target rate. For the US, the former is analogous to a scenario with no self-imposed constraint and with the Treasury obtaining overdrafts to its account at the Fed when it deficit spends, whereas the latter is obviously what occurs now with no overdrafts allowed. In other words, prohibiting overdrafts leaves the Treasury issuing bonds that arbitrage against the Fed’s target rate. There is no economically significant difference—if given the choice between an overdraft at the target rate or issuing debt at roughly the target rate, it is not economically significant for the Treasury’s purposes if the former choice is then prohibited. (And while the Treasury may issue longer-term bonds that can be issued at significantly higher interest rates than the Fed’s target rate, for both the general and US cases this is a choice, not anything enforced by private debt markets.) Even under current operations, interest rates are a matter of political economy rather than being set in a loanable funds market or subject to the whims of bond vigilantes.

Regarding (iii), the private sector’s net financial wealth has been increased by the amount of the deficit. That is, the different sequencing of the Treasury’s debt operations does not change the fact that deficits add net financial assets rather than “crowding out” private sector financial resources. Indeed, primary dealers finance their purchases of bonds at auction in the repo market, mostly using Treasuries as collateral, while the newly issued bond will likely serve as collateral for further credit creation in financial markets. Far from “crowding out,” bonds can actually enable further credit creation than would occur in their absence.

In summary, separating the Treasury and the Fed and adding the rule that the Treasury must finance its operations in the open market results in the six transactions described above for the Treasury’s debt operations compared to the three simpler operations in the general case. Nevertheless, the nature of these operations as described by the general case of a consolidated government/central bank balance sheet or the results described in (i), (ii), and (iii) all remain completely intact. Unfortunately, and most importantly, the added complexity is counter-productive because it leads to poor understanding among economists, poor modeling, and bad policy choices. Were economists and policy makers to understand that the MMT general case explains the true nature of government debt operations, we suggest that all three could be markedly improved.

WHY THE RIGHT FRAMEWORK MATTERS

It is impossible for anyone to develop a perfect model of the macro economy, one that incorporates all of the fluid activities that take place in a world rich with institutional detail, where humans engage in a vast array of complex economic decision-making. The most widely accepted mainstream models do not even try. Instead, they abstract from the complexities of the real world, replacing involuntary unemployment with revealed preferences, fundamental uncertainty with calculable risk, central bankers with helicopter pilots, and so on. In contrast, heterodox economists working in the Post-Keynesian and Institutionalist traditions have worked to produce a more realistic framework from which to analyze and understand the workings of a modern capitalist economy.

As a theoretical school of thought, MMT draws heavily on J.M. Keynes's analysis of monetary production economy, Abba Lerner's theory of Functional Finance (FF), Hyman Minsky's Financial Instability Hypothesis (FIH), Wynne Godley's Sectoral Balance (SB) approach to macro modeling, and the work of G.F. Knapp and A. Mitchell Innes, who independently developed chartalist or state theories of money. These are our forefathers and MMT is an amalgamation of their most important contributions. And it is from this integrated framework that we have been able to understand events, assess policies and derive policy proposals for real-world economies operating with very different institutional systems.

Thus, it is the entire *collection* of ideas that has enabled us to make meaningful sense of events in domestic and global markets. For example, our framework has helped us to understand: the dynamics of debt default under fixed exchange rates (e.g. the Russian case), why the CBO's projection of "surpluses as far as the eye can see" (Clinton years) was destined to miss the mark, why the Stability & Growth Pact would not restrict government deficits, how default risk premiums would lead to a debt crisis in the Eurozone, why Quantitative Easing would not cause runaway inflationary, why the sharp increase in the US deficit would not cause US interest rates to rise, why the Fed's zero interest rate policy (ZIRP) would fail to restore a private credit expansion, etc., etc.

We have tried to extend the Keynesian-Institutionalist-Post Keynesian-Circuitist tradition to study the "nature" of "modern" money—that is, state money as defined by Knapp and Keynes. We include a detailed analysis of the way money "works" in modern fiscal and monetary policy operations. And we examine the policy implications and possibilities that follow on from this analysis.

REFERENCES

Bell, Stephanie. 2003. "Convergence Going in, Divergence Coming Out: Default Risk Premiums and the Prospects for Stabilization in the Eurozone." C-FEPS Working Paper No. 24.
<http://www.cfeps.org/pubs/wp/wp24.html>

Bell, Stephanie. 2000. Do taxes and bonds finance government spending? *Journal of Economic Issues*. 34: September.603-620.

