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Proposals for Full-Reserve Banking: A Historical Survey from David Ricardo to Martin Wolf[1]

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Abstract

Full-reserve banking, which prohibits private money creation, has not been implemented since the 19th century. Thereafter, bank deposits became the dominant means of payment and have retained their position until today. The specific contribution of this paper is to provide a comprehensive outlook on the historical and contemporary proposals for full-reserve banking. The proposals for full-reserve banking have become particularly popular after serious financial crises.

Keywords: full-reserve banking, monetary reform, sovereign money, Chicago Plan, history

1. Introduction

Under full-reserve banking (FRB) private money creation is prohibited. Today it would mean that banks could no longer create new money in the form of bank deposits in the process of bank lending. In other words, every deposit would be backed by government money (i.e. cash, central bank reserves and government securities) or a commodity (e.g. gold). FRB aims at separating the payments system from the financing system, as well as separating monetary policy from credit policy.

FRB has been proposed and even implemented as a solution to financial instability a number of times in the past. Thus, the idea of monetary reform should be seen as a historical continuum. In the UK the Bank Charter Act of 1844 prohibited private money creation through fractional-reserve banking by requiring that bank notes (which were the prevailing means of payment) should be fully-backed by government money. The National Acts of 1863 and 1864 achieved the same goal in the US.

The prohibitions, however, did not include bank deposits, which slowly became the dominant means of payment. In the 1930s, the Chicago Plan was almost adopted in the US, but the FRB idea was watered down in the Banking Acts of 1933 (better known as the Glass-Steagall Act) and 1935. Instead of preventing private money creation in the form of bank deposits, the Banking Acts separated commercial and investment banking, provided deposit insurance and improved government's control over monetary policy and money supply. Currently there are no examples of economies where the majority of money does not come into existence as a consequence of bank lending.

Now, in the aftermath of the Global Financial Crisis (GFC), preventing private money creation in order to ensure financial stability has once again become a topical issue. For

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instance, Martin Wolf (2014a; 2014b), the chief economics commentator at the *Financial Times*, supports FRB openly; in 2015 the Green Party in the UK included FRB in its political agenda; Iceland's Prime Minister commissioned a report authored by Sigurjonsson (2015) on FRB; and bills to implement FRB have been put forward in the US and UK.

The scope of this paper is to chart the history of FRB proposals from the 19th century until today. I will focus on the FRB proposals put forward in the US and UK, although other countries are not entirely excluded. The reason for this is that the US and UK are at the heart of global (financial) capitalism and, since World War II, have been a key influence setting global financial standards through international institutions – such as the International Monetary Fund (IMF) and the Bank for International Settlements (BIS).

The discussion on the consequences of FRB is excluded from this paper. It would be too demanding in terms of length to go to the wider literature which debates the advantages and shortcomings of FRB. Nevertheless, it could be mentioned that, for example, Goodhart (1987; 1993), Kregel (2012), Dow et al (2015) and Fontana and Sawyer (2015) provide academic critiques of FRB.

The specific contribution of this paper is a comprehensive mapping exercise of the history of FRB proposals. Although Ronnie Phillips (1994a) laid down much of the groundwork – especially for the New Deal period – such a survey on historical and contemporary proposals for FRB has not been conducted before, especially including the recent new wave of FRB proposals sparked by the GFC.

As Table 1 below illustrates, there are different versions of FRB. A pure commodity standard was the first type to emerge in the 19th century. Sovereign money was proposed before the Great Depression in the 1920s and it has probably become the most popular alternative since the GFC. The Chicago Plan was of high standing academically and politically during the New Deal banking reforms in the 1930s. Deposited currency was an innovation of the mid-1980s. Narrow banking emerged as an alternative during the Savings and Loan Crisis of the late 1980s. The most recent newcomer is limited purpose banking in the mid-1990s. In the following sections I will go through and elaborate on these various FRB types in chronological order.

This paper is structured as follows. In section 2 I will present the first FRB proposals starting from David Ricardo. In section 3 I will move to the Chicago Plan outlined in 1930s during the New Deal banking reforms before discussing the FRB proposals of the latter half of the 20th century in sections 4 and 5. In section 6 I will present the recent new wave of FRB proposals following the GFC. Finally, in section 7, I will draw some concluding remarks.

