

Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime: A Comment on Palley, Tymoigne, and Wray¹

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Introduction

As I have remarked elsewhere, one of the main collective contributions of the various heterodox schools of monetary thought, such as circuit theory, Post Keynesian theory, in both its horizontalist and structuralist versions, modern money theory (now known simply by its acronym MMT) and others, has been to stress the importance of the endogeneity of money *via* bank credit creation. This issue was hardly discussed at all in the economics mainstream after Keynes's death, not until the end of twentieth century and the beginning of the twenty-first.

It is necessary to stress the notion of a *collective* contribution because of the various claims and counter-claims to academic priority made in the literature. The recent exchange between Thomas I. Palley (2015a, 2015b) and Eric Tymoigne and L. Randall Wray (2015), in the *Review of Political Economy*, provides a clear example of this. Wray and Tymoigne are writers directly associated with the MMT school, and Palley with Post Keynesian economics more generally. Palley first provides a critique of MMT from the point of view of what he calls "established Keynesian monetary macroeconomics" (Palley 2015a, 2). Tymoigne and Wray (2015) then respond sharply to these criticisms. Palley (2015b) makes a further rejoinder entitled the "The critics of MMT are right".

Reading this exchange was not very encouraging as a summary of the state of the

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

academic debate in the early twenty-first century. I should explain that I have been following the work of all three writers for some time, with great interest. Though I certainly do not think it possible to accept every claim made by each of the three I have learned much, from each of them, in developing my own approach to the various issues under debate. I would go so far as to say that together their efforts have been indispensable (with others) to anyone attempting to form a position on these important questions. This is also why it is of some importance to examine their differences in detail. It should also be said at the outset that a concept introduced some years ago by another member of the MMT school namely, Bell's (2001) notion of the "hierarchy of money", might have been useful in reconciling some of these differences, but this idea was not much discussed.

Palley's Criticisms of MMT

According to Palley (2015a, 1):

Modern money theory (MMT) is an approach to the origins of money, the source of value of *fiat* (sic) money, and the nature of the financial constraint on government.

However, he thinks that the claims about public finance are "nothing new", those about policy are "unsubstantiated", and the discussion of the origins of money is based on a "misunderstanding" (Palley 2015b, 57-61).

Tymoigne and Wray (2015, 24-44) re-assert what they take to be the central contribution of MMT, the idea that "monetarily sovereign" governments are not financially constrained in same way as non-sovereign governments (*e.g.*, provincial and municipal governments). They also point to the detailed institutional and conceptual insights provided by MMT scholars about

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

the workings of fiscal, banking and financial systems, in several different political jurisdictions around the world. Finally, they affirm the value of policy recommendations about price stability, full employment, and financial stability, based on MMT reasoning.

Who is right on each of these issues? As usual in these sorts of disputes, the answer is that both camps are right to some extent, and also that they are both wrong.

“Money-Tree Economics”?

Palley (2015a, 21) ultimately dismisses MMT as “modern money-tree economics”. And, in fact, there would be nothing new or “modern” about this type of thing, as shown by the following quote from a lecture given by the “pre-Keynes” Cambridge economist Dennis Robertson³ as long ago as February 1928. (The lecture was therefore prepared and delivered well *before* either the stock market crash of late 1929 or the Great Depression of the 1930s). According to Robertson (1940, 39):

... our [chair] ... will bear me out that one cannot set up, even in a modest way, as writer on monetary affairs, without becoming the target for a ... stream of documents – manuscript, typed and printed – designed to show that the ills of the human race are all due to monetary mismanagement, and all curable by monetary manipulation. In the back streets of London suburbs and northern industrial towns, on the plains of India and the prairies of the Middle West, those who have Found the Light about Money take up their pens and write, with a ... devotion otherwise only found among the disciples of a new religion. It is easy to scoff at these productions: it is not so easy ... to see exactly where they go wrong. It is natural that practical bankers ... conscious that the projects of monetary cranks are dangerous to society, should cling in self-defence to ... tradition and accepted practice. But it is not open to detached student[s] of economics to take refuge from dangerous innovation in blind conservatism. [They] must assess with an equal eye the projects of the reformers and the claims of the established order ... to this end ... must [themselves] build up ... a theory of money – a critical analysis of the ... processes by which, under a modern system of banking, money is manufactured.

The geographical references in this passage are fascinating.

For example, India is mentioned, no doubt, because at Robertson's time of writing that country was still an integral part of the global British Empire.

The phrase "industrial towns" makes one think not only of the North of England, but also inevitably the Midlands, specifically Birmingham. One of several critical targets of Hayek at around the time Robertson was writing (Hayek 1994, 93) were the "Birmingham inflationists" of the previous century, personified by Thomas Attwood. In Attwood's own day, J.S. Mill was said to have commented that "Birmingham is not England", or words to that effect (Humphrey 1977). An appropriate response might have been "neither is the City of London" but whether anyone thought to make it is not recorded. Translated into the context of the USA this simply anticipates the perennial "Main Street versus Wall Street" divide.

