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HELICOPTER BEN, MONETARISM, THE NEW KEYNESIAN CREDIT VIEW AND LOANABLE FUNDS

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ABSTRACT

The purpose of this paper is to examine the intellectual roots of monetary dominance; specifically, the view that fiscal policy is largely irrelevant to counter-cyclical macro stabilisation and long-run output growth. A first step towards monetary dominance was the monetarist reinterpretation of the Great Depression. In the 1990s orthodoxy replaced money supply targeting with inflation targeting while preserving monetarist results. In this monetarism without money, fiscal policy was not needed in the short-run for macro stabilisation, and in the long-run could only lead to higher inflation rates and to higher real interest rates that lowered potential output by crowding-out private investment. Expansionary fiscal policy was mostly overlooked in the early 2000s New Keynesian literature on the zero lower bound; instead, the optimism on unconventional monetary policies failed to prepare policymakers for the Global Financial Crisis. The crisis demands far-reaching changes to macro theory not least of which is a recognition that the theory of loanable funds is incapable of providing any insight into how the financial system works in practice or the long-term effects of fiscal policy.

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Abstract

The purpose of this paper is to examine the intellectual roots of monetary dominance; specifically, the view that fiscal policy is largely irrelevant to counter-cyclical macro stabilisation and long-run output growth. A first step towards monetary dominance was the monetarist reinterpretation of the Great Depression. In the 1990s orthodoxy replaced money supply targeting with inflation targeting while preserving monetarist results. In this monetarism without money, fiscal policy was not needed in the short-run for macro stabilisation, and in the long-run could only lead to higher inflation rates and to higher real interest rates that lowered potential output by crowding-out private investment. Expansionary fiscal policy was mostly overlooked in the early 2000s New Keynesian literature on the zero lower bound; instead, the optimism on unconventional monetary policies failed to prepare policymakers for the Global Financial Crisis. The crisis demands far-reaching changes to macro theory not least of which is a recognition that the theory of loanable funds is incapable of providing any insight into how the financial system works in practice or the long-term effects of fiscal policy.

Keywords: *quantitative easing, monetarism, bank lending channel, loanable funds*

JEL codes: *B31, E51, E52, E58*

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1. Introduction

I am ready and willing to praise Friedman's contributions wherever and whenever ... both policymakers and the public owe Milton Friedman an enormous debt (Bernanke 2003).

I came to the conclusion that... you really didn't need to worry too much about what was happening on the fiscal end ... the link from fiscal policy to the economy was of no use (Milton Friedman in Taylor 2001: 119).

Large-scale expansions in central bank balance sheets were a major feature of the policy response to the Global Financial Crisis in major advanced economies. Towards the end of 2013 there were calls to redeploy traditional fiscal policy in view of concerns about secular stagnation and hysteresis effects. Nevertheless, in 2016, the level of real U.S. government consumption and investment expenditures was the same as in 2007 (and less on a per capita basis). Why did policymakers expect a robust recovery would take place while the government's direct contribution to aggregate demand was growing at an average rate of zero (or less)? The answer to that question lies with how orthodox economists have theorised expansionary fiscal policy as having, at most, a short-lived transitory impact on the levels of real output and employment and, at worse, no effect or even a negative effect. In this respect, orthodox economists owe an enormous intellectual debt to Milton Friedman.

Monetarist principles lived on after the failed experiment with monetarist operating procedures in the mid-1970s and early 1980s. The following monetarist propositions find broad support with orthodox economists: a vertical medium-run Phillips curve, a *positively*-sloped long-run Phillips curve, a structurally-determined natural rate of unemployment, a natural growth rate determined by supply-side considerations, Wicksell's natural rate of interest, crowding-out effects for fiscal policy and an irrelevance proposition for income distribution. During the 1990s the above monetarist propositions were refashioned into the New Consensus Macroeconomics (NCM). The NCM replaced money supply targeting with inflation targeting while preserving monetarist results. A Taylor rule for adjusting short-term interest rates was found to be capable of achieving short-run macro stabilisation. Fiscal policy was not needed in the short -run and, in the long -run, could only lead to higher inflation rates and higher real interest rates. Inflation-targeting frameworks were praised for achieving low inflation and for dampening fluctuations in the business cycle (Bernanke 2004a). It was the Great Moderation!

An academic background in the New Keynesian tradition was shared by both Chairs of the U.S. Federal Reserve (hereafter the Fed) who presided during the Global Financial Crisis; Ben Bernanke from February 2006 to January 2014, and Janet Yellen from February 2014 to February 2018. We shall focus our attention on the former. Bernanke was touted as a monetary policy expert due to his previous academic career. His research on the Great Depression spawned an acknowledged deep reverence for Milton Friedman and his monetarism.¹ This paper will document that the influence extends to excessive optimism about monetary policy and excessive pessimism about fiscal policy.² The rationale is to explore the role of monetarist philosophy in underpinning the intellectual roots of monetary dominance; specifically, the view that fiscal policy is largely irrelevant to counter-cyclical macro stabilisation and long-run output growth.

The analysis proceeds with Section 2 contrasting the Keynesian and monetarist lessons of the Great Depression. Keynes' (1930, 1936) advocacy of activist monetary policies is often overlooked. Section 3 looks at the influence of Friedman on Bernanke's research on monetary policy. Section 4 analyses how New Keynesians, in Bernanke in particular, understand the links between the central bank and the money creation process. Section 5 revisits the monetarist / Old Keynesian debate on crowding-

¹ See, in particular, Bernanke (2002a, 2003, 2004b).

² Similar views are, of course, shared by the orthodox New Keynesian and New Classical authors of the NCM. Nonetheless, this paper sees utility in highlighting the affinities between the most influential economist on the economics profession since the mid-1960s, and the Fed Chair during the majority of the Global Financial Crisis.

out versus crowding-in. Friedman (1972) failed to identify, or chose to ignore, what pure fiscal policy can do that pure monetary policy cannot. Still, despite its theoretical flaws and detrimental effects in practice, the notion that fiscal policy crowd outs private economic activity by draining the financial resources available for fixed investment remains influential. Section 6 concludes with some remarks on the ongoing debate about the implications of the financial crisis for macro theory.

2. Keynesian vs Monetarist Lessons of the Great Depression

The Keynesian interpretation of the Great Depression emphasised a lack of effective demand. It drew the conclusion that a *laissez-faire* market system required stabilisation by government intervention. The monetarist reinterpretation emphasised central bank mismanagement of the money supply. It drew the conclusion that automatic policy rules were necessary to eliminate the distorting effects of discretionary actions. Friedman/Schwartz (1963) were willing to imagine counterfactuals about how the Great Depression might have evolved if monetary policy—in the form of open-market purchases—had been more aggressive. The monetarist reinterpretation of the Great Depression makes Friedman a candidate for patronage of quantitative easing (QE).³ Bernanke (2014: 14) has said as much: ‘I think of QE as being a basic monetarist principle.’ Keynes also had a bit to say on monetary policies.