Table 1. Different types of full-reserve banking

	Pure Commodity Standard	**Sovereign Money**	**Chicago Plan**	**Deposited Currency**	**Narrow Banking**	**Limited Purpose Banking**
Features	All money, including bank deposits, backed by a commodity such as gold (in all other types backed by government money).	Deposit banks can make loans only by attracting savings or using own capital.	Deposit banks provide only payments services and cannot make loans.	Full-reserve requirement applied only to certain deposits. Other (not fully-backed) deposits not guaranteed. Individuals choose which type of deposits to hold.	Banks' assets restricted to 'safe' by some standards.	Banks become unleveraged mutual funds. Banks' liabilities restricted to equity.
Notes	Associated to Austrian school.	Associated to Positive Money, New Economics Foundation and ecological economics.	Associated to 'old' Chicago school and monetarism.	For example, postal saving system or central bank accounts for the general public.	Less restrictive proposals not counted as FRB.	Instead of banks, all risks are born by investors.
Proposals	Ricardo (1824), Mises (1912), Hayek (1937), Rothbard (1962), Huerta de Soto (2009)	Soddy (1926; 1934), Currie (1934; 2004), Daly (1980; 2013), Rowbotham (1998), Huber and Robertson (2000), Yamaguchi (2010; 2011; 2014), Jackson and Dyson (2012), Kolehmainen et al (2013), Farley et al (2013), Wolf (2014a; 2014b), Lainà (2015b), Green Party UK (2015), Sigurjonsson (2015)	Knight et al (1933), Simons et al (1933), Fisher (1935), Douglas et al (1939), Simons (1948), Friedman (1948; 1960; 1969), Benes and Kumhof (2012; 2013)	Tobin (1985; 1987), Jessup and Bochnak (1992), Gruen (2014), Lainà (2015a)	Kareken (1986), Litan (1987), Spong (1996), DeGrauwe (2008), Kay (2009), Phillips and Roselli (2009), Flaschel et al (2010), Chiarella et al (2011)	Pollock (1993), Kotlikoff (2010), Cochrane (2014)

2. First Steps: David Ricardo and Others

The first proposal for FRB can be traced back to David Ricardo. In 1823, Ricardo (1824) drafted a 'Plan for the Establishment of a National Bank' in which he argued that money creation should be separated from lending by requiring the issuing department to hold 100 percent in gold reserves. Ricardo's plan was a full-reserve plan – but it accepted only gold as reserves. The plan was published in 1824, six months after his death.

Ricardo's (1824) plan was a **pure commodity standard** proposal. Unlike in a regular commodity standard – such as the gold standard effective until the 20th century – in a pure commodity standard *all money*, including bank deposits, is backed with the commodity. In a regular commodity standard only *base money* (i.e. cash and central bank reserves) is backed with the commodity.

According to Phillips (1994a), Ricardo's plan served as a guideline for the Bank Charter Act of 1844. As described earlier, the Bank Charter Act (passed in the UK in 1844) effectively implemented FRB. The Act required full-backing of bank notes – which were the dominant means of payment at the time. However, in addition to gold, as suggested by Ricardo (1824), notes could also be backed with government debt. Nevertheless, the Act did not cover bank deposits. Hence, over time banks were able to substitute bank notes with bank deposits. This, in addition to the fact that the Act was suspended whenever a real panic occurred in the subsequent 25 years, slowly led to the deterioration of FRB in the UK.

The National Currency Act of 1863 and the National Banking Act of 1864 implemented a FRB requirement for all national banks in the US. According to McCallum (1989, p. 318), these Acts required national bank notes to be 111.11 percent backed by government bonds (so it was even more than *full*-reserve banking as it imposed a 111.11 percent reserve requirement). Later, according to White (1983, p. 11), Congress imposed a 10 percent tax on any new issuance of bank notes by state-chartered banks. This led banks, both national and state-chartered, to reduce the issuing of bank notes. As in the UK, the US banks were, nevertheless, able to undermine the reform by increasing their issuance of demand deposits.

Ludwig von Mises (1912) presented his brief proposal for FRB arguing that there are two reasons why FRB should be adopted. Firstly, the use of fiduciary money (i.e. money that represents dual sides of a balance sheet) would be destabilising and, secondly and more importantly, human influence on the credit system would be eliminated. As cash and central bank reserves are also fiduciary money, it is quite obvious that Mises is arguing for a full-reserve gold standard (or some other metal standard). Thereby, the FRB proposal of Mises substantially resembles Ricardo's pure commodity standard of almost a century earlier.