Finally, with the reference to the "prairies of the Middle West" Robertson seemingly anticipates the arrival of MMT *via* the University of Missouri at Kansas City, by a full 70 years. (The coincidence, of course, is not really that surprising to anyone familiar with the intellectual history of both the USA and Canada, especially as far as views on banking are concerned). However, is this a fair comparison to make, on my or anyone else's part? Of course, it is *not*, definitely not. I am sure that all economists who have ever put forward heterodox views on money, certainly including myself, have been subject to this charge of favouring "funny money". In the case of MMT, there is clearly far more of substance, in the institutional and historical analysis that they have conducted, than could ever justify their being tarred with that brush. Nonetheless, it is an obvious trap to fall *into* in the academic arena, and it is fair to say (as does

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

Palley) that the MMT writers have done very little to avoid it. This applies, in particular, to the various unorthodox policy proposals that have been put forward, few of which seem to logically follow from the institutional analysis.

The Central Contribution of MMT?

The central contribution of MMT is, I think, precisely what its authors claim it to be. In the words of Tymoinge and Wray (2015a, 24-5)

[A] ... main contribution ... has been to explain why monetarily sovereign governments have a flexible policy space unconstrained by hard financial limits.

Palley is right, of course, that this is *not* new and also that MMT authors regularly fail to give credit to others, particularly among their contemporaries, who have expressed similar views.⁴ Nonetheless, they have been uniquely successful in the *promotion* of these ideas over the past couple of decades since the advent of the Euro-zone in 1999, and this has been an important contribution in the contemporary political environment.

However, if Palley is correct in suggesting that several other writers have anticipated the MMT school on the central issue, he is surely *wrong* to include the so-called “Keynesians” of the neoclassical synthesis (henceforward “neoclassical Keynesians”) as being among them. It is true that in the neoclassical Keynesian literature, including contributions by Christ (1968), Blinder and Solow (1973), Tobin and Buitner (1976) and Tobin (1982),⁵ much was made of the contrast between the “bond financing” and “money financing” of deficits. The former was regarded as being acceptable while the latter was not. However, contrary to both of Palley’s statements about this matter (Palley 2015a, 4; 2015b; 51), it is a long stretch from this position to what the MMT

group seems to be trying to say.⁶

If D stands for the government budget deficit, G for government expenditure, T for taxes and R for interest payments on the national debt, then by definition:

$$(1) \quad D = G + R - T$$

The usual argument that follows from this is that a deficit, if one exists ($D > 0$), can be financed one of two ways. Either the Ministry of Finance (the “Treasury” in the USA) can sell bonds, B , to the general public (debt financing), or the Central Bank (CB) can buy bonds from the Ministry of Finance (MOF), in exchange for its own liabilities, H (money financing). The symbol “ H ” dates back to the heyday of monetarism in the 1960s and 1970s, when the monetary base was called “high-powered money”. This is not a good descriptive term but it remains convenient to have a different symbol from the overall money supply, M , which consists mainly of the deposit liabilities of commercial banks.

The choices about how to finance the deficit can thus be characterized as:

$$(2) \quad D = \Delta B + \Delta H$$

By bringing the two different branches of government into the discussion, we touch on another issue debated by Palley and Tymoigne and Wray (2015, 26-7), whether or not it is sensible to “consolidate” the accounts of the government and treat the CB and the MOF as one. This is convenient for some purposes but not others. In the present context, note that keeping the accounts separate is actually the move which gives rise to the concept of money financing *versus* debt financing in the first place.

The point that Palley (2015b, 48) makes about money *versus* bond finance is to argue that the neoclassical Keynesians always recognized that a sovereign government could set $\Delta B = 0$ if

it wants to and, therefore, the deficit *may* be 100% money financed. It is equally possible however, that the opposite choice could be made, with $\Delta B > 0$ and $\Delta H = 0$, which was, in fact, the preferred option for neoclassical Keynesians. The flaw in the argument is that the concept of money finance is restricted to the idea that the *monetary base* increases to pay for the deficit. Therefore, in order to make any more general statements about the endogeneity or exogeneity of money, the neoclassical Keynesians (and any others who make this case) are forced back to yet another monetarist notion of the 1960s, that of the “money multiplier” (Friedman 1960, Goodhart 1989). For the purposes of monetarism it had to be argued that there was a reliable connection between the growth of the CB’s own liabilities and that of the money supply itself. This was the role of the money multiplier given by:

$$(3) \quad \Delta M / \Delta H = [(1+cd)/(cd+rr)]$$

The idea was that if H changes by some given dollar amount the money supply, M , itself will change in the ratio $(1+cd)/(cd+rr)$, where cd is the cash-deposit ratio and rr is the reserve ratio. However, the argument simply does not work. All of H , M , cd , and rr are endogenous variables. In the real world commercial banks “keep in step” (Keynes 1930, 23), not by restricting themselves to loaning out other people’s money, but by adjusting their own lending and deposit rates whenever the central bank policy rate changes (Kam and Smithin 2012, Lavoie 2010). It is reasonable to argue that the central bank can influence commercial bank lending rates (and thereby the nominal value of bank balance sheets) by changing the policy rate, but *not* that there is any direct numerical relationship between H and M . Nonetheless, and this does seem to be the point that the MMT group is trying to make, it remains true for a sovereign government, and given external balance and domestic investment-saving balance, that:

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

$$(4) \quad D = G + R - T = \Delta M$$

This is a much more meaningful statement in a theory of endogenous money, when focusing on the role of the budget deficit. There are also analogous expressions that can be derived even when $D = 0$ combined with imbalance in one or another of the remaining sectors.

