Full reserve banking: More 'Cranks' than' Brave Heretics'

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Abstract: This paper presents a critique of proposals for full reserve banking (FRB). It is argued that whilst the FRB advocates recognize the essential endogeneity of the money supply, they have failed to understand the Post Keynesian and monetary circuitist analyses of endogenous money. It is further argued that FRB would do little to enhance financial stability and could well lead to growth of the shadow banking system, and would be soon undermined by the development of alternative media of exchange and means of payment. Furthermore, the consideration of the intimate links under FRB of changes in the money supply and budget deficit lead to the conclusions that (i) budget deficits would often be smaller under FRB than under present arrangements, (ii) FRB could nullify the automatic stabilisers of fiscal policy and (iii) will lead to a *de-facto* dominance of monetary policy and the central bank over fiscal policy and democratic decision making. Finally, the argument that debt-free money would be created is examined and found wanting.

Key words: full reserve banking, endogenous money, budget deficits, debt-free money

Journal of Economic Literature codes: E42, E50, E62

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1. Introduction

The proposals which are often referred to as 100 per cent reserve banking and the 'Chicago plan' came forth in the aftermath of the financial crash of 1929 (though Soddy, 1926 pre-dates that, written from outside economics). The intention of such proposals would be to have a less unstable financial system and to specifically develop a banking system which on the one side did not fuel credit expansions in the upswing and on the other was not threatened by bank runs. A range of terms are used such as 100 per cent reserve banking, positive money, sovereign money as well as full reserve banking, and there are some differences between them, but contain sufficient commonalities to consider them together[2]. There is something of a dichotomy in the literature. One grouping comes from those who would trace their ideas back to the 'Chicago proposals' of the 1930s and earlier (e.g. Soddy, 1934, Fisher, 1935, 1936)[3] with some revival in the writings of authors such as Benes and Kumhof (2012)[4]. The other grouping forward proposals for full reserve banking often in conjunction with means of achieving sustainable growth (often zero or very low growth) and a steady state economy, and have used labels such as positive money, sovereign money and full reserve banking, and we use the last of those to encompass these. Writings in that vein include Dyson, et alia (2011), Ryan-Collins et alia (2011), Positive Money (2010), Farley et alia (2013), Jackson and Dyson (2012)[5]. These proposals have picked up some political support featuring in the Green Party of England and Wales election manifesto (Green Party, 2015) and being the subject of a report commissioned by the Prime Minister of Iceland (Sigurjonsson, 2015). The focus here is on the second group, and in this paper we do not further consider those coming from the 'Chicago proposals' tradition.

[1] Much of this paper was written whilst Malcolm Sawyer was visiting professor at University of Bergamo, Italy, and he is grateful to that University for hospitality and to Patrizio Lainà and Stefano Lucarelli for helpful discussions.

[2] Dixhoorn (2013) present a comparison of four monetary plans – Chicago plan, 'positive money', narrow banking and limited purpose banking, summarised in Dow et alia (2015), Table 1.

[3] See Phillips (1992, 1994) for the history of the fate of the 'Chicago plan'. See Lainà (2015) for a full recent discussion of the history of full reserve banking.

[4] See Fiebiger (2014) for a 'friendly critique'.

[5] See Dittmer (2015) for critique of some 'green' proposals.

These proposals which we group under the heading of full reserve banking (FRB) have the common thought that money should only be central bank issued money (hereafter central bank money) or deposits in bank accounts which are fully backed by monetary reserves of the central bank. There are some differences in the precise proposals and some are better worked out than others. But of particular significance is that the rationales for FRB differs substantially, and hence to judge its success or otherwise differs; and the proposals come from analyses of how the present banking and financial system operates (some of which may result from the proposals being developed in different eras).

It is important to note that the focus of the FRB proposals is on the banking system, and within it, on the nature and role of clearing banks, especially on their ability to create money (in the form of bank deposits) in the loan processes. The term 'bank' is used in different ways. In much macroeconomic analysis, 'bank' refers to financial institutions whose liabilities (in the form of deposits) serve as money; such clearing banks are generally regulated and have a close relationship with the central bank. However, a 'bank' in the legal sense is often identified with deposit taking financial institutions, which is a much broader notion that clearing banks in the macroeconomic sense. The financial system contains many other financial institutions, notably non-bank financial intermediaries and 'shadow banking'. These remarks are of significance for our discussion below in the following ways. The FRB proposals only relate to clearing banks, and not to the rest of the financial system. As such at most the FRB proposals can only address any issues of instability and of the allocation of loans and funds which can be laid at the door of the clearing banks. The growth of the financial system over the past decades has involved the growth of non-bank financial intermediaries and shadow banking, and of a wide range of novel financial instruments (derivatives, securitisation etc.), rather than of clearing banks.

The paper is organized as follows. Section 2 discusses the nature and implications of the endogeneity of the money supply and the failure of FRB supporters to appreciate and understand the large Post Keynesian and monetary circuitist (hereafter circuitist) literature on endogenous money. Section 3 considers the sources of financial instability and argues that a FRB system would do little to reduce instability. In section 4 it is argued that other financial assets (whether in the form of bank deposits or other financial instruments) would

quickly emerge which would serve as media of exchange and means of payment[6]. The relationship between money and budget deficits in a FRB world is next considered in Section 5. The arguments as to whether money under FRB would constitute debt-free money are reviewed in section 6. The final section offers some brief concluding comments.