The origins of later **sovereign money** proposals can be traced back to Frederick Soddy. He was a Nobel Prize winner in chemistry in 1921, but he was also an economist. Soddy (1926) pointed out the difference between real wealth (buildings, machinery etc.) and virtual wealth (money and debt). Real wealth is subject to inescapable entropy laws of thermodynamics (depreciation), while virtual wealth is subject only to laws of mathematics (compounding at the rate of interest instead of depreciating). As a solution to this imbalance Soddy (1926; 1934) suggested FRB. Soddy's economic views, however, were largely ignored by his contemporaries.

Even though it was implemented in the 19th century both in the UK and in the US, FRB was unable to endure as near-money emerged and finally replaced bank notes as the dominant means of payment. This near-money, known as bank deposits, continues to occupy the position of the main means of payment.

3. Chicago Plan: on the Policy Agenda

During Roosevelt's New Deal banking reforms, FRB re-emerged in the form of the Chicago Plan. The Chicago Plan was presented as a way out of the Great Depression as well as providing a long-term reform of the financial system. This section is divided into three subsections. First, I outline the proposals for the Chicago Plan. Second, I present legislative

initiatives implementing the FRB principle. Third, I describe academic reactions to the Chicago Plan.

3.1 Proposals

The first version of the **Chicago Plan** was provided by Knight et al (1933) in the Chicago Memorandum of March 1933. The memorandum was from Garfield Cox, Aaron Director, Paul Douglas, Albert Hart, Frank Knight, Lloyd Mints, Henry Schultz and Henry Simons and it was signed by Frank Knight. All were members at the University of Chicago. Later Douglas became a senator and is still known in economics for the Cobb-Douglas production function. The recipient of the memorandum was Henry Wallace, the Secretary of Agriculture.

In short, the proposal would require FRB in currency and central bank reserves, which would be backed by government debt in the books of the Federal Reserve Banks. The detailed proposal included 1) federal ownership of the Federal Reserve Banks, 2) giving Congress the sole power to grant charters for deposit banking, 3) a two-year transition period for deposit banking, 4) creation of a new type of deposit bank institution with a 100 percent reserve requirement in notes and deposits at the Federal Reserve Banks, 5) abolition of reserve requirements for Federal Reserve Banks, 6) replacement of private credit with Federal Reserve Bank credit within a two-year transition period, and 7) restricting currency to only Federal Reserve notes. As deflation was the pressing economic problem of the time, one of the short-term objectives of the proposal was reflation (a term coined by Irving Fisher to indicate inflation after deflation) of wholesale prices by 15 percent, until a long-run currency-management rule could be established. As a long-run currency-management rule the group proposed different versions of the stabilisation of money supply (either total quantity M, total circulation MV, or per-capita total circulation MV/N; where M is the money supply, V is the velocity of circulation and N is the number of inhabitants).

According to Phillips (1994a), Wallace handed the Chicago Memorandum of March 1933 to President Roosevelt two and half weeks after his inauguration. The Chicago Plan was also sent to a number of other recipients including John Maynard Keynes. According to Phillips (1994a), Keynes briefly expressed his interest in the plan, but did not elaborate his views in more detail.

The second version of the Chicago Plan was provided by Simons et al (1933) in the Chicago Memorandum of November 1933. The memorandum was signed by the same group, but, according to Phillips (1994a), it was evidently written only by Henry Simons. The revised Chicago Plan included the same items as the March 1933 version, but added a simple rule for monetary policy and a price-level target set by Congress. It was argued that monetary policy should be subject to a rule instead of being discretionary. The goal could be, for instance, price stability, steady growth of the money supply, or some other goal specified by Congress. The proposal included neither deposit insurance, as deposits would already be fully secured by the reserves backing them, nor a central bank discount window – as banks would always be able to settle their payments and credit availability was not seen as a potential problem. In addition, the proposal rejected the gold standard.

Proponents of FRB can also be found within the US administration. In 1934, Secretary of Treasury Henry Morgenthau appointed Jacob Viner to assemble a group to come up with ideas involving money, banking and public finance. The group was referred to as the 'Freshman Brain Trust'. It included, among others, Lauchlin Currie and Albert Hart, who were open advocates of FRB, and Jacob Viner who was at least sympathetic to it. Later that year, Currie became a personal assistant to the governor of the Federal Reserve Board, Marriner Eccles.

Lauchlin Currie (1934) submitted his proposal for FRB to Morgenthau in 1934. In Currie's **sovereign money** proposal, banks would initially meet the 100 percent reserve requirement with a non-interest-bearing note from the Federal Reserve Banks. The note could be left outstanding indefinitely or alternatively the note could be retired over a period of time from five to 20 years by turning over government bonds to the Federal Reserve Banks. As the discount window would be abolished, the money supply could only be affected by open market operations. Currie (1934) was against an independent monetary authority as he argued that democracy should apply to monetary policy as well. As his memo from 1938 reveals, Currie (2004) continued to develop the idea of FRB. Another proposal for FRB, emanating from within the administration, came from Gardiner Means (1933) who was working at the Department of Agriculture.