Monetary Sovereignty in the Global Economy

It is clearly important to understand precisely what is meant by the term “monetary sovereignty” as used by MMT writers. When Wray’s (1998) book on *Understanding Modern Money* was first published, there was a quote from Warren Mosler in the front-piece as follows:

The achievement of zero unemployment, price stability, and a market economy for the long term, as advanced by Wray, is viable only with floating exchange rates.

This caught my attention as it was close to my own position at the time. I was pleased to see such an unambiguous statement. However, Tymoinge and Wray (2015, 24) now seem to hedge to some extent as follows:

We use the term ‘sovereign government’ to indicate a government that issues its own currency... a monetarily sovereign government can *choose* among alternative exchange rate regimes – fixed, managed, and floating – which impact domestic policy space. (emphasis added)

They go on to explain the nature of the constraint in the different cases. In a model of a theoretical *closed* economy with only one (central) government and no trade with the rest of the world, it is actually a fairly straightforward exercise to demonstrate the essence of the MMT case about the lack of financial constraint on that government (Smithin 2013, 221-33).⁷ In the open economy, however, the nature of the exchange rate regime is indeed the key factor. Smithin (2013, 221-38) has discussed how the results from a closed economy *model* translate into the

practical open-economy setting. As a “broad brush”, we can identify four possible exchange rate regimes:

1. A floating exchange rate.
2. A “fixed but adjustable” exchange rate.
3. An irrevocably fixed exchange rate or “hard peg”.
4. An optimum currency area (OCA).

In an economy with a *floating exchange rate*, and in the context of a plausible model, we get qualitatively the same results as in the equivalent closed-economy model. All that would be needed for a more complete discussion would be to add results for the real exchange rate and the foreign debt position. This is a case of full sovereignty.

In an economy with a *fixed but adjustable exchange rate* the results also resemble qualitatively those of the closed economy. This is an important finding, because it does allow for some domestic control over both monetary and fiscal policy even outside Mosler’s preferred regime of a pure floating rate. What is not clear, however, is whether there is any real benefit for the domestic economy in having this regime rather than a floating rate (Smithin 2013, 292-7).

In spite of the name a putative *hard peg* for the exchange rate (a metallic standard, a “credible” fixed exchange rate regime, a currency board with no loopholes), is actually an unstable regime outright and will eventually, but inevitably, break down. There are numerous historical examples. There is no effective sovereignty in this case. It is not a viable choice in the long run.

Similarly, the idea of an *OCA* originally due to Mundell (1961) is an attempt to do away with exchange rates altogether, and has been very negatively influential in practical politics in

the 21st century. It is a total abandonment of sovereignty. When initially applied, the OCA will have many of the characteristics of a hard peg (as was certainly the case in the Euro-zone, for example). Therefore, there are really only two possible long-run outcomes either (a) break-up, or (b) eventual evolution into a true federal state (the different countries literally become “Provinces” in the Canadian sense of this term).

These results may be better understood by referring to the familiar interest parity conditions from international finance. Palley (2015b, 55) actually refers to the covered interest parity (CIP) condition as “raising legitimate concerns about MMT policy recommendations”, but this is not quite accurate. The other parity conditions need to be taken into account as well. In notation previously used elsewhere (Smithin 2013, 274-7) this CIP condition may be written as:

$$(5) \quad i - i^* = (E - F)/E$$

where i is the domestic nominal interest rate, i^* is the foreign nominal interest rate, E is the current spot exchange rate (defined as the *domestic* currency price of one unit of *foreign* exchange) and F is the forward exchange rate. It seems to be implicit in Palley’s discussion, however, that uncovered interest parity (UIP) also holds, so that;

$$(6) \quad \ln F = \ln E_{+1}$$

which would be similar to the result of a “rational expectations” or “efficient markets” analysis.

In reality, however, under floating exchange rates, and regardless of how expectations are formed, UIP frequently does *not* hold. The forward rate differs from the expected future spot rate, E_{+1} , due to the existence of the so-called “risk premium”, Z , (a true Keynesian would presumably prefer to call this an “uncertainty premium”). That is:

$$(7) \quad \ln E_{+1} = \ln F + Z$$

In general under flexible exchange rates, therefore, domestic nominal interest rates can deviate from foreign rates according to:

$$(8) \quad i - i^* = [(E - E_{+1})/E] + Z$$

As mentioned even in the case of a “fixed but adjustable” exchange rate the domestic authorities still retain a certain leeway to set interest rates as they see fit based on local economic conditions. In such circumstances, although it may well be the case that the exchange rate is not *expected* to change ($E = E_{+1}$), nonetheless it possibly could do so. This eventuality must be priced into all relevant financial contracts. Domestic nominal interest rates will still differ from foreign rates according to:

$$(9) \quad i - i^* = Z$$

Note that this result does not rely on capital controls or other political impediments to the free flow of funds from one jurisdiction to another. Ironically it is the *lack* of firmness and resolution about exchange rates that provides the “policy space”.