2. FRB and endogenous money

Much of the advocacy of full reserve banking starts from observations such as '97 per cent of money is created by banks', 'most people believe that our money is currently created by the nationalised Bank of England. It isn't. … In fact, commercial banks create new money (in the sense of money in bank accounts) whenever they make loans, and that money disappears when the loan is paid back' (Green Party 2015). There can be some outrage that it is private banks rather than the (publically owned) central bank which creates money: 'Allowing money to be created in this way affect us all [and] … is the reason we have such a pronounced and destructive cycle of boom and bust, and it is the reason that individuals, businesses and government are overburden with debt' (Jackson and Dyson, 2012, p. 22). Money is viewed as currently endogenously created by clearing banks, and the positive analysis of the present monetary system shares much with the endogenous money analysis of the Post Keynesian school[7]. However, the FRB respond to this by seeking to introduce what could be termed as an 'exogenous money' normative analysis whereby the amount of money in circulation is determined by the central bank (and the links between FRB proposals and monetarism are set out in Sawyer, 2015). The contradiction between an endogenous money positive analysis vis-à-vis an exogenous money normative analysis should not be a surprise. As Schumpeter (1954, p. 289) recalls 'an economist may … be full convinced that theoretical metallism is untenable [that is the proposition that the purchasing power of money is determined by the value of the metal that makes it], and yet be a strong practical metallist' because of the lack of confidence in the monetary authorities

[6] The distinction is drawn between a medium of exchange which as the phrase suggests serves to facilitate exchange and a means of payment which has the additional feature that it is used to discharge debts including taxes and fines.

[7] Some advocates of FRB do not accept a full endogenous money view – for example Daly (2013) writes as though there are reserve ratios which constrain the volume of bank deposits whereas the endogenous money view would find the reserve ratio not an effective constraint as reserves would be created by the central bank if and when required.

or politicians. In similar way, an economist may theoretically support the endogenous money analysis but for all practical reasons be an advocate of exogenous money.

The advocacy of FRB is often linked with a critique of the present arrangements under which transferable bank deposits are the major part of what is regarded as money, and that banks create bank deposits in the process of loan creation. Post Keynesian macroeconomists and circuitists have been actively analysing endogenous money for many decades. Yet whilst the FRB advocates recognize endogenous money (and then propose to replace it with exogenous money), they barely acknowledge the Post Keynesian and circuitist analysis, and as a consequence make a number of errors. These would include:

(i) In the money supply process of endogenous money, assets (loans) and liabilities (deposits) are created by banks, whereas assets (deposits) and liabilities (loans) are created for the non-bank public. There is no net wealth creation, and specifically banks do not create their own wealth. Thus, there is no seignorage for banks, contrary to claims such as 'Why should the public pay interest to the private banking sector to provide a medium of exchange that the government can provide at little or no cost? And why should seigniorage (profit to the issuer of fiat money) go largely to the private sector rather than entirely to the government (the commonwealth)?' (Daly, 2013). The profits for banks come from the difference between the rate of interest on loans (with allowance for default) and the costs of deposits including operating costs and any interest payments. This would hold whether loans create deposits (as in the endogenous view) or deposits create loans (as would be the case under FRB).

(ii) In contrast to the monetarist exogenous money view that growth of the money supply determines the rate of inflation, the endogenous money view is that the processes of inflation generate increases in money. Production requires the provision of finance to enable inputs including labour to be paid, and when input prices and wages are rising, then more finance is required for production, and that is introduced through loans, thereby creating money[8]. Thus blaming rising money supply for inflation does not fit with the endogenous money approach. This leads the FRB school into the mistaken belief that inflation can be controlled by the rate of increase of the money supply: 'at the simplest level of analysis, if inflation is below the target, for instance the MPC could increase the money

[8] See, for example, Vernengo (2006) for discussion of inflation and endogenous money.

supply, while if inflation was above the target, the MPC would decrease the money supply' (Dyson et alia, 2011, p.11).

(iii) Money is generally held by an individual for a relatively short period of time prior to undertaking transactions requiring money. As such the 'demand for money' (more a willingness to temporarily hold money) comes from what Keynes termed the transactions motive, the precautionary motive and the finance motive. Usually, but not always, money is a poor vehicle for holding savings as it is not interest bearing. There are more attractive alternatives available which may be financial assets with a fixed nominal price, but not directly and immediately transferable to others and which may be termed 'near money', as well as other financial assets such as bonds and equity. The amount of money will adjust to that which is required for these transactions purposes. Thus it is not correct to say, as the FRB advocates maintain, that the amount of money is solely determined by the banks but rather depends on decisions of the non-bank public as well. The creation of money via loans depends on banks decisions and on borrowers seeking to take out loans; the stock of money which remains in existence depends on the willingness of the non-bank public to hold money. In the endogenous money perspective, the size of the stock of money is of little significance. It serves as something of a residual, and is essentially set by peoples' willingness to hold money, albeit temporarily as part of their transactions and precautionary demands.