According to Sandilands (2004), Currie had a major influence on the administration version of the Banking Act of 1935. Phillips (1994a) argued that Currie did not, however, suggest FRB should be included in the administration version of the bill, as he saw it as politically unacceptable. According to Phillips (1994a), Currie compromised on the 100 percent reserve goal, and, in the end, his compromise prohibited any possibility of such a reform being achieved in the future. Nevertheless, Currie was able to include in the administration version of the bill that the Federal Reserve Board would have unlimited power to alter the reserve requirements – with a view to them eventually being raised to 100 percent. Senator Carter Glass, however, was able to rewrite the bill in Congress to limit the Fed's ability to raise reserve requirements higher than 30 percent. It goes without saying that this prohibited any attempt to raise the reserve requirement to 100 percent.

President Roosevelt and Irving Fisher, according to Phillips (1994a), were frequently in touch. Roosevelt requested Fisher to provide comments on his economic policies. Phillips (1994a) argued that Fisher first became aware of FRB as he was handed the Chicago Memorandum. Fisher was working on his own version of the Chicago Plan and provided a draft of his book *100% Money* to Roosevelt. Afterwards, according to Phillips (1994a), Fisher urged Roosevelt to consider the proposal a number of times. Roosevelt and Fisher continuously exchanged letters on FRB and Roosevelt even showed some interest in it, but he was not willing to embrace the reform as the bankers were opposed to it. Nevertheless, Roosevelt forwarded Fisher's draft to his Secretary of Treasury, Henry Morgenthau.

In 1935, Irving Fisher published his own version of FRB. Fisher's (1935) book *100% Money* was largely in line with the Chicago Plan, but it differed somewhat in its policy target. Fisher proposed a price-level stabilisation rule instead of stabilisation of monetary aggregates.

3.2 Legislation

Legislation to implement FRB was introduced during the New Deal reforms. It is worthwhile noticing that FRB was already made possible by the Emergency Banking Act of 1933. The Act permitted banks to offer deposit accounts backed with cash, central bank reserves or government bonds. In other words, these deposit accounts operated according to the FRB principle. There were, of course, other deposit accounts as well and, thus, only a small fraction of deposits became fully-backed by government money. For the banks, the full-reserve requirement of these accounts was easy to satisfy as the Fed flooded the banking system with excess reserves by changing its policy to issue reserves against almost any assets of the banks.

The idea of FRB was also practiced without legal obligations on bank-level. According to Phillips (1994b), John M. '100%' Nichols put the theory fully into practice by successfully operating a bank according to the FRB principle for over a decade.

There were also bills to fully implement FRB nationwide. According to Phillips (1994a), Henry Simons outlined and Robert Hemphill drafted a bill, largely based on the Chicago Memorandums, for Senator Bronson Cutting and Congressman Wright Patman. They introduced the bill S. 3744 'A bill to regulate the value of money' (H.R. 9855) in 1934. The goal of the bill was to correct the shortcomings of the Banking Act of 1933, which did not address the problem of the availability of credit and how to effectively control the money supply. As Phillips (1994a) put it: 'Deposit insurance made banks "safe" not by direct restrictions on their assets, but rather by the promise that the government would guarantee a percentage of the deposits in all banks, good and bad.' In other words, deposit insurance succeeded in stopping bank runs, but it did not address the second primary function of banks: funding the capital development of the economy.

The bill would have made lawful cash money and bank deposits fully-backed with either central bank reserves or government securities. The bill proposed 1) to segregate demand deposits from savings deposits; 2) to require banks to hold 100 percent reserves against their demand deposits; 3) to require banks to hold 5 percent reserves against savings deposits; 4) to set up a Federal Monetary Authority (FMA) with full control over the supply of currency, the buying and selling of government securities, and the gold price of the dollar; 5) to have the FMA take over enough bonds of the banks to provide 100 percent reserves against demand deposits; and 6) to have the FMA raise the price level to its 1926 level and keep it there by buying and selling government bonds.