The other two regimes provide no policy space, which is actually the reason why they are unstable.

Theory and Policy

In contrast to the attempted defence of neoclassical Keynesians and their concept of money financing *versus* debt financing, Palley (2015a, 5; 2015b, 51) is on much stronger ground in his critique of MMT for *not* providing a coherent macroeconomic model. He complains that:

MMT has no model ... [that is, it] ... has failed to provide a formal model that explicates (sic) its claims (g)iven this lack of formal modelling

readers must fend for themselves.

This is surely fair comment. It is precisely the lack of a formal model that leads to very many of the misunderstandings and confusions that prevail in this literature on both sides of the debate. It also seems to be the main reason why discussions of the various policy options suggested by MMT theorists have been so unfruitful and inconclusive. For the most part, there is simply no basis to discuss the likely effects of the various policy initiatives. Palley unmistakably raises this issue in the quote above and is quite explicit about it elsewhere. Prominent among the policy proposals put forward by the MMT group are (i) anti-austerity fiscal policy (with which most Keynesians and Post Keynesians would agree), (ii) an employer of last resort (ELR) policy to guarantee full employment, (iii) a zero central bank policy rate of interest, and (iv) tighter financial regulation. However, quite clearly, in order to assess the effects of each of these in any serious way, it would be indeed be necessary to work their actual effects in the context of an explicit macroeconomic model. In their own words if the central propositions of MMT theorists are true this simply provides “policy space”. It does not tell us what those policies should be.

On the other hand the absence of any really detailed macroeconomic theory in MMT cannot and does not imply that the theory of the neoclassical Keynesians or “old Keynesians” is correct by default. Although not offering a detailed alternative, Tymoinge and Wray (2015, 40) were quite rightly:

... surprised that Palley continues to promote a rather orthodox theory of the Phillips curve trade-off.

Palley (2015a, 11; 2015b, 53) does indeed strongly assert that “the issue of the Phillips curve is central to macroeconomics and policy”, and even predicts that if MMT theorists “ever produce a

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

model ... it will look a lot like the [Old Keynesian] framework ...". By now, the reader may well reasonably doubt whether either of these points has any basis. I do think that MMT theorists are correct to reject the notion of the Phillips curve, the supposed trade-off between inflation and unemployment or unemployment and growth. However, it is also true that "you can't beat something with nothing".

Here is what I said about the dubious notion of the Phillips curve in an encyclopedia entry on the topic some years ago (Smithin 2002, 584-5):

... any comprehensive theory of inflation and growth, should be able to explain equally convincingly, periods of high growth with high inflation, low growth with low inflation, low growth with high inflation, and high growth with high inflation. All of these have occurred in different times and different places.

These circumstances are what needs to be explained, rather than Phillips's contrived exercise for a particular country (the UK), and a particular 91-year time period, 1867-1958 (for most of which Britain was participating in the either the international gold standard 1873-1914, the restored gold standard 1925-1931, or the Bretton Woods system 1944-1973).

In Economics "101", no one is surprised to learn that sometimes price increases are associated with an increase in output (when demand increases), and sometimes with a decrease in output (when supply falls). This just seems to be the logical consequence of microeconomic demand and supply analysis. However, all of this goes out of the window in later courses on macroeconomics. At the macroeconomic level, mainstream theory attempts to rule out such common-sense notions by an appeal to "natural rates" of unemployment, output, growth and interest, and the insistence that employment and output are determined *only* on the supply side.

How has this situation come about? The reason is that a basic research strategy in

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

economics, from Adam Smith onwards and still in every textbook, is to invoke a hypothetical world without money, which nonetheless has a fully-fledged market economy (the barter economy). The idea is promoted that even in an actual money-using economy researchers should look behind the “veil of money” to the barter ratios presumed to reflect the underlying true preferences. The barter equilibrium, even though it exists only as a thought experiment, is traditionally regarded as the norm or ideal for the “optimal allocation of resources”. Never mind that there would be no trade in the first place until someone hit upon the notion of money. It is an article of faith in this approach that money itself is emergent from “market forces” not the other way around and significantly, among the current disputants it seems that Palley (2015b, 60) alone accepts this view, as attested by references to “Bitcoin”, dollarization, scrip money, and so forth, in the appendix. Money is thought of primarily as a *medium of exchange*, a sort of substitute or stand-in for barter rather a *means of payment* (of debt). To the contrary the anthropologist Graeber (2011), for example, drawing on more anthropologically, historically and sociologically informed authors such as Innes (1913, 1914), Wray (1998) himself and Ingham (2004), has written explicitly of the “myth of barter”.