(iv) Money is being continuously created and destroyed: the provision of bank loans creates corresponding bank deposits (which are regarded as means of payments) and repayment of bank loans eliminates both loans and deposits. A reflux mechanism operates whereby most or all of the money (bank deposits) which is created is then destroyed (Lavoie, 2001). The amount of money which is created within any time period depends on the willingness of banks to extend loans and of non-bank public to take out loans. The amount of money destroyed depends on loan repayment decisions made by the public. Thus the distinction must be made between the amount of money which is created and the amount which remains in circulation, and it is that distinction which is blurred in much of the FRB writing. When the reflux mechanism is complete, then the amount which eventually remains in circulation would be zero.

These remarks are closely related to the distinction between *initial finance* and *final finance*. 'Firms need finance in order to set up and carry on any kind of production. This kind of

finance can be properly named *initial finance* and must cover the total cost of the planned amount of production, no matter what the nature of the product (consumer goods or capital goods)' (Graziani, 2003, p.69). Graziani (pp.69-70) spoke of *final finance* as 'the liquidity collected by firms either selling commodities or issuing securities', and of the 'role of final finance … to make it possible to firms to repay their bank debt'. When related to the funding of investment, '*investment finds its final finance in saving*' (p.71, emphasis in original). Financing then refers to the availability of money to be used as a means of payment. Funding (as in, for example, the sources and uses of funds in corporate accounts) refers to the sources of funds. Funding refers to the source of funds as in the 'sources and uses of funds' in an accounting framework. The significance of the confusions in the FRB literature between the act of the creation of money and the amount of money which remains in existence is elaborated at the beginning of section 5.

3. **Would FRB enhance financial stability**?

It is rather clear that the financial system is subject to bouts of boom and bust and to financial crises. The claim made that FRB is that it would ensure financial stability. We examine that claim in a number of stages.

The arguments advanced by FRB advocates is well summarised by Dow et alai (2015, p. 3): 'The argument is that financial instability is inherent in the current system and is directly caused by the capacity of banks to create credit and thus money beyond the direct control of the central bank, and the effect of the lender-of-last-resort facility in protecting banks from the ensuing risks. Priority is placed on ensuring the provision of a safe money asset without the need for costly bank bail-outs. A sharp distinction is drawn between safe money assets (issued, or completely backed by, the state) and all other assets.' These are arguments with which both Dow et alia and ourselves disagree.

The first, and perhaps obvious, point to make is that the FRB proposals would only directly affect a small, if important, part of the financial system. It would impact on the creation of money and hence on banks narrowly defined, but not directly on the role of banks as financial intermediaries between savers and investors, nor on the role of other financial institutions. It would also leave untouched the so-called 'shadow banking' sector, and indeed the introduction of FRB and the constraints on short notice deposit accounts and the

removal of deposit insurance would likely produce a stimulus for the growth of 'shadow banking'[9,10]. As we have argued elsewhere (Sawyer, 2014), the money creation processes is and has to be an integral part of the financial system. It is thus difficult to extract the (narrow) banking function from the rest of the financial system and analyse one without the other.

A banking crisis is generally viewed in terms of several banks in danger of becoming insolvent. In general, the collapse of one bank does not constitute a general crisis. In our discussion here it is not necessary to consider the causes of a single bank failure, often arising from corruption and incompetence, and whether such failure that can be attributed to its role as money creator. As an aside it could be noted that any liquidity issues can be readily dealt with by the central bank as lender of last resort. Further, it may also illustrate the foolhardiness of some FRB advocates in removing deposit insurance.

The accelerator mechanisms provide a case where the ability of banks to provide credit 'on demand' and to expand their balance sheets without limit if they do so in a co-ordinated manner supports the generation of cycles (and hence what sometimes may be seen as boom and bust and crisis). From the demand for investment side, insofar as it is argued that investment is related to (expected) changes in demand and output, and that investment expenditure has a multiplier effect on output: thereby generating an accelerator—multiplier type of cycle. Such analysis assumed (often implicitly) that bank credit would be available to finance the investment. This was added to by with the notion of a 'financial accelerator' (Bernanke, Gertler, Gilchrist, 1996, 1999). In effect when there was an upswing, this would lead to banks being more favourable disposed to extending loans and to applying less rigorous credit tests.

Daly (2013) amongst others argues that under FRB banking investment expenditure is constrained by prior savings (in effect through the operation of the investment accounts)[11]. As such that would appear to imply that investment expenditure is constrained by prior

[9] 'There will be no need for deposit insurance or taxpayer-funded bailouts' (Jackson and Dyson, 2012).

[10] If we impose 100% reserve requirements on depository institutions, but stop there, we'll just drive even more finance into shadow banking, and make the system even riskier (Krugman, 2014).