Keynes’ (1930: 386) remedy for a deep slump was to have the central bank ‘maintain a very low level of the short-term rate of interest, and buy long-dated securities either against an expansion of Central Bank money [i.e., QE] or against the sale of short-dated securities [i.e., a sterilised maturity extension program]’. These policies were adopted by some of the major central banks during the Great Recession. Keynes was more optimistic about the capacity of monetary policy to remedy a deep slump when he wrote the *Treatise of Money* than when he wrote the *General Theory*, nonetheless, he repeated his call for monetary authorities to undertake bold measures to influence the yield curve:

Perhaps a complex offer by the central bank to buy and sell at stated prices gilt-edged bonds of all maturities, in place of the single bank rate for short-term bills, is the most practical improvement which can be made to the technique of monetary management ... The monetary authority often tends in practice to concentrate upon short-term debts and to leave the price of long-term debts to be influenced by belated and imperfect reactions from the price of short-term debts;—though here again there is no reason why they need do so (Keynes 1936: 206).

Advocacy of aggressive monetary policies is not usually associated with Keynes. In the story told by critics such as Dennis Robertson and Milton Friedman, and Old Keynesians such as John Hicks, Keynes’ theoretical novelty was the *liquidity trap*.⁴ A great amount of unproductive ink has been spilled over the liquidity trap, defined as when money and bonds become perfect substitutes due to prospective capital losses, and as a horizontal segment for the LM curve. We say this for two reasons. First, regardless of the possibility of an absolute floor to nominal interest rates, the transmission of monetary policy will be diminished if interest rates on longer-term and/or riskier assets are sticky; or, if components of spending are relatively insensitive to interest rates (e.g., business fixed investment).

Second, while Keynes foresaw circumstances when policymakers may lose effective control over the complex of interest rates, he gave six reasons: (1) an unwillingness of monetary authorities to purchase longer-term and/or riskier assets; (2) virtually-absolute liquidity preference due to the speculative-motive for holding money; (3) external crisis; (4) liquidation crisis; (5) lenders’ risk; and, (6) operating expenses (*ibid*: 207-208). Friedman and others limited themselves to the second reason even though Keynes admitted ‘I know of no example of it hitherto. Indeed, owing to the unwillingness of most monetary authorities to deal boldly in debts of long term, there has not been much opportunity for a test’ (*ibid*: 207). Clearly, Keynes believed that if liquidity-preference became absolute, it may

³ Friedman (1997) also advised the Bank of Japan to undertake measures to increase the broad money supply.

⁴ The term *liquidity trap* was coined by Dennis Robertson and then popularised by Alvin Hansen in his textbooks.

still be possible for monetary authorities to regain effective control *if* they were willing to deal in debts of a longer-term and/or riskier nature. Keynes stressed the role of market psychology in determining long-term interest rates (and spreads between safe and riskier assets). He therefore recommended that monetary authorities undertake what is nowadays called forward guidance:

a monetary policy which strikes public opinion as being experimental in character or easily liable to change may fail in its objective of greatly reducing the long-term rate of interest, because M_2 [speculative-motive for money demand] *may tend to increase almost without limit in response to a reduction of r [long-term interest rates] below a certain figure*. The same policy, on the other hand, may prove easily successful if it appeals to public opinion as being reasonable and practicable and in the public interest, rooted in strong conviction, and promoted by an authority unlikely to be superseded (*ibid*: 203) [emphasis added].⁵

The italics emphasis highlights the passage quoted in Friedman (1972: 945), in an appendix, and as part of a series of quotes to defend his claim that the theoretical novelty of Keynes' position was the liquidity trap. The reader can see that the truncation was unfair to Keynes. The remarks on the speculative-motive are sandwiched between qualifications that matters depend on how markets perceive the intentions and steadfastness of a central bank undertaking unconventional measures. Friedman (1968: 3, 1970: 71, 76-77) propounded the myth that Keynes assigned no role in a deep slump to monetary policy. Keynes (1936: 197) in fact argued that the Fed did not go far enough:

Where, however, (as in the United States, 1933-1934) open-market operations have been limited to the purchase of very short-dated securities, the effect may, of course, be mainly confined to the very short-term rate of interest and have but little reaction on the much more important long-term rates of interest.

Friedman's Keynes was a straw man. The debate between Keynesians and monetarists is often cast as one about fiscal policy versus monetary policy. But the debate as it pertains to a deep slump should be cast as monetary *and* fiscal policies versus monetary policy. Keynes thought policymakers needed to fire on two cylinders. Friedman thought that monetary policy alone could do the job.

Figure 1 shows the index level for gross domestic product (GDP) and government expenditures on final consumption and gross capital formation (G). The data is adjusted for inflation and population. For perspective the change in the index level since 2007 is compared to an alternative scenario where the variables had continued to grow at the average annualised rate over 1996-2007. The panels show data for the U.S., the Euro Area, the U.K. and the average for Greece, Italy, Portugal and Spain (GIPS). The graphics serve to make the following point; namely, that advanced economy policymakers failed to heed the Keynesian lessons of the Great Depression. Initially, in 2008 and 2009, there was a consensus amongst global policymakers to use fiscal policy including discretionary stimulus to combat the fallout from the Global Financial Crisis. However, following the self-made Euro Area crisis starting in mid-2010,⁶ there was a turn to fiscal austerity. The economic recovery faltered and what could have been an avoidable stagnation set in.

It is beyond us as to why policymakers would expect real output to grow at its potential rate over a medium- to long-term horizon when the government's direct contribution to aggregate demand is growing significantly below that rate or, as in some countries, at an average rate of zero (or less). Support for a policy approach that disregards fiscal policy can be found in Friedman's monetarism. Consider Friedman's remarks in an interview, conducted in January 1996, and in response to the question of whether he would advocated expansionary fiscal policy during the 1930s:

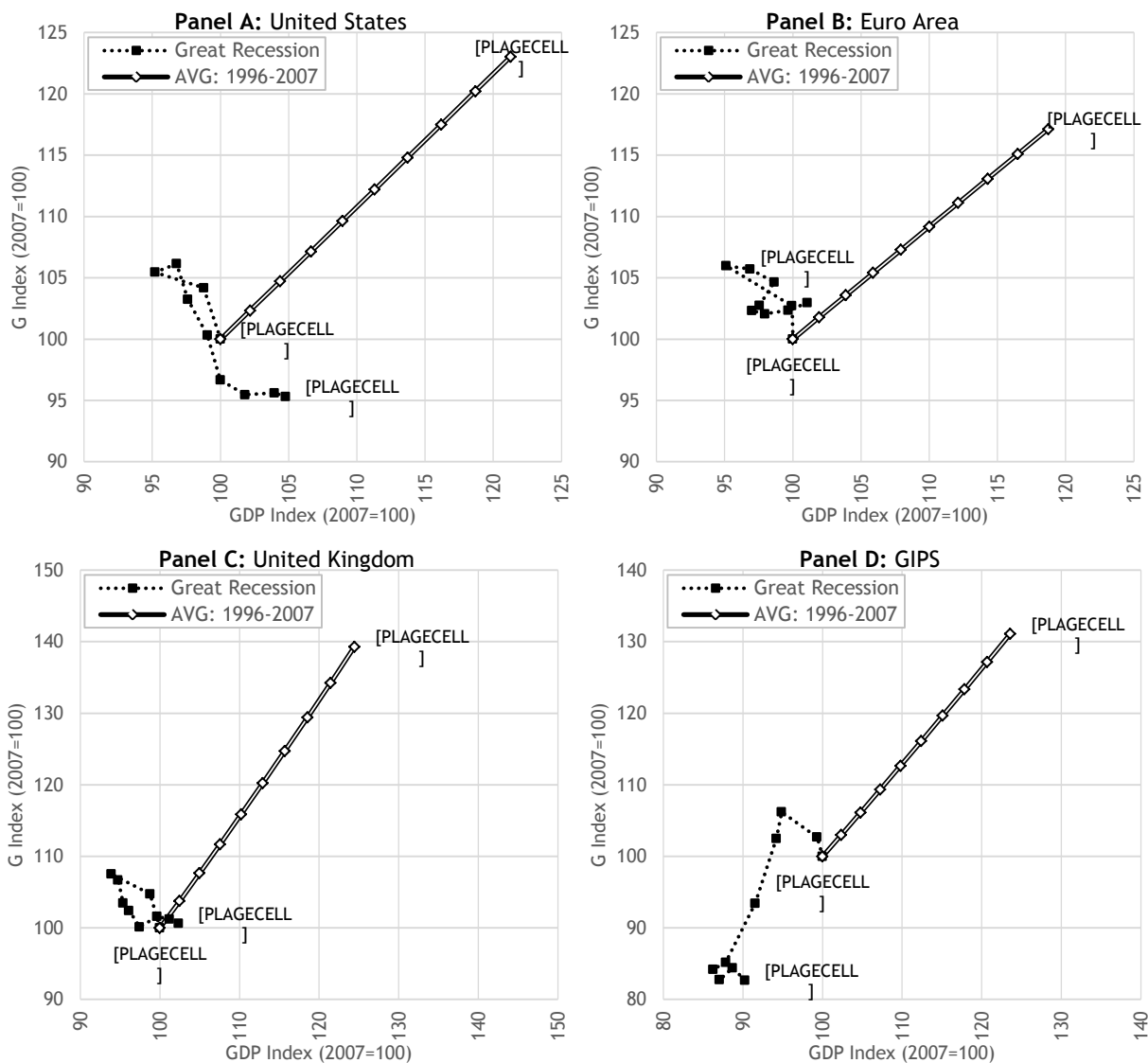
It wasn't fiscal policy, it was monetary policy that dominated. There was nothing you could do with fiscal policy that was going to offset a decline of a third in the quantity of money. Let me show you a current

⁵ Keynes (1930: 386, 1936: 202) also recognised the possibility that policymakers could influence longer-term interest rates by shaping market expectations about the path of short-term interest rates.

⁶ The euro crisis was self-made in the sense that the European Central Bank could have intervened more forcefully into secondary markets for sovereign bonds but chose not to for ideological reasons (Lavoie 2015).

example. Take Japan right now. They are wasting their time and money in trying to have an expansive fiscal policy without an expansive monetary policy (Milton Friedman in Snowden/Vane 2005: 219).

Figure 1: Index Level of Real GDP and G per capita (2007=100)



Sources: OECD, *OECD.Stat.* St. Louis Federal Reserve, *FRED*.

A definitive answer to the question was sidestepped. An answer of no was suggested by the remarks that Japanese policymakers were wasting their time and, even more so, by Friedman's remarks to the preceding question on what role he saw for fiscal policy in a macroeconomic context: 'None ... the Keynesian view that a government deficit is stimulating is simply wrong. A deficit is not stimulating because it has to be financed, and the negative effects of financing it counterbalance the positive effects, if there are any, on spending' (*ibid*). These remarks are based on the notion of crowding-out that we will discuss in Section 4. In another interview, in May 2000, Friedman agreed that the economics profession had largely accepted his views *vis-à-vis* Keynesians but not wholly: 'I still have more extreme views about the unimportance of fiscal policy for the aggregate economy than the profession does' (Milton Friedman in Taylor 2001: 120). At the time the NCM was supreme. It is not apparent how fiscal policy could be made to be any less important than in the NCM, which assigned no role to fiscal policy for short-run stabilisation, and in the long-run posited crowding-out.

3. Bernanke and Friedman's Monetarism

The New Keynesian tradition arose as a counter-reaction to the rise of New Classical economics. Despite the label of *Keynesian*, and the presence of some eclectic members (e.g., Joseph Stiglitz), the tradition has taken its cues more from Friedman than Keynes. Bernanke (2002a, 2003, 2004b) has acknowledged his intellectual debt to Friedman's monetarism.⁷ This section will highlight this influence as it concerns: (1) an analysis of the Great Depression; (2) channels of monetary transmission; and, (3) monetary policy at the zero lower bound. Fiscal policy will be considered in Section 5 and Section 6.

Bernanke (1983: 257) presented his financial disintermediation / supply-side credit crunch thesis on the Great Depression as building 'on the Friedman-Schwartz work'. The two main channels were: (1) loss of information on borrower creditworthiness due to bank failures; and, (2) decline in borrowers' net worth and thereby creditworthiness due to falls in collateral values. The first channel did challenge Friedman/Schwartz's (1963: 352) claim that bank failures were unimportant. The second channel was renamed the *financial accelerator* by Bernanke/Gertler (1995). It amounts to a rational expectations version of Minsky's (1975) views on financial fragility.⁸ When Bernanke became a Fed Governor he took the opportunity on Milton Friedman's 90th birthday to clarify that he was in the monetarist camp:

I have always tried to make clear, my argument for nonmonetary influences of bank failures is simply an embellishment of the Friedman-Schwartz story; it in no way contradicts the basic logic of their analysis ... Let me end my talk by abusing slightly my status as an official representative of the Federal Reserve. I would like to say to Milton and Anna: Regarding the Great Depression. You're right, we did it. We're very sorry. But thanks to you, we won't do it again (Bernanke 2002a).