Importantly, Wicksell (1898, xxv) the acknowledged historical precursor (by almost exactly one hundred years) of the modern “new consensus” (Woodford 2003), was very much committed to the conventional view and wrote of the “natural rate of interest” as follows:

This natural rate is roughly the same thing as the real interest of actual business. A more accurate, though rather abstract, criterion is obtained by thinking of it as the rate which would be determined by supply and demand if real capital were lent in kind without the intervention of money

But, if barter is a myth, then the idea of a natural rate of interest must also be a myth. To

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

put the point as straightforwardly as possible, how can there be “actual business” without a money of account and credit creation? There cannot be. Furthermore, if the natural rate of interest is a myth then it seems to follow from economic theory *itself* (Kam 2005, Smithin 2003, 2009, 2013) that all cognates, such as the natural rate of unemployment, the natural rate of growth, the “NAIRU”⁸ and even the very notion of “full employment” as a threshold for inflation, are also myths. All the building blocks of Phillips curve analysis seem to be myths.

“Stabilizing an Unstable Economy”?

The above is a reference the title of a widely-read book by Hyman Minsky (1986), the author of the “financial fragility hypothesis”. It is relevant here because as Palley (2015b, 56) says many contributors to the MMT literature are also followers of Minsky. It is therefore reasonable to inquire whether some of their policy recommendations would help with the stabilization of the economy, or the reverse. There is *one* particular policy proposal of MMT that might be thought to lead to trouble in virtually any coherent model of an economy, and Palley does highlight this problem. This is idea that the optimal value of the *nominal* policy rate of interest is zero, the so-called “Kansas City rule”⁹, sometimes expressed by saying that the natural rate of interest is zero (Palley, 2015b, 55-6). As a proponent of an alternative *real* interest rate rule (Smithin, 1994, 2007, 2003, 2009), I must agree with Palley that the notion of a zero nominal interest rate is misguided, but *not* with his idea that “discretion”, rather than the sort of rule he dismisses as a “park it” policy, is the way to go for monetary policy (Palley 2015a, 17). Arguably, some kind of “park it” policy is precisely what is needed to avoid the problems that have been *caused* by

misguided policy initiatives in the real world, including the periodic fads for various types of feedback rule.

To explore this question in more detail, first consider the following simple model of the demand for and supply of endogenous money;

$$(10) \quad M = \psi PY \quad 0 < \psi < 1$$

$$(11) \quad M = \phi W_{-1}N_{-1}, \quad \phi > 1$$

where M is total holdings of commercial bank deposits in period t , and $W_{-1}N_{-1}$ is the aggregate nominal wage bill of the previous period. The idea that the money supply depends upon the total wage bill comes from circuit theory (Graziani 2003, 27) but it is important to note that for the industrial system to be *viable* in the sense of generating positive monetary profits, the coefficient, ϕ , must be greater than one. This therefore represents all other types of borrowing, over and above what is needed to finance the aggregate wage bill (Smithin 2013, 228-30). There is implicitly a one- period production lag in the model whereby the expression $Y = AN_{-1}$ maps lagged labour input into current GDP. This is the minimum lag necessary to capture the fundamental idea that production takes place in time. Given these assumptions the aggregate price level, P , will be given by:

$$(12) \quad P = (\phi/\psi)(W_{-1}/A)$$

Now divide through by P_{-1} and take natural logarithms. The result is;

$$(13) \quad p = \ln\phi - \ln\psi + w_{-1} - a$$

where lower case p is the inflation rate ($p = \ln P_{-1} - \ln P_{-1}$), w is the \ln of the average real wage rate (so that $w_{-1} = \ln W_{-1} - \ln P_{-1}$), and $a = \ln A$.

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

suppose further that the ratio ϕ/ψ , the anti-log of $\ln\phi - \ln\psi$, is given by:

$$(14) \quad \phi/\psi = [(\phi_0/\psi_0)]e^{-\lambda(r - r_{-1})}, \quad 0 < \lambda < 1$$

This specification clearly contains a version of Keynes's (1936, 196) "speculative" demand for money, from the *General Theory*. However, as noted, there is a speculative supply of money also (not in Keynes), arising from bank loans for such things as literally financial speculation, consumer spending in excess of income, *etc.* Taking natural logs, we obtain;

$$(15) \quad \ln\phi - \ln\psi = p_0 - \lambda(r - r_{-1})$$

which introduces a new term p_0 , where $p_0 = \ln(\phi_0 - \psi_0)$. This can be thought of as representing the purely psychological element of liquidity preference (rather than speculation about interest rate changes as such), and may be identified with the (overall) "bullishness" or "bearishness" of financial markets from the *Treatise on Money* (Keynes 1930, 128-31). Once again, both sides of the money market are affected, and we can derive the following expression for inflation:

$$(16) \quad p = p_0 - \lambda(r - r_{-1}) + w_{-1} - a$$

Finally, recall that by definition:

$$(17) \quad r = i - p_{+1}$$

Now suppose that the CB just fixes the *nominal* policy rate at whatever level, which includes the MMT idea that it should fall to zero. The main point is that the CB is *not* following a feedback rule conditional on previous outcomes. The setting of the nominal policy rate (the overnight rate in Canada) will be "passed through" to interest rates in general, *via* the expression:

