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Some Puzzles about Money, Finance, and the Monetary Circuit[1]

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Introduction

The arguments of this paper are derived from three main sources. The first is the set of ideas associated with the late twentieth century "Franco-Italian" circuit school of monetary theory, including such writers as Graziani (1990), Parguez (1996), Schmitt (1988), and others. The circuit theorist saw clearly that in order to advance Keynes's idea of a monetary theory of production (MTP) it was necessary to go beyond the arguments of the *General Theory* (1936) and analyze in full the workings of the monetary circuit (Graziani 2003, Parguez and Seccareccia 2000, Rochon 1999.).

The second source is a reconsideration, or re-evaluation, of the position of one of the leading representative of the "Austrian" school of economics (Hayek) in the famous Keynes-Hayek-Sraffa debate of the 1930s. This is a point of view diametrically opposed to that of the later "circuitistes", and it is hardly likely that any reconciliation is possible at this late date. However, there is one interesting point about Hayek's style of argument that remains which is his use of numerical examples to make his case. This occurs for example, in the paper "The 'paradox' of saving",[3] a critique of the "under-consumptionist" theories put forward by Foster and Catchings in the 1920s (Hayek 1931, 96-118). Also, there are numerical examples in chapter 2 of *Prices and Production* (Hayek1935, 44-62).What is interesting about these exercises, however, is that although they are clearly meant to refer to "real" goods and services, or real

saving and investment, in some sense, they are nonetheless expressed in terms of the money of account (which was the British pound for Hayek, Keynes, and Sraffa). In effect, the "money stream" is treated as identical to the real flow of goods and services, a point astutely noted by Sraffa (1932, 208), in one of his critical contributions. Without going into the precise details at this stage, one obvious problem is that if the sums of money under consideration are supposed to (*e.g.*) *increase* from one period to the next, how can that actually happen without there being *literally* more money in existence? Yet credit and money creation is the one thing that the Austrians economists specifically wanted to rule out (Sraffa 1932, 199). Note, moreover, that the classical and neo-classical concept of the velocity of circulation is of no real use in explaining away this problem (Smithin 2010, 54-5). Even though (*e.g.*, in the case of simple paper money) a single note, say a $20 bill (the dollar being the unit of account in contemporary Canada), can circulate any number of times and *appear* to generate $100, $200, or $300 worth of business, really any amount, in a given economic space, during a given period, this does not "close the circuit", and is irrelevant to anyone outside the circle requiring a "cash" payment from any of the participants.

A third source for the paper derives from my own attempts over a number of years to explain the issues about endogenous money, the realization of monetary profits, the monetary circuit, and so forth, to students of varying levels of preparation at both undergraduate and graduate levels, in economics and business administration programmes. As with Hayek nine decades ago, experience shows that numerical examples are quite often useful in trying to make a point. In what follows, therefore, just such a numerical example is discussed. What is crucial in this type of exercise, however, is always to distinguish between the theoretical "real dollars" that

are meant to stand for the real flow of goods and services (in *whatever* sense that term is supposed to be meaningful) and dollars as such. This seems to be exactly what was *not* done in the 1930s debate. Yet the arithmetical logic is, in fact, only about "dollars as such", what Weber (1927) would have called the "formal validity of money".

Three "Puzzles"

This paper attempts to further the agenda by considering a number of "puzzles" that arise in the study of money, finance, and the circuit itself. The three puzzles it will be interesting to discuss are as follows:

(i) *The Velocity of Circulation*

The notion of the velocity of circulation is the means by which classical, neoclassical and mainstream economists have hoped to *avoid* the issues raised in circuit theory. More than ninety years ago, in the short textbook *Money* (1922), the pre-Keynes Cambridge economist Dennis Robertson[4] tried to explain the idea of velocity to his readership by means of a "parable" (a simple scenario), but only succeeded in demonstrating the emptiness of the concept. A reconsideration of Robertson's failure is therefore a useful way to show exactly why a theory of the circuit is necessary.

(ii) *Marx's Version of the Circuit: How does it Work?*

The concept of the monetary circuit is a term that originated in Marx. Moreover, in some writings before the *General Theory,* Keynes (1933a, 1933b) also seemed to allude to this idea, *via* the notion of the MTP. However, these references did not survive in the published version in

1936 (Tarshis 1989). Nor did Keynes seem particularly confident about the process in the debates about interest rate theory in the *Economic Journal* and elsewhere, the following year (Graziani 1984). 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.