The remarks about the Great Depression were vague. What Bernanke (2004b) had in mind may be suggested from a speech he gave the following year:

Milton Friedman and Anna Schwartz deserve enormous credit for bringing the role of monetary factors to the fore in their *Monetary History* ... By allowing persistent declines in the money supply and in the price level, the Federal Reserve of the late 1920s and 1930s greatly destabilized the U.S. economy and, through the workings of the gold standard, the economies of many other nations as well.

The final sentence is Bernanke's own opinion. When the Fed commenced the first of its three QE programs during the Great Recession there was an attempt at rebranding. Bernanke (2009) explained that in a credit easing regime the 'policies are tied more closely to the asset side of the balance sheet than the liability side, and the effectiveness of policy support is measured by indicators of market functioning, such as interest rate spreads, volatility, and market liquidity'. The emphasis on the asset-side of the central bank's balance sheet and reducing interest rate spreads is much closer to Keynes' (1930, 1936) recommendations for monetary policy than those of Friedman/Schwartz (1963). Much to the disdain of traditional monetarists (e.g., Laidler 2013), Bernanke's Fed did not justify its crisis response, as being motivated by putting upward pressures on broad money growth.

Another monetarist, Alan Meltzer (2010b), claimed that Friedman would not have supported the Fed's inflationary program. Meltzer (2010a) was worried that 'the current massive volume of excess reserves will melt into a greater money supply, and later higher inflation'. Underlying such concern

⁷ Milton Friedman's propagandising for *laissez faire* was rivalled only by Friedrich von Hayek. On the eve of the financial crisis the Fed Chair was lauding the merits of an *invisible hand* approach to financial regulation, being unaware of the imprudent build-up of excessive risk and leverage on the balance sheets of the financial sector, and unable to see that leaving financial markets to self-regulate was a dereliction of duty: 'In recent decades, public policy has been increasingly influenced by the insight that the market itself can often be used to achieve regulatory objectives ... The market discipline provided by creditors and investors is potentially a powerful mechanism for controlling leverage and other aspects of risk-taking ... Market discipline is a powerful and proven tool for constraining excessive risk-taking' (Bernanke 2007a).

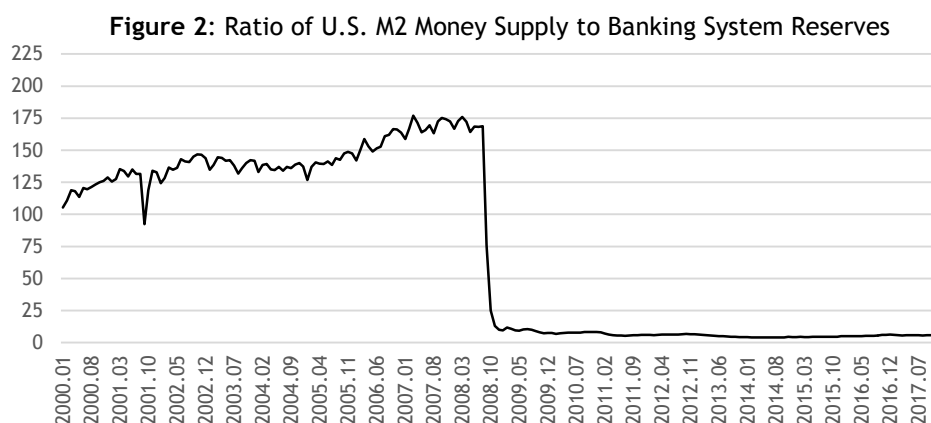
⁸ Bernanke (1983: 258) trivialised the contributions of Hyman Minsky and Charles Kindleberger for departing from 'the assumption of rational economic behaviour'.

was an apprehension that the money multiplier would get reactivated. Bernanke (2017: 11) may have been alluding to Meltzer when making the following remarks: ‘There has been no massive upsurge in inflation... or a collapse in the dollar, as predicted by proponents of crude monetarism (of a type, certainly, that Milton Friedman would never have endorsed)’. Bernanke’s assessment appears rather strange: Friedman/Schwartz (1963: 301) argued that during the Great Depression ‘feasible actions by the monetary authorities could have prevented the decline in the stock of money—indeed, could have produced almost any desired increase in the money stock’. How so? Through the money multiplier. Friedman/Schwartz’s version as is well-known, was as follows:

$$\Rightarrow M = H \cdot \frac{r(1+c)}{r+c}$$

where M is broad money, H is high-powered money, r is the deposit-reserve ratio and c is the deposit-currency ratio. Apparently, while the ratios c and r are not constants, to control broad money the Fed ‘needed only to vary H , the stock of high-powered, or base, money, to offset the effects of changes in c and r ’ (Laidler 2013: 6). Friedman/Schwartz (1963) asked readers to imagine scenarios where the Fed had purchased \$1 billion of government securities. About the first period from January 1930 to October 1930, they note: ‘Banks were using reserves to the full. Any increase in reserves probably would have been put to use in expanding the assets of banks’ (*ibid*: 392). And if the two ‘deposit ratios had behaved as in fact they did’ then the counterfactual scenario would have ‘converted the actual 2 per cent decline in the stock of money into a rise of 7 per cent’ (*ibid*: 392-393). We have relayed this standard monetarist analysis to underline that Friedman’s monetarism was in fact crudely premised on a policy-exploitable quantitative relationship between the monetary base and the money supply, as Laidler would have it.

Figure 2 shows the ratio of the M2 money supply to U.S. banking system reserves (which is a measure close to the deposit to reserve ratio) during the Great Recession. Monetarists heralded that to control the broad money supply monetary authorities only needed to push out reserves and wait for the money multiplier process to fully work itself out. Obviously, this did not work out during the 2008 financial crisis. Underpinning the money multiplier, and thus the monetarist understanding of the money supply process, is the claim that the fractional reserve banking system constrains the capacity of banks to create money. This theory holds that banks can only lend by acquiring funds either from the general public or the central bank. The volume of deposits (and bank’s earning assets) is determined by reserves and reserve requirements. A fully loaned-up bank has no excess reserves. New Keynesians followed monetarists in adopting this theory of the money supply process in the 1980s. The theory of fractional reserve banking and its underlying assumption of loanable funds is critical to understanding, though often left implicit, Bernanke’s research on the banking system and monetary policy.



Source: St. Louis Federal Reserve, *FRED*.

4. Bernanke's Views on Banks

4.1 Banks as Special Intermediaries of Loanable Funds

Bernanke was a key contributor to the New Keynesian *credit view* of monetary transmission channels. Banks are *special* because there may exist bank-dependent borrowers. Bernanke/Gertler (1995) differentiated the credit view into a balance sheet channel and a bank lending channel. The former is the financial accelerator already referred to. The latter is Bernanke/Blinder's (1988) CC/LM model that reformulated the IS/LM model and the monetarist money multiplier to explicitly include bank loans. Bernanke/Gertler (1995: 40) explain that 'Bernanke and Blinder's (1988) model of the bank lending channel suggested that open market sales by the Fed, which drain reserves and hence deposits from the banking system, would limit the supply of bank loans by reducing banks' access to loanable funds'.