[11] 'With 100% reserves every dollar loaned to a borrower would be a dollar previously saved by a time account depositor (and not available to the depositor during the period of the loan), thereby re-establishing the classical balance between abstinence and investment. With credit limited by saving (abstinence from consumption) there will be less lending and borrowing and it will be done more carefully — no more easy credit to finance the leveraged purchase of "assets" that are nothing but bets on dodgy debts.' (Daly, 2013).

savings, and which itself would be generated by investment expenditure. This would then appear to cut off the source of fluctuations, and hence cut off boom and bust. It would of course come at the cost of preventing any expansion of investment expenditure, inhabiting the possibility of e.g. innovation and job opportunities associated with it.

How far would a FRB system reduce this amplification of the business cycle? This is briefly discussed under four heads. The first is that savings behaviour itself can change, and whilst the volume of savings would be seen as determined by the volume of investment, the consequences for the level of output depend on the propensity to save: in the simple case income (output) is equal to investment divided by the propensity to save.

The second is that in a system where banks are prevented from creating loans which are not already matched by deposits, investment may be constrained in the upward direction by the availability of prior savings, but not in the downward direction. Thus a fall in the investment intentions would lead to a downturn in economic activity. This would have elements of being cumulative as investment falls then savings fall etc.

The third arrives from consideration of the national accounts relationship for a closed economy (explored further below) that S = I + BD (i.e. savings are equal to investment expenditure plus budget deficit). The combined volume of investment expenditure and budget deficit in time *t* determines the volume of savings during that period and the savings available to fund investment in the next period $t + 1$. Further the budget deficit is equal to the change in the money stock under FRB (as discussed below). Hence prior savings could be more or less utilised for investment purposes, and additional money is being created.

The fourth would come from the central bank providing additional funds to clearing banks to enable them to provide funds for investment (see, for example, discussion in Dyson and Jackson, 2012, Chapter 7).

The provision of loans to enable investment to take place can be seen as a permissive factor in the generation of cycles. The 'financial accelerator' mechanism can have a magnifying effect. These cyclical movements can be viewed in terms of 'boom and bust', and the downturn of the cycle seen in terms of a crisis. But, as illustrated in the simple multiplier-accelerator model, it does not always involve what may be termed a banking crisis. Here it is argued that the cyclical movements of the economy may be dampened under FRB, and at the likely cost of curtailing investment, but would not be eliminated.

Financial crises have many causes though it is often the case that 'asset price bubbles' are involved which in their nature burst at some point. The bursting of the bubble has consequences for balance sheets in so far as asset values fall relative to liability values. Minsky (1986) made the distinction between hedge, speculative and Ponzi finance: for 'hedge units' it is foreseen that cash receipts are sufficient to meet cash debt commitments; for 'speculative units' expectation that cash receipts cover interest payments but not loan repayments; and for 'Ponzi units' cash receipts not expected to cover both interest payments and loan repayments. The 'Ponzi units' then rely on the price of the asset acquired rising, and the rise in asset prices is unsustainable, leading to financial difficulties. The question here is whether a FRB regime would inhibit the development of asset price bubbles and the shifts towards speculative and Ponzi finance. We would suggest that as loans and credit would be available in a FRB regime (whether based on so-called 'investment accounts' held by banks or through the 'shadow banking' institutions), there would remain the strong probability that 'asset price bubbles' would develop.

4. How long would FRB last?

The bank accounts to be offered under FRB would be of two types. The first, labelled transactions accounts (similar to current or chequing accounts), which are readily transferable between individuals, would have the requirement that banks hold 100 per cent reserves of central bank money. The second, labelled investment accounts (or could be labelled savings accounts) would not have a specified reserve requirements, but deposits in such accounts would not be available to holder at short notice (a 7-day or 14-day notice period is often suggested). Banks would not be able to offer loans in transactions accounts, but would do so in investment accounts.

The FRB proposals are based on the clear assumption that the financial assets which are the generally accepted means of payment (and hence which can be regarded as fulfilling the key role of money) is under the control of the Central Bank and government. The State can (and usually does) determine what is to be the unit of account within a country – or at least determines the unit of account in which the State will conduct its affairs. The State can also determine which financial assets denominated in terms of the unit of account it will accept in payment of taxes and fines, and also determine which financial assets would be deemed acceptable in the discharge of private debt. Whilst this power of the State has a large say in which financial assets are treated as money, it does not fully determine what is an accepted

medium of exchange or means of payment. In circumstances of high inflation, it is often observed that alternative currencies (e.g. dollar) circulate, and an economy may become partially dollarized. In the context of full reserve banking, the question is whether the State has sufficient power to ensure that the transactions accounts of banks (as defined above) remain the key and sole medium of exchange and means of payment. In this regard the State has more power with regard to the means of payment in that it can set which financial assets it will accept in payment of taxes than it does in respect of the medium of exchange. This is much more than ensuring that the amount of central bank money in circulation meets the transactions needs of the economy, although as we shall shortly argue that would have strong implications for the budget deficit and government debt. It is to some degree an application of 'Goodhart's Law' that 'any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes.' (Goodhart, 1981, p. 116). It does however go further than that asking what the incentives would be for the development of alternative forms of bank accounts which would be used as (at least) a medium of exchange. Transactions accounts would be costly for banks to operate for which charges to the public would have to be made[12]. The development of alternative accounts, which could be directly or indirectly transferred between economic agents and which would be widely accepted as payment, would be the interests of banks (since they would not be required to keep anything like 100 per cent reserves which yield banks no income) and in the interests of bank customers who would have lower cost banking.