Senator Cutting was, according to Phillips (1994a), personally disliked by President Roosevelt. This was one reason why the bill did not gain the support of the administration and, consequently, did not pass. Later, however, the bill was reintroduced as S. 2204. A significant blow to the FRB legislation came in May 1935, during the fierce debate over the Banking Act of 1935, when Senator Cutting died in an airplane crash. For the last time the proposal for FRB was introduced by Senator Nye, but his amendment was defeated. The Banking Act of 1935 was a watered down version of Cutting and Patman's bill and – although reforming some aspects, for instance, allowing the Federal Reserve to alter reserve requirements and making deposit insurance permanent – it did not reform money to become fully-backed by government money. Although the Chicago Plan was not adopted, it did have a significant influence on the New Deal legislation. To sum up, the Banking Acts of 1933 and 1935 gave the government better control over monetary policy and the money supply, but not full control over the money supply.

Phillips (1994a) gave four reasons why the FRB proposal was not adopted: 1) the administration blundered in its handling of the banking legislation as it did not keep Senator Glass up to date; 2) the public was ill-informed; 3) Senator Cutting died; and 4) the Banking Act of 1935 was not believed to be the final New Deal banking legislation. Phillips (1994a) added that bankers were against the Chicago Plan as it was seen to reduce their profits. They resisted any changes to the *status quo*, unless it could be demonstrated that the new system would be even more profitable. Whittlesey (1935, p. 23) was pretty much of the same opinion as he saw that the proposal was opposed because free services of banks would no longer be free, and bank owners would lose their main source of profits.

3.3 Academic Reactions

Only after the Banking Act of 1935 had passed did the Chicago Plan start to generate widespread academic interest. Most academic discussions were sympathetic to the plan: there were concerns about transition and details, but the goals were widely seen as desirable.

Douglas (1935), Whittlesey (1935), Hart (1935), Graham (1936) and Higgins (1941) advocated FRB but they emphasised different reasons. In Angell's (1935) version, the government would place a lien on the total assets of the banks equal to the value of new currency received. Service charges would be avoided by banks paying a specified amount to a common pool and then receiving money from the pool relative to their demand deposits.

Watkins (1938, 44) cited Keynes: 'Those (monetary) reformers, who look for a remedy by creating artificial carrying-costs for money through the device of requiring legal-tender currency to be periodically stamped at a prescribed cost in order to retain its quality as money, or in analogous ways, have been on the right track.' Watkins (1938, 44) argued that FRB would be the analogous way that Keynes meant, as it would raise service charges.

Douglas et al (1939) circulated a paper which claimed that FRB was supported by nearly 300 economists while disapproved by only 43. The paper was written by Paul Douglas, Irving Fisher, Frank Graham, Earl Hamilton, Willford King and Charles Whittlesey and it included many of the previous features of the FRB proposals. According to Allen (1977, p. 586), two years later the group also included John R. Commons and the supporters had grown to some 400 economists.

Hayek (1937), on the other hand, revived the **pure commodity standard** proposals. In his pure gold standard proposal, deposits should not be backed with government money, but only with gold. Otherwise Hayek's proposal resembled the original Chicago Plan.

The pure commodity standard type of FRB proposal is sometimes associated with 'free banking'. However, some free banking proposals are, by definition, excluded from being FRB proposals as there are no reserve requirements at all. Other proposals, such as Hayek's (1937), argued for 'free' banking with full gold backing. Apparently, 'free' means in this context 'free from any governmental control' as banks could not freely issue money.

Although FRB might sound like a radical solution now, at the time it was presented as a moderate alternative to the nationalisation of the whole banking system (see e.g. Simons 1948, pp. 332-333; Douglas 1935, pp. 184-187; and Watkins 1938, p. 11). Today it might also sound peculiar that demands for FRB came from the University of Chicago whose economics department is known for *laissez faire* policy prescriptions. According to Phillips (1994a), the founders of the Chicago School of Economics – Frank Knight, Henry Simons, Jacob Viner and Lloyd Mints – were indeed proponents of *laissez faire* in industry, but at the same time they did not question the right of the government to have an exclusive monopoly on money creation.

4. Post-World War II: Academic Developments

After World War II, the atmosphere for reform was again propitious. Congressman Jerry Voorhis introduced a bill H.R. 3648 in 1945 to create a Monetary Authority as the sole creator of money. According to Phillips (1994a), Voorhis worked closely with Fisher who, by 1946, had received over 1100 positive responses out of 4662 members of the American Economic Association willing to endorse FRB (with no response from most of the members). However, the end of the political possibilities for FRB came in the 1946 elections when Congressman Jerry Voorhis from California was defeated by Richard Nixon.

In academia FRB was, nevertheless, not abandoned. After Irving Fisher died, Henry Simons (1948) continued to argue for the **Chicago Plan** and Lloyd Mints (1950, pp. 186-87) suggested his proposal.