$$(18) \quad i = m_0 + m_1 i_0, \quad m_0 > 0, \quad 0 < m_1 < 1$$

Therefore, letting $w = w_{-1} = w_{-2}$, *etc.*, in "real" equilibrium the following difference

equation in inflation will emerge:

$$(19) \quad p = [(I+\lambda)/I]p_{-1} + (I/\lambda)(p_0 + w - a)$$

As $0 < \lambda < I$ then, in the difference equation in (19), we have $[(I+\lambda)/\lambda] > I$. Under these circumstances therefore, a *nominal* interest rate peg, there is inflationary instability (Smithin 1994, 2007, 2009, 2013). This confirms what Palley (2015, 55-6) says about MMT's interest rate policy.

Alternatively, suppose that the CB pursues a *real* interest rule, such as;

$$(20) \quad i_0 = r_0 + p$$

where r_0 is the inflation-adjusted real target for the overnight rate. This is also, *contra* Palley, a “park it” policy but does pay attention to the observed inflation rate. This rule yields a stable difference equation which is “convergent”, meaning that the inflation rate does eventually settle down to a steady-state equilibrium value, whether high, low or even negative. Given (20):

$$(21) \quad p = p_0 + w - a - \lambda m_1(p - p_{-1}) + \lambda(p_{+1} - p)$$

And:

$$(22) \quad \Delta p_{+1} = m_1 \Delta p - \lambda(p_0 + w - a - p)$$

As $0 < m_1 < I$, the difference equation in (22) is convergent. There is a steady-state equilibrium such that $\Delta p_{+1} = \Delta p = 0$ and the inflation rate stabilizes to:

$$(24) \quad p = p_0 + w - a$$

In principle, assuming that the authorities do pursue the more sensible type of policy in (20) this is a comprehensive theory of inflation for an economy with endogenous money. Cost push and productivity changes are relevant, but so also are the parameters of the explicit money

supply and demand functions.

The Ontology of Money (or, Where do Profits Come From?)

This brings us back to the issue of social ontology. I would say that it is *precisely* on such matters as rules versus discretion, the legitimacy of the Phillips curve, the merits of activist fiscal policy and so on, that questions about the nature of money, the origins of money, the role of money in capitalism, and the economic sociology of money, are most relevant. These sorts of questions are addressed in the MMT literature, but are brushed aside by Palley (2015b, 47) as “red herring[s]”. As shown by the use of circuit theory, the preference for institutional analysis and an interest in the origins of money, MMT scholars clearly do have an awareness of the underlying issues, whereas Palley (2015b, 60-1) shows no interest and relegates the discussion of these matters to an appendix.

Tymoigne and Wray (2015, 26) explicitly refer to the notion of the “monetary circuit” in their exposition of MMT. This is a term that originated in Marx. However, more directly relevant to current “post-Keynesian” heterodox economics, it is also noteworthy that in some writings before the *General Theory*, Keynes (1933a, 1933b) himself seemed to allude to this idea, *via* the notion of a monetary theory of production. However, these references did not survive in the published version in 1936. Nor did Keynes seem particularly confident about the concept in the debates about interest rate theory in the *Economic Journal* and elsewhere, the following year (Graziani 1984). Writers such as Augusto Graziani (1990, 2003) and Alain Parguez (*cf.* Parguez and Seccareccia 2000) have since developed the theory of the monetary circuit in far more detail,

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

arguing that to advance Keynes's agenda it is necessary to go well beyond the arguments of the *GT*. This was a missing piece of the puzzle in Keynes, and is it important to inquire about its exact significance for an overall system of political economy.

In many ways, the essence of what is at stake is contained in a question that economic sociologists do sometimes ask (Collins 1986), but economists almost never, "where do profits come from?". A starting point for an answer is to write out the original circuit from *Das Kapital* in full, that is $M - C \dots P \dots C' - M'$ (Marx 1884, 109), where P stands for the details of the production process, and to try to explain precisely what $M' - M$, and $C' - C$, are supposed to represent. A stylized version of the complete circuit can thus be written as:

$$(25) \quad M - C - C' - M'$$

The entrepreneurs start with a sum of money (dollars) M . Then they buy some commodities C (including raw materials *plus* labour time). Next, they engage in production, using C , to make more (that is, "more valuable") commodities C' . The term $(C' - C)$ thus corresponds to the real value-added in the economy. Entrepreneurs then sell the enhanced commodities C' for more *money* M' , and the difference $(M' - M)$ is the realized money profit. So, this is capitalism according to Marx, not dissimilar to the views of Weber, Schumpeter, Keynes and others.

To proceed any further with the argument we would first need to define "real value", a very old question in economics. In Marx, and some versions of classical economics, there was a labour theory of value. Later neoclassical, "Austrian", and modern mainstream economics used the nebulous concept of utility. More to the present point, if the money supply is supposed to be fixed, how can it be *possible* for M' to be greater than M and hence money profits to be realized?