The constraints on the terms of the investment accounts arise in order to seek to prevent the growth of accounts which are close to money but which would not be included under transactions accounts. Savings accounts from which withdrawals can be on demand serve as near money: in an electronic age funds can be switched from savings accounts into current accounts and then transferred to others by two mouse clicks. All savings accounts with less than 7 or 14 days notice period would have to have the 100 per cent reserve requirement placed upon them – otherwise it would be a simple case to link savings accounts with transactions accounts whether in the same or different financial institution, and set

[12] 'In case of bank credit, the real lenders are the depositors including, notably, the recipients of checks. It is these whose convenience waiting is combined and coordinated by the banks and made available to borrowers who pay for -free banking service to depositors. The 100 per cent reserve scheme would make this free service impossible unless subsidized and might conceivably bring disappearance of deposit banking. … Why henceforth deprive depositors of possibility of free banking service?' (Brown, 1940, p.309)

arrangements for transfer of funds between the two types of accounts. Indeed it could go further and current accounts emerge under which transfers from one individual to another can be made but only with 7 days notice. This would in effect be little different to the pre-electronic transfer age when a cheque would take several days to clear. It would also be a feature of full reserve banking that overdraft facilities would not be allowed. It would also be necessary to forbid the shadow banking system offering short-notice accounts.

It is clear that there would be incentives for banks to develop forms of accounts which were not subject to the 100 per cent reserve requirement, and which would serve as media of exchange and means of payment. For the banks, there would be a loss of revenue on the operation of transactions accounts (as compared with present arrangements for current/cheque accounts) equivalent to the interest payments on loans. If the banks were to recoup that loss of revenue then bank charges to customers would be of the order of magnitude of the average rate of interest on loans (since for current accounts with low reserve requirements deposits are of the same order of magnitude as loans). The question would then be whether bank charges equivalent to say 4 or 5 per cent of deposits would provide sufficient incentive for the development of alternative, but not as convenient, bank accounts which would serve as a form of media of exchange and means of payment. There would though, we would argue, little which the government could do to prevent the emergence of such accounts.

5. Budget deficits and money creation

'When the Monetary Policy Committee authorises the creation of a certain amount of new money, the Bank of England's Issue Department will add that money to the government's Central Government Account. The government is free to use this money as it chooses in order to achieve its democratically-mandated policy objectives. Therefore the government may choose to:

a) Reduce the overall tax burden
b) Increase government spending
c) Make direct payments to citizen (sometimes referred to as a 'citizen's dividend')
d) Pay down the national debt.' (Positive Money, 2012, p. 6)

Similar arguments are made in other publications, and for example Jackson and Dyson (2012, Ch. 7) has an extensive discussion of how the 'additional money' can be spent.

Let us note the reversal of roles which this entails as compared with the present system. Now the government decides what expenditure it seeks to undertake, and then the central bank enables the government to finance that expenditure through the creation of central bank money. It is a fundamental proposition that government expenditure is never constrained through a lack of money since the central bank is always able to create the required money. The full reserve banking proposals in contrast now constrain government expenditure through setting down a rule as to how much money can be created. Under present arrangements, central bank money is created as required by the government, then circulates, and much returns to government through tax revenues and sale of bonds, and thereby much of the money created is subsequently destroyed. How much is destroyed would depend on the extent of the reflux mechanism, and in effect on how much of the central bank money the private sector wishes to hold, whether in the form of notes and coins by the non-bank public or of reserves by the banks. Under FRB, money created similarly through tax revenue, though it is not clear how far sales of bonds are used, a point to which we return below. Under FRB arrangements, the limit on the net creation of money comes from the use of the money supply as a control device, particularly for the control of inflation as noted above. The willingness of the public to hold, albeit temporarily, money is related to facilitating transactions, and the 'demand for money' could be anticipated to expand broadly in line with nominal income and expenditure. An expansion of the money supply in excess of the 'transactions demand' would in this exogenous money world, following the monetarist analysis of Friedman and others, lead to the bidding up of output and prices; and a failure of the money supply to grow in line with the 'transactions demand' would lead to falling output and prices. In terms of orders of magnitude, this would imply an increase in the stock of money of the order of 2 per cent of GDP – this comes from a postulated ratio of transactions accounts to GDP of 40 to 60 per cent, and a growth rate of nominal GDP of 4 per cent per annum (2 per cent real growth, 2 per cent inflation)[13]. The distinct limit which is placed on the growth of money supply feeds back onto constraints on the budget deficit and to constraints on the willingness of the central bank to finance public expenditure. In a particularly time, if the growth of the money supply was on track to

[13] The ratio of M1 to GDP is around 80 per cent; however M1 covers current accounts and instant access savings accounts, and we treat transactions accounts as very similar to current accounts.

exceed the target, then the central bank would be forced to deny financing for government expenditure.