Maurice Allais presented his version of FRB in 1948 in French. His views were not published in English until 1987 in Allais (1987). Allais's proposal resembled previous versions of the full-reserve plan, but differed in some important respects. He argued that banks should be required to borrow long and lend short, whereas at the time (and still now) they borrowed short and lent long.

Friedman (1948) suggested eliminating the private creation of money and the discretionary control of the money supply by the monetary authority. This would also mean the elimination of the discount window. Friedman (1948) argued that the chief function of the monetary authority should be to create money to meet government deficits, or destroy money when the government has a surplus. In a later proposal, however, Friedman departed from this view.

Friedman's (1960) later proposal departed from the Chicago Plan by demanding that interest should be paid on reserves – because FRB would be, according to Friedman (1960), effectively a tax on the banking system. Friedman (1960, p. 74) argued that paying interest on reserves would reduce the incentive to evade the full-reserve requirement and to create near-monies. Friedman (1960, p. 65) also argued that holders of money balances and holders of government securities should be equally compensated. Friedman (1960, p. 70) saw 'no technical problem of achieving a transition from our present system to 100% reserves'.

Friedman (1969, p. 83) agreed with Simons's FRB plan, but for different reasons. Friedman's (1969, p. 83) aim was to reduce government interference in lending and borrowing and to allow greater freedom in the variety of borrowing and lending arrangements.

Rothbard (1962) argued that the central bank should be abolished and we should adopt a 'free banking' system. However, Rothbard suggested gold as the only eligible asset to back deposits. In other words, he proposed a **pure commodity standard**. Rothbard's 100 percent gold standard proposal is thus very similar to Hayek's (1937) proposal.

5. Turn of the Millennium: More Creative Ideas

After Friedman, FRB lost its interest in the academic world and among policy-makers for a couple of decades. Proposals for FRB were, however, revived at the turn of the millennium, which generated more creative proposals such as deposited currency, narrow banking and limited purpose banking. Of course, there were also more traditional proposals including government money or gold as the asset to back deposits.

James Tobin's (1985; 1987) **deposited currency** proposal included the establishment of a currency functioning according to the FRB principle, while allowing other deposits as well. Thus, Tobin's (1985; 1987) deposited currency can be seen as optional or 'limited' FRB. In other words, only a fraction (whose size would be determined by the actions of various economic agents) of demand deposits would function according to the FRB principle.

In addition to Tobin's deposited currency, there were also other 'limited' FRB proposals. Jessup and Bochnak (1992) proposed reviving the postal savings system. According to O'Hara and Easley (1979, p. 744), funds in the postal savings accounts could only be invested in government securities or placed in solvent national banks. Thus, the postal saving system can be seen as a limited implementation of FRB.

The turn of the millennium also saw proposals for **narrow banking** (sometimes called core banking). Narrow banking, a term coined by Litan (1987), allows any 'safe' asset to be the balancing item of bank deposits. The safe assets can be anything from central bank reserves to traditional bank loans such as mortgages – depending on the proposal. Indeed, some of the narrow banking proposals are so permissive that they could not be labelled as FRB proposals. However, Litan (1987), Kareken (1986) and Spong (1996) would impose such strict restrictions on bank assets that they *would* qualify as FRB proposals.

Gordon Getty, according to Ferguson (1993), wanted to replace the financial system controlled by the Fed with a parallel system of mutual funds. Pollock (1993), on the other hand, suggested reviving mutual savings and loan associations, which would restrict the funding of investments to equity or shares. These types of FRB proposals are labelled **limited purpose banking**. Mutual fund shares would be effectively money backed by the asset portfolio. There would be no government insurance and no guarantee of par value clearance. Instead of banks, individuals would carry the risks. This would be a full-reserve system, but neither in government liabilities nor in commodities.

While Hotson (1985) and Schemmann (1991) wanted to carry out the **Chicago Plan** in a more modern context, Islamic banking was also discussed as an alternative way to organise the monetary system. According to Phillips (1994a, pp. 208-209), Islamic banking, which forbids charging interest, is also one type of FRB. Khan and Mirakhor (1985), Khan (1986; 1988) and Doak (1988) provide a detailed discussion on the connection between FRB and Islamic banking.