This is the crucial question, but neither Marx, nor the classical economists, nor the neoclassical economists, ever seemed to get around to asking it. Implicitly, however, modern accountants do ask it of modern businesses every day. The point being made is that the system must generate positive aggregate profits in money terms *before* any “real” profit or surplus can come into existence for the different parties to dispute. Granted even in the case where $M' = M$ (the money supply does not increase) it would still be possible for *some* firms to make profits while others make losses. This is the usual meaning of “competition”. But, this is *not* the answer. It is still impossible for firms on average (in aggregate) to be profitable. The system as a whole cannot function on the basis of zero aggregate money profit, as the expectation of success in any particular business is zero and there is no real incentive to act. The only feasible solution is that there must be credit creation (money creation) by the banking system.

In modern economics real value-added is no longer thought of as “embodied labour” (nor even, in practice, “utility”) but as something like the standard definition of real GDP:

$$(26) \quad Y = C + I + G + (EX - IM)$$

where Y where stands for real GDP, C for real consumption expenditure, I for real investment spending (firm spending), G for real government spending and $(EX - IM)$ for real net exports.

Note that for theoretical purposes these symbols should refer to real flows of funds (in money terms, deflated by Fisherine “ideal” price index) rather than the imputed values actually provided by the statisticians. This is because the actual GDP numbers are not “stock-flow consistent”, actually a requirement endorsed by both Palley (2015a, 49) and Wray (2012). In practice, the GDP numbers are all there is for empirical work, but in no way are they 100% consistent or accurate from the theoretical point of view. With this caveat, the circuit becomes:

$$(27) \quad M - Y - M'$$

If M' is equal to M , there will be no Y . Why? (No pun intended). It is because there is no *incentive* to produce Y . Even if M' is greater than M , it is still quite possible that there is no Y .

Then, the circuit will be:

$$(28) \quad M - M'$$

This is the case where all the borrowed money goes for financial speculation, *etc.*, and nothing is actually produced.

If M' is greater than M and also roughly equal to Y (or is consistently not much greater than Y) there is a profit incentive for production, and prices will also be roughly stable (the inflation rate will be “low and stable”). If Y is positive but $(M' - M)$ is greater than Y , production will be taking place but prices will be rising (there will be a “high” inflation rate). It seems clear that both macroeconomic policy and financial regulation should be working toward the first of the latter two outcomes. The case of outright instability has already been discussed above.

Conclusion

The quote from Dennis Robertson (*op. cit*) above, mentioned the need to “... build up ... a critical analysis of the nature and results of the processes, by which, under a modern system of banking, money is manufactured”.

Robertson did not himself succeed in this aim in the 20th century, any more than did Wicksell in the 19th, or the modern neo-Wicksellians of the “new consensus” in the 21st and for the same reasons. Nonetheless, it is the right objective. It also ultimately the criterion by which the arguments of our disputants, and of this response itself, will have to be judged.

Notes

1. I would like to thank Geoff Ingham, Marc Lavoie, Hana Smithin, Leo Zalmanowitz and three anonymous referees, for making useful comments and criticisms which have helped to improve this paper. Remaining errors and omissions are the sole responsibility of the author.
2. John Smithin is Professor of Economics in the Department of Economics and the Schulich School of Business, York University, 4700 Keele Street, Toronto, ON, Canada M3J 1P3; tel: +1 (416) 736 2100, ext. 33623; e-mail: jsmithin@yorku.ca.
3. In reality, Robertson started out as Keynes's student. "Pre-Keynes" here means pre-*General Theory*.
4. Palley (2015b, 46) also complains about the "boiler plate language" in which MMT authors refer to the better-known writers from the history of economic thought
5. Palley (2015a, 4) himself has provided these references.
6. Palley (2015b, 50) claims that Tobin and Golub (1998) among neoclassical economists fully anticipated the main tenets of MMT but provides only a "one-liner" of a quote to substantiate this. This work cited is based on Tobin's graduate lecture notes over many years, but was only eventually published more-or-less simultaneously with Wray's book on *Modern Money* (1998). A decade or so earlier I remember attending a symposium on money involving Tobin, and including Hicks, Hollander, Laidler, MacKinnon, Tarshis, and the then Governor of the Bank of Canada, John Crow. Hicks was at that point preparing his later posthumously published *Market Theory of Money* (1989). I do not recall that the question of "taxes driving money" was even discussed, never mind being a central issue. However, it would surely have been front and centre at most heterodox meetings shortly afterwards?
7. This being the case, it is therefore quite a strange phenomenon, as Palley (2015a, 5) does not fail to note, that MMT theorists have consistently failed to provide any such model.
8. The "non-accelerating inflation rate of unemployment".
9. This is usually thought to represent the idea that if the CB did not actively intervene to set the nominal policy rate of interest rate it would fall to zero and, moreover, that this would be a "good thing".

References

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

Bell, Stephanie 2001. The role of the state and the hierarchy of money. *Cambridge Journal of Economics*. (As reprinted in *Concepts of Money: Interdisciplinary Perspectives*, ed. G. Ingham, 496–510, Cheltenham: Elgar, 2005)

Blinder, Alan and Robert M. Solow. 1973. Does fiscal policy matter? *Journal of Public Economics* 2: 319-37.