The discussion on the creation of money in the FRB literature often conflates two notions – the act of the creation of money (in circuitist terminology the provision of initial finance) and the additional money which remains (which for the government would be part of final finance and funding). The act of the creation of money permits government expenditure to be financed and undertaken; it does not enable taxes to be reduced. The degree to which additional money leads to increased government spending, reduced taxation etc., depends on the budget deficit funding equation. This reads (consolidating government and central bank):

(1) $BD = G - T = DCBM + DB$

Where BD is budget deficit, G government expenditure, T tax revenues, DCBM change in central bank money and DB change in government bonds.

Under FRB, DCBM is equal to the expansion of transaction account balances, and to what is regarded as the money supply.

From national accounts perspective there is a relationship between net private savings and budget deficit as:

(2) $BD = G - T = S - I$

Where S is private savings and I private investment, and for simplicity we deal with a closed economy as the addition of open economy considerations would not affect the basic argument.

It then follows that:

(3) $S = DCBM + DB + I$

Hence savings are held in the form of changes in money holdings, government bonds and in the financial assets issued by corporations to fund investment.

The government can only spend more and/or tax less under FRB (as compared with present arrangements) if the budget deficit is larger, and this involves some combination of higher savings and lower investment.

The implication of much that is written on FRB is that under FRB budget deficits will be largely or entirely money funded[14]. We first consider the case where budget deficit is entirely money funded, and then turn to the case where budget deficit is at least partially bond funded[15].

When the budget deficit is entirely money funded:

(4) BD = G – T = DCBM = S – I

The first point which stands out from this equation is that the increase in the stock of money will need to be held as part of private savings. These motives for holding money are related to expenditure, and indeed money is then largely held in order to get rid of it. The transactions demand is often represented in textbooks in terms that the holding of money rises when income is received by an individual and then the holding gradually diminishes as money is spent. On that basis the transactions demand at the level of the individual would approximate, on average, around half of income per pay period. Transactions demand for money would be related to the level of income (per pay period), and tend to increase only in so far as income increases. However we have to consider the implications if the central bank get it wrong in the sense of creating more or less money than individuals are willing to absorb into their savings. When there is 'too much money', then the monetarist response was clear – individuals will seek to spend the 'excess', thereby bidding up output and prices (monetarist rarely considered the case of 'too little money'). Another response is that individuals would seek to hold their savings in the form of financial assets rather than in the form of money, thereby bidding up the price of financial assets.

The second point is the intimate link between the budget deficit and the change in the stock of money. It then becomes important as to whether the budget deficit determines the change in stock of money or whether the change in the stock of money determines the budget deficit. Under the FRB proposals it is clearly the latter. The central bank then imposes a target growth for the stock of money for the coming period (say year), and that in turn imposes a target for the budget deficit. Thus fiscal policy becomes completely subordinated to monetary policy.

[14] In publications such as Jackson and Dyson (2012), Dyson et alai (2011) we could find no discussion of budget deficit or of bond-funded deficit.

[15] Note that since it is taken that the transactions demand for money expands with nominal income and expenditure, and that in general there is an expansion in such transactions demand there would be a requirement under FRB for a budget deficit, and a budget surplus would be ruled out.

The imposition of a constraint on the budget deficit (or surplus) to be achieved in a specific year faces two problems. The arguments raised against a budget to be balanced in a calendar year apply when the budget deficit is to be set in accordance with monetary policy aims for a specified increase in the stock of money, and thereby a specified budget deficit.

The first of the problems comes from asking the question as to what reason is there to think that the pre-specified budget position target is compatible with a high level of employment. Take a simple model to illustrate the issue. Intended savings are taken as $s.Y$ (s propensity to save, Y output), and intended investment as I, and the pre-specified budget deficit (equal to target change in stock of central bank money) as x, then the balance between net private savings and budget deficit would give:

(5) $s.Y - I = BD = x$

and the level of output would be $(I + x)/s$. There is no reason to think that the level of output determined in this manner would correspond to a desirable level (e.g. one based on a high level of employment). An alternative way of expressing this is to simply ask how would $sY^* - I$ where Y^* is the high employment level of output as compared with x. If it is the case that $sY^* > I + x$, then there would be a deflationary situation, and $Y = (I + x)/s < Y^*$. If $sY^* < I + x$, then there could be an inflationary situation.

There have been long debates in macroeconomics as to whether a budget deficit is required for high level of employment or whether a balanced budget would correspond to a high level of employment. There are none (as far as we are aware) who argue that a budget deficit equal to the growth of the transactions demand for money (and as indicated above broadly in line with the nominal growth of the economy) would be compatible with a high level of employment.

The second problem arises from the well-known proposition that the tax and expenditure systems provide some degree of 'automatic stabiliser' – that as private demand fluctuates, a progressive tax system would tend to dampen down fluctuations in output and employment. It is also well-known that budget deficits move counter-cyclically falling in booms, rising in recessions, reflecting the operation of the automatic stabilisers. The FRB proposals would prevent the operation of automatic stabilisers, and would require that in the face of a downturn in the economy for taxes to be raised and public expenditure cut, hence reinforcing the downturn; in an upturn taxes would be reduced and the upswing reinforced. More boom and bust!