In 1998 Huerta de Soto (2009, ch. 9) proposed a **pure commodity standard** following a very liberal line of argument from the Austrian school. He proposed a FRB system which would offer total freedom of choice in currency; implement free banking; and abolish central banking. Thus, Huerta de Soto's proposal is built especially on the FRB proposals of Ludwig von Mises (1912), Friedrich Hayek (1937) and Murray Rothbard (1962) who opposed any monetary system in which the government would have significant influence on monetary policy – either through interest rates or the quantity of money. As Hayek (1937) and Rothbard (1962) demanded FRB only in gold, Huerta de Soto (2009, p. 739) made the same argument for a pure commodity standard although after the initial transition to a 100 percent gold standard he was willing to accept 'the spontaneous and gradual entrance of other monetary standards' as well.

Daly (1980), and other ecological economists, finally revived Soddy's (1926; 1934) **sovereign money** version of FRB. Rowbotham (1998) concentrated on a holistic analysis of the current monetary system and on the reasons for monetary reform, but he also presented his version of how to concretely implement the sovereign money system. According to Rowbotham (1998), the fraction of government money should be gradually increased either through government spending or basic income.

Huber and Robertson (2000) presented the first detailed proposal for sovereign money. Their main argument was that seigniorage revenue should be restored as the sole privilege of the government. Hence, all new money would be issued as public revenue and it would be spent into circulation by the government.

6. Aftermath of the Global Financial Crisis: Back to the Policy Agenda

The GFC sparked a new wave of proposals for, and academic research on, FRB. Recently, Martin Wolf (2014a; 2014b), the chief economics commentator at the *Financial Times*, supported FRB openly; the UK parliament debated on money creation; Switzerland is

preparing a referendum on FRB; Iceland's Prime Minister commissioned a report on FRB; and bills to implement FRB have been put forward in the US and UK. FRB has indeed become a timely topic again.

Firstly, in this section, I outline the contemporary proposals for FRB. Then, I describe legislative initiatives and civil movements advocating FRB. Finally, I present academic modelling of FRB.

6.1 Proposals

Positive Money probably presents the most detailed version of FRB so far in Jackson and Dyson (2012). Positive Money's **sovereign money** proposal is written in the UK context and it has been endorsed by *Financial Times* columnist Martin Wolf (2014a). Kolehmainen et al (2013) is my co-authored proposal which adapts a sovereign money proposal for Finland.

Jackson and Dyson (2012) argue that money should be an asset to the holder, but not a liability to anybody. Contrary to previous FRB proposals, Jackson and Dyson (2012) and its former version Dyson et al (2011) suggest that deposits should be treated off-balance sheet in accounting. That is, all deposits would be held in custody at the central bank (although they also provide an alternative treatment where deposits would be held on-balance sheet at the central bank). They argue that coins in the US are actually treated in this way even today.

The transition from the current banking system to FRB would be done in an overnight switchover in Positive Money's proposal. Jackson and Dyson (2012) adopt Currie's (1934) proposal that demand deposits would be replaced in the balance sheets of banks with a 'conversion liability', which banks would have to repay to the central bank over a ten-to-20-year period of time. The objective of the conversion liability would be to reclaim seigniorage revenue from previously issued deposits back to the government. Thus, their proposal is in line with Huber and Robertson's (2000) previous proposal.

In Jackson and Dyson's (2012) system there would be two types of bank accounts. Current accounts called 'transaction accounts' and savings accounts called 'investment accounts'. No money would be actually held in savings accounts as the money would be transferred from an economic agent's current account to a bank's 'investment pool', which is the bank's current account for making loans. Savings accounts are thus promises by banks to pay money after a certain period. Jackson and Dyson (2012) introduce as a catch-all requirement that a bank must be able to repay the total sum of its current accounts at any time. This would effectively prevent any money creation by banks.

Jackson and Dyson (2012) propose that an independent body would decide how much new money should be created in order to prevent political abuse. The newly created (destroyed) money would simply be added to (subtracted from) the government's budget and, subsequently, a political body such as parliament would decide how the newly created money would be used (collected). Basically, there are four alternatives: increase government spending, cut taxes, make direct payments to citizens or pay off the national debt. Additionally, in order to avoid a credit crunch in some circumstances money could be created by lending it to banks on the condition that they re-lent it to the real economy. The monetary policy target would be unaffected unless decided otherwise. That is, the independent body responsible for money creation would target inflation.

Besides supporting Positive Money's FRB proposal in Wolf (2014a), Martin Wolf also came out with his own proposal. Otherwise Wolf's (2014b) proposal resembles to a large extent Positive Money's sovereign money proposal but it would also strongly increase capital requirements.