The assumption of loanable funds is important for at least two reasons. First, when carried over to models with a public sector, it entails a limited positive role for fiscal policy, since funds going to the public sector are said to be taken away from the private sector. Second, when banks are cast as intermediaries of loanable funds in the theory of fractional reserve banking, the implication is that monetary authorities can more or less directly control bank's earning assets and liabilities as monetarists would have it. This is important because to the extent that such suppositions are false then so too will the analyst be overly optimistic about the capacity of monetary policy. We will pick up on Bernanke's (1992-93: 5) understanding of the processes of credit creation:

By *credit creation* I mean the process by which, in exchange for paper claims, the savings of specific individuals or firms are made available for the use of other individuals (for example, to make capital investments or simply to consume). [In footnote] Note that I am drawing a strong distinction between credit creation, which is the process by which saving is channeled to alternative uses, and the act of saving itself ... Obviously, a study of the U.S. saving problem could not afford to ignore issues relating to government borrowing and debt (Bernanke 1992-93: 50) [emphasis original].

So, according to Bernanke, in order for banks to be able to extend credit, there must be prudent savers. By contrast, in reality, and in accordance with post-Keynesian monetary theory, banks extend credit, creating deposits *ex nihilo* in the process, such that there is no need for abstinence on the part of any other agents.

A few brief remarks on Bernanke/Blinder's (1988) CC/LM model are required. The model is premised on the money multiplier concept. The authors' second equation defines the LM curve: it is derived from the assumption that the 'supply of deposits... is equal to bank reserves, R , times the money multiplier' (*ibid*: 346). Banks' liabilities are comprised solely of deposits. Banks' assets are comprised of securities, loans and reserves that are differentiated into required and excess reserves. With exogenous ratios for reserves and excess reserves to deposits (i.e., a constant money multiplier), an expansion in reserves must increase loans or securities, and by a multiple determined by the value of reserve requirements. The authors question Keynes's liquidity trap: 'monetary policy still matters because it influences the CC curve' (*ibid*: 346). What this amounts to is a claim that, when the central bank creates excess reserves, then banks will lend them out.⁹ The volume of additional loans (and deposits) created will be some multiple of the reserves created. And the money multiplier process will continue until banks have restored their normal ratios of reserves and excess reserves to deposits. So the reason monetary policy will work even in a liquidity trap is the assumption of a constant money multiplier -- a Friedmanite proposition, as we saw earlier.

⁹ 'The increase in reserves gives the banks the "raw material" they need to issue new deposits ... If the Fed increases the stock of reserves, then banks will be able to create more deposits' (Bernanke 1988: 5, 7). Recall that this statement was published the very same year that Basil Moore's (1988) book came out, where he explained in the greatest detail that the role of central banks was to provide all the reserves that banks needed, at the target interest rate that it had set.

4.2. Bernanke and the New Keynesian view of credit

Providing support for our analysis of Bernanke's view of banking, Louis-Philippe Rochon (1998, ch. 7) has early on identified the orthodox monetary thought hiding in the back of the apparently new view of monetary economics to be found in the writings of New Keynesians. While authors such as Bernanke/Gertler (1995: 28) wish to go beyond the black box of the monetary transmission mechanism, pointing out in particular that the main component of aggregate demand being affected by interest rate increases is residential investment -- an important feature of business cycles as became clear with the subprime financial crisis and as is now recognized by many -- they perceive that the additional channels based on credit that they elaborate are not replacements but additions to the orthodox transmission mechanisms. They are an enhancement mechanism. As Rochon (1998: 237) sums it up: 'While the money supply is credit-driven, it remains supply-determined, dictated largely by the policies of the central bank. Banks can only lend what they have at their disposal, either supplied by the deposits of the savers or the supply of high-powered money by the central bank'.

For New Keynesians, the essence of the credit channel is that borrowers who do not have access to the financial markets may get frustrated by credit restrictions, because banks cannot lend more than the deposits and reserves that they hold. Thus, credit rationing, as defined by asymmetric information along the lines of Stiglitz/Greenwald (2003), while it is 'certainly consistent with the existence of a credit channel ... is not at all necessary for the credit channel to exist. All that is necessary for a credit channel is that bank credit and other forms of credit be imperfect substitutes for borrowers' (Bernanke 1993: 56). For (most) New Keynesians, the central bank is able to decrease or increase the number of frustrated borrowers by controlling the amount of available bank reserves.

For Bernanke and the New Keynesians, banks are special, but this is only because they are financial intermediaries which can provide credit to borrowers who cannot get it on financial markets. Bernanke/Blinder (1992: 901) put it this way: 'Loans from financial intermediaries are "special". Specifically, the expertise acquired by banks in the process of evaluating and screening applicants and in monitoring loan performance enables them to extend credit to customers who find it difficult or impossible to obtain credit in the open market'.

Besides this feature, banks appear to be no different from other financial institutions: they are considered to be financial intermediaries, similar in that regard to nonbank financial intermediaries. Banks cannot lend more than what they have in the form of deposits and reserves. Thus banks according to Bernanke are *special*, but *not fully so*, in contrast to the banks in post-Keynesian monetary theory which are able to create loans *ex nihilo*, without the consent of the central bank or without the prior accumulation of deposits, as is now also recognized by researchers at the Bank of England (McLeay *et al.* 2014; Jakab/Kumhoff 2015) and at other central banks.¹⁰

Bernanke/Blinder (1992: 901) are pretty clear about the power of the central bank to restrain the quantity of reserves and hence constrain the capacity of banks to provide credit: 'When the Federal Reserve reduces the volume of reserves, and therefore of loans, spending by customers who depend on bank credit must fall, and therefore so must aggregate demand'. And if this was not clear enough, one can refer to Blinder (1987) according to whom the amount of deposits of a bank determines the stock of loanable funds; as deposit funds flow into the banks, the supply of credit can expand further. The ultimate source of loanable funds however is the reserves provided by the central bank: 'In a system of fractional reserve banking ... the central bank has considerable leverage over the

¹⁰ As Martin *et al.* (2016: 194) put it, 'The current banking system in the United States and worldwide no longer resembles the traditional textbook model of fractional reserve banking'.

latter.... For the banking system as a whole, reserves not deposits, are the binding constraints (Blinder 1987: 333).

Thus, despite all their interest for the credit market, Bernanke and the New Keynesians rely on the monetarist causality that goes from high-powered money to deposits and credit, and hence do not adopt the reverse causality advocated by authors such as Kaldor (1982) and Moore (1988) who have disputed the findings of Milton Friedman. Bernanke/Blinder (1992: 915) sometimes do seem to acknowledge reality and the reverse causation argument when they consider the case of a horizontal supply curve of non-borrowed reserves at a policy-determined interest rate. Still, ultimately Bernanke reverts to the belief that open-market sales by the Fed shrinks the deposit base of banks and hence reduce loans (Bernanke/Gertler 1995: 257).