Budget deficits can be forecast, and attempts made to set tax rates and public expenditure levels to achieve the target budget deficit. The actual outturn on budget deficit depends on evolution of the level and composition of demand and of income (and the occurrence of unexpected events and emergencies). The achievement of a stock of money target would require the fine tuning of the budget deficit position to be compatible with the stock of money target.

'While changes in taxes are made infrequently, the amount of new money to be created will be determined on a monthly basis. Not being able to predict or influence the decisions of the MCC [Monetary Creation Committee] will mean the government will have little idea how much new money will be created each year and therefore by how much it can be able to reduce taxes' (Jackson and Dyson, 2012). This seems to suggest that the MCC does not announce what its money supply target is, and leaves the government guessing. The creation of 'new' money is required on a continuous basis in order for government expenditure to be financed and hence take place. But money is also destroyed when tax revenue is received, and the net increase in the money supply depends on the balance between public expenditure and tax revenues.

The argument which is applied in the quote with respect to taxation would also apply to public expenditure. Public expenditure can only take place if it is financed; if the central bank perceives that by financing public expenditure through money creation the overall increase in the money supply will exceed their target (after allowance for tax revenues and hence destruction of money), then the expenditure would be blocked. It could operate in the other direction as well – if the money supply were not increasing by the target amount, then the central bank would have to instruct the government to spend more.

It is not the target growth of the stock of money which would be unknown but rather the actual budget deficit outcome. The planned budget deficit may have been in line with the target growth of the stock of money (which would illustrate the complete subordination of fiscal policy to monetary policy). But the actual budget deficit would in general differ from the planned deficit, and if the planned deficit is to be achieved late adjustments to public expenditure and tax rate would be required. This can go in either direction – that is public expenditure may have to be suddenly reduced as the accounting period draws to a close, or suddenly increased. Not a recipe for the good management of public expenditure!.

Bond sales

An alternative scenario comes when the government continues to issue bonds as payment of the funding of a budget deficit[16]. Equation (1) above is restored, that is BD = DCBM + DB, though under FRB DCBM is the change in the overall money supply. The target (forecast) for the budget deficit is made by the fiscal authorities, tax rates and public expenditure plans made, and the resulting achieved budget deficit then depends on the 'state of the economy'.

This is a situation similar to the present one and the growth of central bank money is dependent on the conduct of monetary policy with the setting of interest rates and decisions made by the private sector in terms of the division between expansion of central bank money and (net) sale of bonds. It would however differ in two significant aspects. First, it would appear that DCBM would be set by the central bank in a monetarist fashion in pursuit of a monetarist target. The sale of bonds by the government would then need to conform to the above equation, and bonds in effect put out to auction to cover the difference between the budget deficit and the target increase in the money supply (rather than the setting of policy interest rate for policy purposes such as attempts to target inflation, influence the exchange rate, aid financial stability or whatever).

Second, DCBM would be equal to the expansion of the money stock (as defined as transactions accounts deposits), whereas under present arrangements DCBM only relates to central bank money and the over-all expansion of the monetary stock is much greater (and, of course is out of the control of the monetary authorities and depends on decisions by banks and the non-bank public over loans and deposits). The FRB would have the effect of changing the balance in the funding of budget deficit away from interest bearing bonds to non-interest bearing money. If that were successful then the interest payments made by government would diminish over time as central bank money replaced bonds as the component of public debt. However recall that since S – I = BD the private sector has to be willing to hold its savings in the form of non-interest bearing money.

The diminution of interest payments on government debt is also a diminution of income of the bond holders. For a given budget deficit this would enable the replacement of interest payments by other forms of public expenditure: how far that is deemed socially beneficial

[16] In the literature on 100 per cent reserve banking with often reference to the 'Chicago plan', it is generally recognized that budget deficit is partially bond financed: see, for example, Benes and Kumoff (2012).

would clearly depend on attitudes to the recipients of the interest on bonds and the forms of the additional public expenditure in other areas. However, as argued above, the public would face charges on their transactions accounts which are largely not present in the current system. Under FRB, the size of those transactions account is equal to the monetized component of government debt. The reduction in interest payments by the government would be equal to rate of interest times the monetised component of public debt, whereas the additional transactions account would be *c* times transactions account deposits (equal to the monetised component of debt) where *c* is percentage banking service charges. As argued above, banks would levy charges to replace the interest payments received on loans, and as such the level of *c* would be the same order of magnitude as the reduced interest payments on government bonds.

6. **Debt-free money**

'Because money will be created by the central bank free of any corresponding debt, money will now be a *source of wealth* for the population in aggregate.' (Jackson and Dyson, 2012, emphasis added).

It is self-evident that under the present arrangements money in the form of bank deposits is an asset as far as its owner is concerned and a liability as far as the bank is concerned. The creation of money (in the form of bank deposits) has the loan creation as the counterpart. Under FRB, central bank money is directly created by the central bank, albeit that for banks themselves operating transaction account there are two sides to the balance sheet – bank deposits (a liability as far as the bank is concerned) and reserves of central bank money (asset for the bank).