How exactly was the original Marxian circuit supposed to work? A starting point for an answer is to write out the scheme from *Das Kapital* II, in full, that is *M – C ... P ... C' –M'* (Marx 1884, 109),[5] and try to explain precisely what *M' – M,* and *C' – C,* are supposed to represent.

(iii) *Making Money from Making Widgets?*

The (so-called) "widget problem" was addressed by Smithin (2013) in a *Festshrift* for Professor Alain Parguez (Rochon and Seccareccia 2013), one of the co-founders of the circuit school. It essentially presented a numerical example of the realization problem and how to solve it. It was thereby possible both to illustrate and clarify, in a fairly simple way, a number of the issues that have arisen in the development of the MTP.

Robertson (1922) on the Velocity of Circulation

Robertson's parable about the velocity of circulation is succinctly described in the following passage from *Money* (1922):

> On Derby Day[6], two men Bob and Joe, invested in a barrel of beer,and set off to Epsom with the intention of selling it at retail on the racecourse at 6d[7] a pint, the proceeds to be shared equally between them. On the way Bob, who had one three- penny-bit left in the world, began to feel a great thirst, and drank a pint of the beer, paying Joe 3d as his share of the market price. A little later Joe yielded to the same desire, and drank a pint of the beer, returning the 3d to Bob. The day was

> hot, and before long Bob was thirsty again, and so, a little later, was Joe. When they arrived at Epsom, the 3d was back in Bob's pocket, and each had discharged in full his debts to the other: but the beer was all gone. One single three-penny bit had performed a volume of transactions which would have required many shillings[8] if the beer had been sold to the public in accordance with the original intention.

What is Missing in Robertson's Account?

The footnotes below clarify some of the archaisms in this old text. The situation it presents, however, could well be a case study in a business school even today. If we treat it as such, most non-economists reading this passage would surely immediately sense that something is wrong. What is it? From the purely *business* point of view the episode seems (and *is*) disastrous, the would-be entrepreneurs have literally "drunk the profits". The strange thing, however, is that Robertson does not even seem to notice this. His point is to illustrate the idea of the "transactions" velocity of circulation which means how rapidly the money, in this case the coin, changes hands. In reality the story shows the emptiness of this concept.

The reason that Robertson misses the most obvious feature of the situation he has himself created is that according to the theory of neoclassical economics there is actually nothing "wrong" with it. The beer has been produced and drunk, and has given utility or satisfaction. It does not matter to whom. In the jargon of the economics discipline there has been an "optimal allocation of resources", "utility is maximized" and so forth.

The Importance of Money Profits in the Real Economy

It therefore seems, in spite of what is still taught in colleges and universities every day, that the neoclassical theory of utility is not, and cannot be, an accurate theory of capitalism. There is no

mechanism within it for the realization of profits in money terms which is how the system works in practice. The same criticism could be made of the rival "Austrian" subjective theory of utility, and indeed all similar approaches to the question of economic value.

Interestingly enough, there also may be nothing amiss in this story from the perspective of either Marxism or classical economics. Marx, for example, had a labour theory of value, which has in common with utility theory that it is a real or "substance" theory of value, rather than a monetary or social theory (Ingham 2004, 204). In the Marxian case, exploitation supposedly occurs when the value of the working capital (variable capital) measured in labour time, needed to sustain the workforce, is less than the total value created also measured in labour time, during the working day. For example, during an eight-hour day the time necessary to produce the equivalent in goods and services of the wage bill may be only five hours. What is produced in the remaining three hours is the surplus value, and goes to the employer as profit. Joan Robinson (1962, 46) probably had the best answer to this, from a Keynesian point of view, when she wrote that "the misery of being exploited by the capitalists is nothing compared to the misery of not being exploited at all".

Be that as it may, it could plausibly be argued that the issue does not arise in Robertson's scenario. Everything hinges on the meaning of the term "invest" in the text, which is always highly ambiguous when used by professional economists. Does this mean simply to put down money or does it mean *invest* in the sense of putting in time and effort? If the latter, Roberston's tale becomes a case in which the original producers consume all their output and there is no surplus to begin with. Even if Robertson "really" meant the former there is nothing to stop the reader from thinking about the implications of a similar case in which the entrepreneurs are

indeed the original producers.

The take-away from all this is that the realization of profits in a specifically monetary form is much more important in reality than it is ever allowed to be in most of economic theory, either of the left or the right. One of the crucial advantages of thinking about credit creation and debt retirement in terms of a circuit is that it brings out this essential point inescapably.