Christ, Carl. 1968. A simple macroeconomic model with a government budget constraint. *Journal of Political Economy* 76: 53-67.

Collins, Randall. 1986. *Weberian Sociological Theory*. London: Routledge.

Friedman, Milton. 1960. *A Program for Monetary Stability*, New York: Fordham University Press.

Goodhart, Charles. 1989. The monetary base. In *The New Palgrave: Money*, eds. J. Eatwell, M. Milgate and P. Newman, 206-11, London: Macmillan.

Graziani, Augusto. 1984. The debate on Keynes's finance motive. *Economic Notes*: 5-32.

----- . 1990. The theory of the monetary circuit. *Economies et Societies* 24: 7-36.

----- . 2003. *The Monetary Theory of Production*. Cambridge: CUP.

Graeber, David. 2011. *Debt: The First 5000 Years*. Brooklyn: Melville House.

Hicks, John. 1989. *A Market Theory of Money*. Oxford: Oxford University Press.

Humphrey, Thomas. 1977. Two views of monetary policy: The Attwood-Mill debate revisited. *Federal Reserve Bank of Richmond Economic Review*. (As reprinted in *Money Banking and Inflation*, 271-9, Aldershot: Elgar, 1993).

Ingham, Geoffrey. 2004. *The Nature of Money*. Cambridge: Polity Press.

Innes, A. Mitchell. 1913. What is money? *The Banking Law Journal*. (As reprinted in *Credit and State Theories of Money*, ed. L. R. Wray, 14–49, Cheltenham: Elgar, 2005)

----- . 1914. The credit theory of money. *The Banking Law Journal*. (As reprinted in *Credit and State Theories of Money*, ed. L. R. Wray, 50–78, Cheltenham: Elgar, 2005)

Kam, Eric. 2005. A note on time preference and the Tobin effect. *Economics Letters* 89: 137-42.

----- and John Smithin. 2012. A simple theory of banking and the relationship between commercial banks and the central bank. *Journal of Post Keynesian Economics* 34: 545-49.

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

Keynes, John Maynard. 1930. *A Treatise on Money: vol 1*. (As reprinted in *Collected Writings* ed. D. Moggridge, London: Macmillan, 1971)

-----, 1936. *The General Theory of Employment Interest and Money*. (As reprinted by Harcourt Brace: London, 1964)

Lavoie, Marc. 2010. Changes in central bank procedures during the sub-prime crisis and their repercussions on monetary policy. *International Journal of Political Economy* 39: 2-23.

Marx, Karl. 1884. *Capital: vol 2*. (As reprinted by Penguin Books: London, 1976).

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

Mundell, Robert. 1961. A theory of optimum currency areas. *American Economic Review* 51: 657-65.

Palley, Thomas I. 2015a. Money, fiscal policy and interest rates: a critique of modern money theory. *Review of Political Economy* 27: 1-23.

----- 2015b. The critics of modern money theory (MMT) are right. *Review of Political Economy* 27: 45-61.

Parguez Alain and Mario Seccareccia. 2000. The credit theory of money: the monetary circuit approach. In *What is Money?* ed. J. Smithin, 101–23. London: Routledge.

Robertson, Dennis. 1940. *Essays in Monetary Theory*. London: P.S. King and Son.

-----, 2002. Phillips curve. In B. Snowdon and H.R. Vane (eds), *An Encyclopedia of Macroeconomics*, Cheltenham: Edward Elgar, 581-5.

-----, 2003. *Controversies in Monetary Economics: Revised Edition*. Cheltenham: Edward Elgar.

-----, 2007. A real interest rule for monetary policy? *Journal of Post Keynesian Economics* 30: 101-18.

-----, 2009. *Money, Enterprise and Income Distribution: Towards a Macroeconomic Theory of Capitalism*. London: Routledge, 2009.

-----, 2013. *Essays in the Fundamental Theory of Monetary Economics and Macroeconomics*. Singapore: World Scientific Publishing.

John Smithin: *Endogenous Money, Fiscal Policy, Interest Rates and the Exchange Rate Regime*

Tobin, James, 1982. Money and finance in the macroeconomic process. *Journal of Money Credit and Banking* 14: 171-204.

Tobin, James and Willem Buiter. 1976. Long run effects of monetary and fiscal policy on aggregate demand. In J.L. Stein ed. *Monetarism*. Amsterdam: North Holland.

----- and S. Golub. 1998. *Money, Credit and Capital*. Boston: Irwin McGraw Hill.

Tymoigne, Eric and L. Randall Wray. 2015. Modern money theory: a reply to Palley. *Review of Political Economy* 27: 24-44

Wicksell, Knut. 1898. *Interest and Prices: A Study of the Causes Regulating the Value of Money* (As reprinted by Augustus M. Kelley, New York, 1965)

Wray, L. Randall. 1998. *Understanding Modern Money*. Cheltenham: Elgar.

----- 2012. *Modern Money Theory*. London: Palgrave Macmillan.