----. "The role of the state and the hierarchy of money". *Cambridge Journal of Economics*, 25(2), March, 149-163 (2001).

Bell, Stephanie and L.R. Wray. "Fiscal Effects on Reserves and the Independence of the Fed", *Journal of Post Keynesian Economics*, Winter 2002-2003, Vol 25, No 2, pp. 263-271.

Clower, Robert. 1965. "The Keynesian Counter-Revolution: A Theoretical Appraisal", in F.H. Hahn and F.P.R. Brechling, eds., *The Theory of Interest Rates*, 103-125, London: Macmillan.

Fullwiler, Scott, 2006. "Setting interest rates in the modern money era", *Journal of Post Keynesian Economics*, 28(3) Spring, 495-525.

----. 2010 *Treasury Debt Operations—An Analysis Integrating Social Fabric Matrix and Social Accounting Matrix Methodologies*, September 2010 (edited April 2011), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1874795

Fullwiler, Scott T. 2003. "Timeliness and the Fed's Daily Tactics." *Journal of Economic Issues*, vol. 37, no. 4 (December): 851-880.

_____. 2005. "Paying Interest on Reserve Balances: It's More Significant than You Think." *Journal of Economic Issues*, vol. 39, no. 2 (June):

_____. 2008. "Modern Central Bank Operations: The General Principles."

_____. 2009. "The Social Fabric Matrix Approach to Central Bank Operations: An Application to the Federal Reserve and the Recent Financial Crisis." In Natarajan, Tara, Wolfram Elsner, and Scott Fullwiler, (eds.) *Institutional Analysis and Praxis: The Social Fabric Matrix Approach* : 123-169. New York, NY: Springer.

---- and L. Randall Wray, 2011 "Its Time to Reign in the Fed" *Levy Institute Public Policy Brief* 117, April, <http://www.levyinstitute.org/publications/?docid=1371>

Godley, Wynne. "Money, Finance and National Income Determination: An Integrated Approach", Levy Economics Institute, Working Paper 167, June, www.levy.org, 1996.

Goodhart, Charles 1998. Two concepts of money: implications for the analysis of optimal currency areas. *European Journal of Political Economy*. 14:407-432.

Graziani, A. (1990), 'The theory of the monetary circuit', *Economies et Societes*, series no. 7, June.

Innes, A. M. 1913. What is money? *Banking Law Journal*. May: 377-408. And 1914. The credit theory of money. *Banking Law Journal*, January, 151-68; reprinted in L. R. Wray (ed.), *Credit and State Theories of Money*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar (2004), pp. 14-49.

Keynes, John Maynard. (1964) *The General Theory of Employment, Interest and Money*, Harcourt Brace Jovanovich, New York and London.

----. 1930. *The Treatise on Money*

-----. 1914. "What is Money?", review article in *Economic Journal*, 24(95), September, 419-421.

Knapp, Georg Friedrich. (1924) 1973. *The State Theory of Money*. Clifton: Augustus M. Kelley.

Lavoie, Marc. "Credit and Money: The dynamic circuit, overdraft economics, and Post Keynesian economics", in Jarsulic, Marc ed., *Money and Macro Policy*, Boston, Dordrecht, Lancaster: Boston-Dordrecht-Lancaster, 1985 p. 63.

Lerner, Abba P. 1943 Functional finance and the federal debt. *Social Research* vol. 10, 38-51.

-----. 1947. Money as a creature of the state. *American Economic Review*. 37:312-317.

Minsky, Hyman P., *Stabilizing an Unstable Economy*, New Haven and London: Yale University Press, (1986).

Moore, Basil J. (1988). *Horizontalists and Verticalists: The Macroeconomics of Credit Money*, Cambridge: Cambridge University Press.

Parguez, Alain, "A monetary theory of public finance". *International Journal of Political Economy*, 32(3), Fall, (2002)

Parguez, Alain, and Mario Seccarrecia. 2000. "The credit theory of money: the monetary circuit approach". In *What is Money?* Edited by John Smithin: London and New York: Routledge, 101-123.

Wray, L. Randall. 1998. *Understanding Modern Money: The Key to Full Employment and Price Stability*. Northampton, Mass.: Edward Elgar.

----- (Editor) 2004. *Credit and State Theories of Money: the contributions of A. Mitchell Innes*, Cheltenham, Edward Elgar.