The "Transactions" Velocity of Circulation?

The main problem in our example is simply that there not actually enough money in existence to purchase the full money value of the output. This is a point often raised in the past by both Keynes's (1936, 371) "brave heretics", and Robertson's (1940, 39) own "monetary cranks" alike, but it was never made perfectly clearly. Neoclassical economics has therefore always been able to elide the issue in both the macroeconomic and microeconomic contexts, using the concept of velocity. The quantity theory of money was usually invoked at the macroeconomic level, but, it is also possible to write down a "transactions version" of the quantity equation to describe our simple microeconomic example. In the traditional notation this would be:

(1) $MV = PT$

Here M is the money supply (in this case the single coin) V is the transactions velocity of circulation, P is the price *per* transaction, and T is the total number of transactions. In the beer scenario, Robertson does not actually say how many transactions there are but let us suppose, for the sake of argument, that there are twenty of them (20 pints of beer). Then $M = 3$, $P = 6$, $T = 20$ and, (1) can be solved as follows:

(2) $V = (6*20)/3 = 40$

This "rapid" velocity of circulation is thus supposed to save the day for neoclassical economic theory. All such sophistry is bound to collapse, however, as soon as anyone simply asks the entrepreneurs "show me the money". The single coin is all there is.

Marx (1884) on the Monetary Circuit

If Robertson's text is archaic, Marx's is still older by thirty-eight years, but nonetheless remains highly relevant to our present concerns. As suggested above, taking the production process itself for granted, the full circuit in Marx could be written as:

(3) $M - C - C' - M'$

The entrepreneurs start with a sum of money (*e.g.*, 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. The entrepreneurs then sell the enhanced commodities, *C'*, for more *money*, *M'*, and the difference (*M'* – *M*) is the realized money profit. This is capitalism according to Marx which is not dissimilar to the views of Weber, Schumpeter, Keynes and others.

What is Missing in Marx's Account?

To proceed any further with the argument we would first need to define what is actually meant by real value, a very old question in economics. As already mentioned, in Marx, and in some versions of classical economics there was a labour theory of value. Later neoclassical economics,

so-called Austrian economics, and modern mainstream economics all fell back on the nebulous concept of utility.

Whatever the value theory, however, and more to the present point, if the money supply is supposed to be fixed how can it actually be p*ossible* for *M'* to be greater than ***M,*** and hence for 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. To the contrary, modern accountants do implicitly ask it of modern businesses every day. The essence of what is at stake may well be contained in a question that economic sociologists do sometimes ask, but economists almost never, namely "where do profits come from" (Collins 1986, 122)? The point being that the system must first generate positive aggregate profits in money terms *before* any "real" profit or surplus can come into existence for the parties to dispute. Granted, even if $M' = M$ it would still be possible for *some* firms to make profits while others make losses. This is the usual meaning of the term competition. But this is *not* the answer. It is still *im*possible for firms on average and 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 (and therefore money creation) by the banking system.

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

$$Y = C + I + G + (EX - IM) \tag{4}$$

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.

For theoretical purposes these symbols should refer to real flows of funds (in money terms deflated by a Fisherine "ideal" price index), rather than the imputed values actually provided by the statisticians. This is because the reported GDP numbers are not "stock-flow consistent", a theoretical requirement endorsed by many heterodox writers (Godley and Lavoie 2007, Palley 2015, Wray 2012). In practice, the GDP numbers are all we have for empirical work, but in no way are they 100% consistent or accurate from the point of view of monetary theory. With this caveat in mind, the circuit becomes:

(5) $M - Y - M'$

If $M' = M$, there is 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 for there actually to be no *Y*. Then the circuit will be simply:

(6) $M - M'$.

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

If $(M' – M)$ is greater than zero, 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 or the inflation rate will be "low and stable". If *Y* is greater than zero, but $(M' – M)$ is much greater than *Y*, there will be production but prices will be also 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.

Smithin (2013) on the "Widget Problem"

As noted above, in Smithin (2013) I suggested the use of simple arithmetical methods to illustrate the basic problems that arise in any consideration of the monetary circuit, as a sort of antidote to the examples offered by Hayek in some of his early paper. What follows however, is an alternative numerical example, with some changes and additional nuances specifically to highlight the most important questions that have arisen in the course of the modern development of the MTP.