4.3. Bernanke's inconsistencies

When Bernanke/Blinder (1992: 901) claim that a reduction in reserves must lead to a reduction in loans, there is implicit theorising. Why should an open-market sale lower the supply of bank loans? Open-market operations have no direct implications for bank loans. The effects on money stocks depend on whether the open-market counterparty is a depository institution or a nonbank financial intermediary (or even a non-financial agent as also occurred in more recent quantitative easing operations). If with the former then the open-market sale will only change the composition of the depository institution's balance sheet (i.e., the decrease in reserves will be offset by an increase in banks' holdings of securities). If with the latter, and we assume as in practice that the buyer will authorise payment from a deposit account held at a depository institution, then the open-market sale will affect the size of the depository institution's balance sheet. The decrease in reserves on the asset side will have as a counterpart a decrease in deposits on the liability side. But in either case there are no direct implications for bank loans. Bernanke/Blinder (1988, 1992) are assuming the theory of fractional reserve banking. In that theory an open-market sale, by draining reserves, will thereby leave banks with insufficient reserves to meet reserve requirements. Banks then respond by calling in loans and/or selling securities to reduce deposits and thereby required reserves.¹¹

Bernanke/Lown (1991: 206), in article discussing the early 1990s U.S. recession, argue that a 'credit crunch does not seriously affect the Federal Reserve's capacity to stabilize the economy but that it may make indicators of monetary policy more difficult to read'. They elaborate as follows:

First, some have worried that an unwillingness by banks to lend can render monetary policy impotent. This concern is misplaced unless a traditional liquidity trap... also exists. Even if banks will not lend, an increase in reserves will raise the supply of deposits ... However, it is true that if banks refuse to lend (that is, if banks accommodate deposit expansion only by holding more securities), the "credit channel" of monetary influence will be shut down, and the real effects of a given monetary expansion will be smaller. In terms of the Bernanke-Blinder model, under normal conditions a monetary expansion raises aggregate demand both by shifting the LM curve and by shifting the IS curve (by stimulating bank lending); if banks refuse to lend, only the traditional LM-curve mechanism is operative (*ibid*: 237).

If reserves and deposits both increase then the open-market counterparty must be a nonbank agent. Yet, in that scenario, reserves are the counterpart asset-side expansion to the liability-side deposit expansion. It is therefore difficult to understand the bracketed remarks 'if banks accommodate deposit expansion only by holding more securities' (*ibid*). The implicit assumption here seems to be the inverse scenario to that just discussed with banks now using excess reserves to acquire securities,

¹¹ Such a process is implicit to Bernanke's (1992-93: 56) remarks on an open-market sale: 'As the loss of reserves reduces the quantity of bank liabilities (deposits), it must also reduce bank assets. Assuming that banks treat the loans and securities as imperfect substitutes, the loss of deposits will induce them to try to reduce both categories of assets'. An open-market sale will reduce deposits only if the counterparty is a non-bank agent. And, regardless of whether the counterparty is a bank or a non-bank agent, the bank assets reduced in an open-market sale are reserves.

instead of making loans, and as some multiple (as per the theory of fractional reserve banking). In the real world banks can only lend reserves to each other in the interbank market. Nor do central banks seek to oversupply or quantity-constrain reserves. The short story is that the bank lending channel based on quantitative reserve effects has no basis in how the actual monetary system actually works in practice.

There is another inconsistency. Bernanke/Lown (1991) were optimistic about the capacity of monetary policy to alleviate a credit crunch defined as a supply-side driven fall in bank credit due to capital constraints. It is curious that they drew on Bernanke/Blinder's (1988) CC/LM model given that it has no bank capital and therefore no capital constraints. As Benjamin Friedman observed: 'If banks really cannot create money and credit because the *capital* restraint is binding, what effects follow from an increase in the quantity of bank *reserves*?' (Benjamin Friedman in Bernanke/Lown 1991: 242) [emphasis in original]. We conclude here that Bernanke's optimism about the capacity of monetary policy to stabilise an economy following a severe financial disturbance (e.g., liquidity trap, credit crunch) was quintessentially monetarist at this point of his academic career. Monetary authorities were thought to wield control over credit and monetary aggregates via quantitative reserve constraints that affected 'banks' access to loanable funds' (Bernanke/Gertler 1995: 40).

4.4. Pre-Crisis New Keynesian Literature on the Zero Lower Bound

Against the backdrop of Japan experiencing consumer price deflation in the late 1990s and early 2000s, and with the Bank of Japan's base interest rate at zero, a number of New Keynesians explored the effectiveness of unconventional monetary policies at the so-called zero lower bound. This literature is claimed to have helped guide the policy response to the Global Financial Crisis (Bernanke 2010a). Arguably, however, the literature did not prepare policymakers by failing to identify a key role for fiscal policy. Krugman's (1998: 158) framework was 'strongly biased against finding any useful role for fiscal policy, because the representative agent, intertemporal optimization approach implies Ricardian equivalence'. Eggertsson/Woodford (2003) contended that forward guidance alone could do the trick. For his part Bernanke (1999: 14-15) attributed abilities to the central bank that it does not have:

The general argument that the monetary authorities can increase aggregate demand and prices, even if the nominal interest rate is zero, is as follows: Money, unlike other forms of government debt, pays zero interest and has infinite maturity. The monetary authorities can issue as much money as they like. Hence, if the price level were truly independent of money issuance, then the monetary authorities could use the money they create to acquire indefinite quantities of goods and assets. This is manifestly impossible in equilibrium. Therefore money issuance must ultimately raise the price level, even if nominal interest rates are bounded at zero. This is an elementary argument, but... corrosive of claims of monetary impotence.

Monetary authorities can issue the domestic currency unit without limit. But so long as the issuances are a part of monetary policy—i.e., liquidity injections (such as via open-market operations, as in the case of quantitative easing)—the quantities of acquired *goods* will be zero. Policymakers can acquire quantities of goods and services through expenditures: but this is fiscal policy, not monetary policy. It is bizarre to make a case about monetary potency when the mechanics depend on fiscal policy. In another speech Bernanke (2002b) also blurred the lines between monetary and fiscal policy by framing the argument in terms of a consolidated government:

... some observers have concluded that when the central bank's policy rate falls to zero--its practical minimum--monetary policy loses its ability to further stimulate aggregate demand and the economy ... But the U.S. government has a technology, called a printing press (or, today, its electronic equivalent), that allows it to produce as many U.S. dollars as it wishes at essentially no cost. By increasing the number of U.S. dollars in circulation, or even by credibly threatening to do so, the U.S. government can also reduce the value of a dollar in terms of goods and services, which is equivalent to raising the prices in dollars of those goods and services. We conclude that, under a paper-money system, a determined government can always generate higher spending and hence positive inflation.