The argument that central bank money is not debt is based on the point that a request for the money to be repaid would be met by the issue of an equivalent amount of money. The line printed on British bank notes – promise to pay the bearer the sum of five pound— would be met by another five pound note. The other side of side of this is that the public cannot reduce the amount of central bank money in issue through repayment of debt (as would be the case with bank money).

It is then argued that central bank money (a la gold) is not debt – it is a financial asset for the public, but there is not a corresponding financial liability for the central bank. This has the implication that the 'golden rule' of stock flow consistent modelling, that there are no 'black holes' would be broken. The creation of money would be a financial asset without any

corresponding financial liability. Hence the creation of money raises the net financial assets, and carries the implication that the more money is 'printed' the better off (wealthier) people will feel. Yet there is no increase in the capacity of the economy to produce. It is also the case that deflation would be perceived to make people feel wealthier (which, of course, lie behind the infamous Pigou effect). To say that money is a source of wealth for the population is like saying that when the price of houses has risen, people are better off even though the housing stock and its quality has not changed.

One limit on the ability of the central bank to make people wealthier through the issue of money comes from the consideration of how much non-interest bearing money can be issued. Otherwise it reads like the 'magic money' tree! Recall that the money which is issued by the central bank has to be held by people as part of their transactions demand, and the over-all increase in the holding of money constitutes part of the financial assets in which savings are held. The limit is then the willingness of the public to absorb the additional money into their (average) holding of money. However, the average holding of money relative to nominal income may rise or fall depending on the velocity of circulation. A rise in the velocity of circulation would then be associated with a decline in the holding of money: the same level of income would then be associated with a lower money stock and hence lower wealth!

Two other considerations arise here. The first is to what degree can central bank money be said to be debt-free money? The central bank stands willing to accept back central bank money as payment of taxes or in exchange for bonds and bills. Thus the government will accept money as though it were its debt: it may not exchange money for gold, but it does exchange it for bonds and the discharge of tax obligations.

The second is whether under FRB the money issued by the central bank can be said to be costless as far as the holder of the money is concerned – that is the role of bank charges. As argued above, there would be bank service charges made relating to the transactions accounts.

7. Concluding comments

Historians of economic thought often argue that during the Great Depression mainstream economists were open to ideas of monetary heretics that in normal times they will have dismissed as cranks (e.g. Dimand, 1991). Once again, heretics seems to have the chance of having their voice heard and so do cranks. As Keynes (1936, p. 371) explained, heretics and

cranks share an acute awareness of real-world problems and of the limitations of mainstream economists to analyse, let alone solve them. However, there are also important differences between heretics and cranks. Heretics make their case by using alternative theories, policies and methodologies, while cranks base their arguments on analytical errors (Clark, 1997). In effect we argue in this paper that alternative theories and methodologies do not underpin the development of FRB proposals, and that the arguments of the FRB advocates are based on analytical errors, and it is in that sense that we describe them as more 'cranks' than 'heretics'.

It could also be said that one difficulty in evaluating proposals such as full reserve banking is that such proposals have a tendency to attract cranks[17]. We have sought in this paper to limit our attention to what appear to be the more serious proposals. Even then we find arguments which apply sleight of hand. The claim that central bank should increase money supply in line with the 'needs of the economy', and yet at the same time much more money will be available for public expenditure being a major one. We have argued in this paper that whilst the FRB advocates recognize the essential endogeneity of bank money, they have failed to understand the Post Keynesian and circuitist analyses of endogenous money. Then we have argued that FRB would do little to enhance financial stability and could well lead to growth of the shadow banking system. Further, we have argued that the FRB system would be soon undermined by the development of alternative means of payment. The consideration of the intimate links under FRB of changes in the money supply and budget deficit lead us to conclude that budget deficits would often be smaller than under present arrangements, FRB could nullify the automatic stabilisers of fiscal policy and lead to a dominance of monetary policy and the central bank over fiscal policy and democratic decision making. Finally we examined the debt free money argument, and found it wanting.

There are two further arguments advanced in favour of FRB. The first is that the present system lacks democratic control which would be overcome by a FRB regime. The second is that money based on loans which generates a 'growth imperative' which those favouring a zero growth environment find objectionable.

[17] One example: 'The creation of money by a private company (a bank) is ethically indistinct from that of a back-street counterfeiter turning out dodgy tenners, therefore it should be illegal' (Anne Belsey, Founder of the Money Reform Party. http://www.moneyreformparty.org.uk/about_money_reform.php)

Space precludes their detailed discussion but we mention them here to avoid any suggestion that we accept those arguments. The democratic argument appears to be based on the government's apparent ability to decide how money is spent. As we have argued above, this ability exists under present arrangements. Decisions on the amount of money to be created and to remain in existence would now lie in the hands of the so-called independent central bank. Decisions on the allocation of loans would continue to be in the hands of (private) banks. The most that could be said is that democracy would not be enhanced by FRB, and in some ways (such as giving power over fiscal policy to the central bank) would diminish democracy.

The 'growth imperative' comes from the drive for profits and investment, and that would not be diminished by FRB: the creation of money by the central bank and the generation of savings as a result of investment and the budget deficit (cf. equation 4) would allow investment to grow.

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