An Alternative MTP Scenario

Suppose an entrepreneur borrows $1,000,000 to make "*widgets*". The widgets take one year to produce, but the entrepreneur pays the workers "in advance" (right at the start) and pays out the whole sum of money.

There is a "Wicksellian bank" in the system, that is, a single bank representing the financial system as a whole, whose liabilities "count as" money (Searle 2010). Suppose that this bank has simply been given a "charter" (a Canadian legal term) to make it legitimate, and starts out with zero reserves and zero capital. The bank charges 10% simple interest on loans, but does not insist on repayment of either principal or interest until after the production period is complete. We further assume that whenever goods are available all deposit holders among the "non-bank public" will try to spend 80% of their money holdings at that time and save 20%. No other transactions (financial or otherwise) occur in this "economy". All bank profits will be retained by the bank owners to build up their "capital".

Right after the charter is granted the bank's balance sheet will not be impressive. There

will be zeros all round as shown in *Table 1*.

Table 1*: *"Wicksellian Bank" Balance Sheet #1
(When the charter is granted, just before the start of year 1)

Assets		Liabilities	
Loans:	0	Deposits:	0
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	0		0

As soon as the first loans are made, however, the balance sheet will begin to look a bit healthier.

Table 2*: *"Wicksellian Bank" Balance Sheet #2
(At the beginning of year 1, after the first loan has been made.)

Assets		Liabilities	
Loans:	1,000,000	Deposits, non-bank public:	1,000,000
	----------		----------
	1,000,000		1,000,000

Next, the widgets are actually sold, at the end of year 1. Now, however, there is a problem. The widget-maker has a *loss* of $300,000, as shown in the income statement in *Table 3*. The firm and the bank both fail. There is an economic and financial crisis.

Table 3*: *Income Statement #1
(After the first year)

Receipts:	(0.8)*(1,000,000)	…….	800,000
(minus)			
Borrowing Costs:	1,000,000 + 100,000	…….	1,100,000
		(Loss)	- 300,000

Is There a Solution to the Crisis?

Yes, there is. The general solution is simply that one sector or another of the economy must *continuously* be indebted (as the net aggregate result of the decisions of everybody in that sector)

in order that current producers can make money profits. There are four possibilities to achieve this in the real world:

1. Other domestic firms borrow (*e.g.*, to make "widgets" again, or "super widgets", or "extra super widgets" *etc.*, *etc.*). In Keynesian terminology this would be a case of positive "animal spirits".

2. Domestic consumers borrow.

3. The foreign sector borrows.

4. The domestic government borrows (they can run a budget deficit).

In our example, therefore, we will have to let some other borrower become active before the original widgets come on sale. This will solve the crisis. The simplest possibility is to let (*e.g.*) a second widget-maker (a "second-mover") become active. The second-mover will thus borrow a further $1,000,000 just before the original widgets come to market (just before the end of year 1). At this point, the bank's balance sheet will momentarily look like that in Table 4.

Table 4*: *"Wicksellian Bank" Balance Sheet #3
(Just before end of year 1, when there has been new borrowing)

Assets		Liabilities	
Loans:	2,000,000	Deposits, Non-Bank Public:	2,000,000
	2,000,000		2,000,000

The first-mover can now make a profit. Now when the first batch of widgets comes on sale, there will now be a *profit* of $500,000 (not a loss). This is shown in the second income statement in *Table 5*.

Table 5*: *Income Statement #2
(With additional borrowing)

Receipts:	(0.8)*(2,000,000)	.....	1,600,000

(minus)
Borrowing Costs: 1,000,000 + 100,000 1,100,000

(Profit) + 500,000

It is important to note, however, that as the ultimately successful producer has now paid off the first loan the overall money supply left over (the total amount of bank deposits) must have fallen. Notice, also, that the bank itself now does have some capital, arising from the interest payments it has received. As seen in *Table 6*, it is clear that the ratio of bank capital to total assets is actually an endogenous variable.

Table 6*: *"Wicksellian Bank" Balance Sheet #4
(At the beginning of year 2, when there has new borrowing before the end of year 1, but after the original widgets have been sold and the first loan is paid off)

Assets		Liabilities	
Loans:	1,000,000	Deposits, Non-Bank Public:	900,000
		Bank Capital:	100,000
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	1,000,000		1,000,000

How Can the Second-Mover Make Profits?