The remarks refer to when ‘the Fed’s acting on its own’ (*ibid*). The argument appears to be that when the central bank increases ‘dollars’ (presumably reserves), or threatens to do so, that this entails an increase in circulation and nominal spending. But why should this be so unless the money multiplier or its New Keynesian offspring -- the bank lending channel - are meant to get into action automatically? By contrast, determined public authorities can always generate higher spending by *spending*.

It was mentioned above that a quantitative relationship between the monetary base and the money supply (or bank lending) was absent from the Fed’s case for credit easing. The Fed declined to use the term quantitative easing, referring instead to large-scale asset purchases. One reason may be that Bernanke (2007b), acknowledging that reserve requirements were much diminished, had called for reformulating the bank lending channel by extending the financial accelerator to lenders’ net worth. Gertler/Karadi (2011) explored this channel in respect to the Fed’s credit policies instigated in 2008. Intriguingly, the central bank was defined as an intermediary of loanable funds, along with banks: ‘We allow the central bank to act as intermediary by borrowing funds from savers and then lending them to investors’ (*ibid*: 18). Fontana/Passarella (2016: 19) are puzzled why the financial accelerator modellers retain the counterfactual assumption that banks collect deposits in order to lend: ‘But this hypothesis... is clearly at odd with the assumption that money supply and credit are residually-determined and demand-driven (as implicitly stated by the Taylor rule)’. Maintaining the link to loanable funds theory may simply be convenient for the New Keynesians, who outside of the zero lower bound/liquidity trap, see utility in retaining the orthodox conclusion that fiscal policy crowds-out private capital.

5. Friedman’s Monetarism and Crowding-Out

Orthodox economists have presented a multiplicity of arguments as to why fiscal policy is impotent. Old ideas such as Ralph Hawtrey’s *Treasury view* and Ricardian equivalence have changed little. Monetarists and Old Keynesians debated the effects of fiscal policy during the 1960s and 1970s. The focus was on so-called pure fiscal policy: government expenditures financed by taxation or by issuing bonds to the private sector. The latter was called *bond-financing*. It was set apart from government spending financed by issuing bonds to the central bank: *money-financing*.

The monetarist logic against fiscal policy was as follows. Money-financing is more expansionary than bond-financing. And, it is more expansionary because there is money creation, which is a part of monetary policy. Ergo there is no need for or indeed any benefit from doing expansionary fiscal policy. Friedman’s critics, notably Tobin (1972), argued that such pessimism on bond-financing required the implausible assumption of complete crowding-out through the effects of higher interest rates (which in the IS/LM model implies a vertical LM curve). Friedman (1972: 916-917) replied by extending his case for the impotency of bond-financing beyond the presumed effects of higher interest rates:

Surely... the monetary effect is “alchemy of a much deeper significance” than the fiscal effect ... As Tobin says, “is a ‘rain’ of Treasury bills ... of no consequence for the price level, while a ‘rain’ of currency inflates prices proportionately”? The answer is that the evidences of government debt are largely in place of evidences of private debt ... The total nominal volume of debt grows by less and I believe much less than the size of the deficit. Moreover, even this growth is offset by two other factors: the increase expected in future tax liabilities accompanying the growth of the government debt... and the reduction in the physical volume of assets created because of lowered private productive investment. On the other hand, the dollar bills are a net addition to the total nominal volume of assets.

Here we find three aspects to Friedman’s crowding-out hypothesis. The first line of argument concedes that private agents would view Treasury debt as a part of their wealth, but for reasons not made clear, the increase in total debt (and thus additional spending out of wealth effects) would be less with bond-financing than money-financing. The second line of argument is Ricardian equivalence, which holds that private agents would view Treasury debt not as a part of their wealth, but as future

tax liabilities. The third line of argument is the Treasury view which is the claim that bond-financing reduces private capital expenditures. Usually, this claim is stated in reference to higher interest rates, as Friedman (1969b: 50) does here: ‘If the federal government runs a large deficit, that means the government has to borrow in the market, which raises the demand for loanable funds and so tends to raise interest rates’. The claim is also falsely asserted on the basis of national accounting.

Tavlas (1997: 172) interprets Friedman’s (1972) position as ‘money-financed expenditures and expansionary open-market operations are equivalent in their effectiveness’. What exactly is meant by *effectiveness* is left unqualified: it seems to be policy measures for combating a deep slump. But monetary policy could only be equivalent in its effectiveness *vis-à-vis* fiscal policy to stimulate output growth in a deep slump if one believed, as we saw earlier, that monetary authorities ‘could use the money they create to acquire indefinite quantities of goods...’ (Bernanke 1999: 14).

At an elementary level: monetary policy does not provide public authorities with a means to acquire quantities of output and, hence, cannot directly generate revenues for the private sector. Monetary policy does not directly employ labour. Nor do central banks run macro-significant deficits that allow agents in the private sector to rebuild balance sheets.

There are other influential “supply-side” versions of the crowding-out hypothesis that take Friedman’s monetarism as the starting point. The first version follows Friedman (1968) in assuming a structurally-determined natural rate of unemployment; thus, macro policies that work through the demand-side cannot affect the natural growth rate or the long-run value of potential output. The second follows Friedman (1977) in assuming a *positively*-sloped long-run Phillips curve; thus, macro policies that lead to higher inflation rates lower productivity growth. Such an assumption explains the obsession of central banks with low inflation and, as discussed elsewhere by one of the present authors, constitutes a hidden equation of the NCM model (Lavoie 2006). The post-Keynesian alternative is to endogenise the natural growth rate to the growth of effective demand. Even researchers at the International Monetary Fund now accept that a lack of effective demand is likely to reduce potential output through hysteresis effects (Cerra/Saxena 2017). For post-Keynesians the relationship between effective demand and productivity growth works both on the downside and the upside. Supply-side factors such as technical process and labour participation rates are responsive to demand-side factors.

The folly of loanable funds theory is that proponents believe that businesses would prefer to receive money, via higher borrowing in the market for loanable funds, than via higher sale receipts arising from consumption or government expenditures. Indeed, far from draining financial resources from private agents, government expenditures will provide businesses with some of the wherewithal to finance capital expenditures (including those on innovative research and development that raise productivity growth). Orthodox economists reach alternative conclusions on the basis of a faulty understanding of the processes of credit creation and national accounting. Consider Bernanke’s (2006) solution to the costs of population aging:

Perhaps the most straightforward way to raise national saving... is to reduce the government’s current and projected budget deficits. To the extent that reduced government borrowing allows more private saving to be used for capital formation or to acquire foreign assets, future U.S. output and income will be enhanced and the future burdens associated with demographic change will be smaller.

The logic is the same as that in Laurence/Mankiw’s (1995) debt fairy parable. They asked readers to imagine a reversal of crowding-out: ‘One night, the debt fairy travels around and replaces every U.S. government bond with a piece of U.S. capital ... we argue that it provides a good guide to the actual effects of deficits in the United States’ (*ibid*: 104). Elmendorf/Mankiw (1998: 17-18) also see the parable of the debt fairy as ‘appealing because it offers a simple way to calculate the effects of government debt on national income’. Their treatment of national accounting is as follows:

$$S + (T - G) = I + NFI$$

The left side of this equation shows national saving as the sum of private and public saving, and the right side shows the uses of these saved funds for investment at home and abroad. This identity can be viewed as describing the two sides in the market for loanable funds (*ibid*: 12).

With the notation: S = private saving, T = taxes less government transfer payments, G = government purchases of goods and services, I = domestic investment and NFI = net foreign income. In the above rendering of national accounts, the government budget ($T - G$) augments the supply of loanable funds when in surplus, and drains the supply when in deficit.¹² But this interpretation overlooks that in any given period, the ability of a sector (or agent) to spend is limited ultimately by its (or their) access to monetary purchasing power (through income, new credit or the depletion of existing money balances), and not the *ex-post* saving in net financial terms of other sectors (or agents). So the theory of loanable funds and the debt fairy parable are just nonsense. The error lies in confusing the concept of finance with thrift (i.e., acts of not spending).¹³ Still, as we saw in Section 4, the naïve theory of loanable funds, whereby banks are financial intermediaries passing on accumulated savings instead of being genuine credit creators, informs Bernanke's thinking on the processes of bank credit. And, as we will now briefly discuss, it informs his views on fiscal policy as well.¹⁴

In 2010 U.S. policymakers were laying the groundwork for the budget sequestration cuts legislated in the Budget Control Act of 2011. Bernanke's (2010b) speech on the 4th of October 2010, 'Fiscal sustainability and fiscal rules', was particularly hawkish. In it we find the usual orthodox claims on fiscal policy: the federal budget was on an unsustainable path; high levels of public debt reduced long-term living standards by draining loanable funds available for private investment; there was a growing real risk of a sovereign debt crisis; and adopting rules for medium- to long-term fiscal consolidation would provide short-term benefits by increasing confidence and by lowering long-term interest rates. Bernanke (2015), post his Fed Chair position, sought to scuttle calls to redeploy fiscal policy:

But if we are really in a regime of persistent stagnation, more fiscal spending might not be an entirely satisfactory long-term response either, because the government's debt is already very large by historical standards and because public investment too will eventually exhibit diminishing returns (Bernanke 2015).

Later Bernanke (2016), along with a small number of mainstream monetary experts, heralded that a '(presumably last-resort) strategy' existed that could make fiscal policy viable '*even if existing government debt is already high and/or interest rates are zero or negative*' [emphasis original]. Bernanke, as do others, refers here to Friedman's (1969a) helicopter drops: central bank monetary financing of budget deficits. For brevity we limit ourselves to two remarks.

First, Friedman (1969a) argued that a helicopter drop of fiat money from the sky would raise the price level, and also lower real income by reducing allocative efficiency. For Friedman policymakers *should avoid* helicopter drops. It is baffling why anyone would point to Friedman for inspiration on expansionary fiscal policy. His policy advice was to use a furnace to burn the fiat money. The so-called Friedman rule, still celebrated by orthodox economists today, holds that monetary authorities should set a deflation rate target equal to the growth rate of productivity.

¹² A minor point is that I must be private investment, or else the government budget is wrong.

¹³ When a sector does not spend all of its income on output, the counterpart in national accounts is not an increase in fixed investment (although an increase in undesired inventory accumulation is possible), but a positive net lending/borrowing balance. The main effect is to lower the income of other sectors (and force at least one another sector to have a negative net lending/borrowing balance). If all sectors were to spend all of their income on output, such that all sectors have a zero net lending/borrowing balance, there could still be investment. Investment expenditures require finance: access to monetary purchasing power.

¹⁴ We note in passing that Bernanke's (2005) *global savings glut* thesis on global current account imbalances is also based on the defective loanable funds approach, and was criticised by Borio/ Disyatat (2011) and Linder (2015).

Second, as Bernanke's version of helicopter money assumes Ricardian equivalence, the policy can only work if the government avoids imposing a future tax liability. With helicopter money, the government deficit is financed by the issue of zero-interest securities purchased by the central bank. But the counterpart of these are the reserves held by commercial banks. Bernanke (1999) did not consider how the policy would work in a monetary system with interest on reserves, as is now the case in many countries. Bernanke (2016) has found the solution: impose a levy on banks equal to the interest paid on reserves. So the solution to avoiding the negative consequences of an imaginary *future* tax liability is to impose an *immediate* tax liability -- a rather strange argument!¹⁵

6. Conclusion

Orthodox economists followed Friedman in hailing the virtues of a *laissez faire* market system and placing immense faith in monetary policy to achieve macro stabilisation. Friedman's optimism for monetary policy to remedy a deep slump was largely confirmed by the pre-crisis orthodox literature on the zero lower bound. Such was the belief in monetary potency that fiscal policy could be omitted. Post-crisis the orthodox thinking on fiscal policy seems to be as follows. Fiscal policy can temporarily boost real output at the zero lower bound, but may not be a viable option if debt levels are too high, and will always have long-run crowding-out effects that reduce living standards.¹⁶

There are differing views on what the implications of the Global Financial Crisis should be for the economics discourse. Bernanke's (2010a) appraisal is that 'calls for a radical reworking of the field go too far'. He segments the economics discourse into science, engineering and management. For him the Great Recession was not a failure of economic science defined as: 'theoretical and empirical generalizations about the behavior of individuals, institutions, markets, and national economies' (*ibid*). So orthodox theory is pure science. What orthodox economists have in the theory of loanable funds is a model of a fictitious barter economy in which thrift is necessary for investment to take place. The real world is not a barter economy. Banks do not collect gravel in order to lend it to cement companies. Modern economies have a money-creating banking sector. Finance is necessary for investment (in fact, for any expenditure), not thrift. We conclude that monetary dominance is a matter not of science but of ideology. An ideology that presents itself as a science while its practitioners abstract, willfully or through ignorance, from how the banking and financial system and thereby the modern economy works in practice. An ideology that has led to poor policymaking decisions and to suboptimal economic outcomes.

¹⁵ We say imaginary because 'rational' private agents would modify their spending behaviour only from the date when policymaker-enacted changes to the tax code were applicable.

¹⁶ 'Under normal circumstances [i.e., when the zero lower bound is not binding], expansionary fiscal action leads to higher interest rates, which tend to reduce private spending and investment' (Bernanke 2016, fn. 2).

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