The fall in the money supply raises the issue of how the second mover will now eventually be able to "cash in" and also make a profit. The answer has to be the same as before. One sector or another of the economy must continuously become indebted so that current producers can make a profit. There must be a third "player". So, let a *third* widget-maker become active and borrow $1,000,000, just before the *second* batch of widgets is brought to market (just before the end of year 2). The bank balance sheet will then look as it does in *Table 7*.

Table 7*: *"Wicksellian Bank" Balance Sheet #5
(At the beginning of year 3, when there has been new borrowing just before the end of year 2,

but before the second batch of widgets is sold)

Assets	Liabilities	
Loans: 2,000,000	Deposits, Non-Bank Public:	1,900,000
	Bank Capital:	100,000
2,000,000		2,000,000

Given these figures the second-mover can now make a profit which turns out to be $420,000, as shown in the income statement in Table 8. There should be a cautionary note attached to these results, however, as the profitability of widget-making now seems to be falling over time (in the first instance from $500,000 to $420,000).

Table 8**:** *Income Statement #3*

Receipts:	(0.8)*(1,900,000)	…..	1,520,000
(minus)			
Borrowing Costs:	1,000,000 + 100,000	…..	1,100,000
		(Profit)	+ 420,000

The bank will now have received a second interest payment (in addition to the second repayment of principal), so the balance sheet will now appear as in *Fig*. 6.

Table 9**:** *"Wicksellian Bank" Balance Sheet #6*
(At the beginning of year 3, when there has been new borrowing before the end of year 2, but after the second batch of widgets is sold and the second loan is paid off)

Assets	Liabilities	
Loans: 1,000,000	Deposits, Non-Bank Public:	800,000
	Bank Capital:	200,000
1,000,000		1,000,000

Next we are faced with the question of how can the third-mover make a profit? Clearly there must be a fourth player, and so on ... and so on. It is also natural to ask the question how long can this go on? The next two balance sheets, and the income statement in *Table 11*, will

illustrate one more iteration of the process before we go on to draw some general conclusions. At the end of year 3, the bank balance sheet will be as follows:

Table 10*: *"Wicksellian Bank" Balance Sheet #7
(At the end of year 3 when there has been new borrowing just before the end of year 2, but before the third batch of widgets is sold off)

Assets	Liabilities	
Loans: 2,000,000	Deposits, Non-Bank Public:	1, 800,000
	Bank Capital:	200,000
2,000,000		2,000,000

The third-mover therefore makes a profit of $340,000 (thanks to the fourth-mover), as shown in the income statement in Table 4. (This is, again, a lower profit than was made in the previous year).

Table 11*: *Income Statement #4

Receipts:	(0.8)*(1,800,000)	.....	1,440,000
(minus)			
Borrowing Costs:	1,000,000 + 100,000	.....	1,100,000
		(Profit)	+ 340,000

At the beginning of year 4 the bank balance sheet is therefore going to be:

Table 12*: *"Wicksellian Bank" Balance Sheet #8
(At the beginning of year 4, after there has been new borrowing before the end of year 3, and after the third batch of widgets is sold and the third loan paid off.)

Assets	Liabilities	
Loans: 1,000,000	Deposits, Non-Bank Public:	700,000
	Bank Capital:	300,000
1,000,000		1,000,000

By this time, it will be clear to the reader how the sequence of events is going to continue to unfold In the next section of the paper the numerical results can be used to address

some FAQs (frequently asked questions) about the process of monetary production.

Frequently Asked Questions (FAQs)

The cliché, from the internet, of "frequently asked questions" (FAQs) is quite useful here, for once, in summarizing the lessons to be learned from the preceding numerical example. What follows are six FAQs and six answers to them.

Question 1. *Would Imposing "Reserve Requirements" on the Wicksellian Bank solve the Potential Problem?*

Answer: This is a type of banking regulation that is designed to affect the composition of the asset side of the bank balance sheet and restrain lending. For example, the bank might be required to keep a certain percentage of total assets in the form of cash reserves. In the example this is a "Wicksellian Bank", the only bank in the system, there is no "cash" and reserves are not required.

To be able to deal with the issue more generally we would also have to ask what actually *is* the "potential problem" here? The problem is not *enough* lending. Strict reserve requirements would worsen the situation.

Question 2: *Would Imposing ex-ante "Capital Requirements" on the Wicksellian Bank Solve the Potential Problem?*

Answer: No. This would be a form of bank regulation designed to affect the composition of the liabilities side of the bank balance sheet, setting a minimum ratio of bank capital to total liabilities, or assets, supposedly to make the bank "sound". Once again, however, the actual problem is not the theoretical soundness of the bank, but rather that there is not enough lending. Moreover, if the bank had had (say) a

10% or 12% capital requirement to start with, the business would never have got off the ground. In reality, the capital-asset ratio of the bank is an endogenous variable that depends exclusively on how the bank performs.

In this particular case, note that, as the situation develops, the bank actually becomes over-capitalized. In the end, there will still be another crisis even if the bank passes every imaginable "stress test".

Question 3: *What is the Relation between Nominal* (*Money*) *Profit and Real Profits?*

Answer: This is indeterminate, as it stands, because the model has not been completely closed with an exact theory of price determination. (Various possibilities were briefly sketched out above).

The most important lesson to be learned from the example, however, does not have to do with alternative theories of inflation but rather the idea that there must always *be* money profits available before there can be any real profits. Therefore, if policy-makers are tempted (as is so often the case in practice) to try to reduce inflation simply by reducing nominal or money profits, this is bound to lead to trouble.

Question4: *Is our Solution a Permanent solution? Does it Lead to a Steady-State Equilibrium?*

***Answer*:** No, it is not a permanent fix. This is because bank capital keeps piling up. After first recovering, profits then gradually fall off again in each succeeding period. Eventually, if nothing changes, there will be another crisis. In effect, the

bankers

are not spending enough money on "riotous living" (Keynes 1936, 125). To get a stable equilibrium with positive profits *in this particular case* we would have to let the bank owners spend or dissipate their capital at the same rate as everyone else (that is, at 80%).

The general lesson for economic theory and policy is that, for each macroeconomic model proposed to shape the narrative, it is necessary to set out the exact conditions under which an equilibrium state may be achievable. It seems clear that in the real world, this will frequently require some sort of conscious stabilization policy.

Question5: *What is the Source of Interest Payments?*

Answer: This has been an important question within the circuit theory framework, as Graziani (2003, 149-50) explains. In the widget example, it is clear that the source of interest payments is purely monetary. The funds, from which it is necessary to make interest payments, arise (are created) in the course of the circuit itself. The rate of interest is a monetary phenomenon and not a (supposedly) real phenomenon, derived from such things as the "rate of time preference" or the "marginal product of capital".

Question 6: *Is there, or could there be, any role for bond financing in this scenario?*

Answer: The example draws attention to what circuit theorists have called "initial finance", the financing of the working capital whereby the production process gets off the

ground. As we have seen this is achieved by bank lending. However, there must also be "final finance", and, according to Graziani (2003, 69-70), "(t)he liquidity collected by firms *either* selling final commodities or issuing securities can be denominated final finance" (emphasis added). In the widget problem (at least when the system is actively generating profits) the final finance comes from the former source. However, the quoted makes clear that the two types of final finance are equivalent, so it would be quite feasible to set out another scenario in which firms also issue securities.

Most importantly, note that the process of working through the complete circuit with a numerical example has had the advantage of making it clear that the *ultimate* source of "final finance" must actually be the same as that of "initial finance". Some third party, somewhere in the system, must continuously be incurring debt. Otherwise, there would be no bank deposits in existence for anyone to be able to buy *either* securities or final commodities.

Conclusion

The title of an influential paper written some years ago by the economic sociologist Geoffrey Ingham (1996) was "Money is a social relation". This summarizes, very accurately, the essential point, always implicitly recognized in the MTP and other heterodox endogenous money theories, that money is a social institution, or "social fact", rather than a commodity in any sense of this term.

Nonetheless, as (*e.g.*) circuit theory has also made clear, money *is* part of a definite social

technology that *enables* the actual production of goods and services which could not proceed without it. It is therefore entirely "real", in the most general sense of this term. Money has deontic power, and important causal effects in our lives. In particular, credit and money creation are continuously necessary in order for firms to realize the profits, and for workers to receive the wages, on which the "method of enterprise" as Weber (1927) called it, *i.e.*, capitalism, depends.

Notes

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3. Hayek's original title in German included a question, "Gibt es einen 'Widersinn des Sparens'?". Keynes would have answered yes.

4. In reality, Robertson started out as Keynes's student. "Pre-Keynes" here means pre-*General Theory*.

5. Where " ... *P* ... " stands for the details of the production process.

6. The "Derby" is a horse race in England, held at Epsom racecourse in June (it goes on to this day).

7. The symbol *d* means a "penny", from the Roman "denarius".

8. A "shilling" was another coin in circulation at the time (1922) worth 12 pennies.

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