Herman Daly (2013) follows the arguments of Frederick Soddy (1926; 1934) and Lauchlin Currie (1934; 2004). He justifies FRB by arguing that it would better service a non-growing or de-growing economy. In addition, he argues that seigniorage revenue should entirely go to the government. In his sovereign money version of FRB monetary policy should be subject to parliamentary decision-making instead of being independent. Farley et al (2013) continue Daly's ecological justification of FRB.

Mayer's (2013a) proposal concentrates on the euro area and turns the established order of the EU Banking Union upside down. EU Banking Union means the establishment of a Single Supervisory Mechanism (SSM), Single Resolution Mechanism (SRM) and common deposit insurance scheme for the euro area (and an opt-in possibility for non-euro area EU states). Until now only SSM has been achieved as the ECB took over financial supervision of the largest banks from national supervisors in November 2014. SRM, which may require laborious change of the EU Treaties, is only being planned. Moreover, common deposit insurance has been postponed into the indefinite future.

Mayer (2013a) argues that the EU Banking Union should have been established starting from common deposit insurance, then SRM and finally SSM. Instead of governments guaranteeing bank deposits, Mayer suggests that FRB should be adopted to make deposit insurance obsolete. After that, according to Mayer (2013a), establishment of SRM and SSM would be more straightforward and the EU Banking Union would be more functional.

In addition, Mayer (2013b) provides seven accounting options for the central bank for how new money can be brought into circulation under FRB. For example, new money could be issued through negative equity. This would mean changing only the liabilities side of the central bank's balance sheet when issuing money. As the central bank cannot go bankrupt, it can operate with negative equity without any problems.

The idea of **deposited currency** was revived after the GFC by Gruen (2014) with his elaborate proposal. In Lainà (2015a) I make a similar proposal to allow central bank accounts[2] for all economic agents in Finland.

Also **narrow banking** has been recently proposed as a solution by DeGrauwe (2008), Kay (2009) and Phillips and Roselli (2009). In DeGrauwe's (2008) proposal narrow banks would be precluded from investing in equities, derivatives and complex structured products. Nevertheless, he does not explicitly determine the assets valid for backing deposits. Phillips and Roselli (2009) would allow government securities – in addition to central bank reserves – as the balancing assets. DeGrauwe (2008) suggests that maturity mismatch would not be allowed for any financial institutions other than narrow banks (i.e. the average duration of other financial institution's liabilities should equal the average duration of their assets). According to DeGrauwe (2008), if only a few countries would implement narrow banking, the banks of these countries would face a competitive disadvantage. Consequently, DeGrauwe (2008) demands also international coordination in order to avoid a regulatory race-to-the-bottom.

Kotlikoff (2010), on the other hand, suggests **limited purpose banking**, a variant of FRB in which each pool of investments made by a bank would be turned into a mutual fund. This would mean that there would be no maturity mismatch between a bank's assets and liabilities. In other words, banks would not be leveraged at all and they would be pure intermediaries between borrowers and lenders. Kotlikoff (2010) admits that it could lead to irrational collective exuberance (financial instability), but he argues that risks and rewards would be better aligned. Banks could not fail as they are not leveraged. Losses would be

[2] According to Godley and Lavoie (2006, p. 102), in some countries individuals are allowed to hold deposits at the central bank and, thus, already have a deposited currency.

absorbed by investors. The Bank of England's former governor Mervyn King (2010) discusses FRB and shows cautious support for it – especially for Kotlikoff's version.

Also Cochrane (2014) argues for limited purpose banking. As bank deposits are run-prone liabilities of banks, Cochrane (2014) argues that banks should be funded 100 percent with equity. According to Cochrane (2014), technology is already available for allowing everybody to sell assets (such as equities) and obtain fully-backed money instantly. Cochrane(2014) sees capital requirements as inefficient regulation and proposes taxing short-term bank debt instead in order to test whether run-prone liabilities are really worth having around. Furthermore, Cochrane (2014) argues that the central bank should include everybody as its counterparties when issuing reserves.

6.2 Legislation and Civil Movements

After Congressman Jerry Voorhis was defeated by Richard Nixon in the 1946 elections, there had not been any legislative initiatives to implement FRB in the US until the GFC. However, in 2011 Congressman Dennis Kucinich introduced a bill H.R. 2990 'National Emergency Employment Defense Act' (NEED Act) to implement FRB in the US. The draft version of the bill was known as the American Monetary Act. The bill, however, failed to pass.

In 2010 in the UK, a Member of Parliament, Douglas Carswell, introduced a short bill 'Financial Services (Regulation of Deposits and Lending)' which, in effect, would implement FRB in the UK. Unsurprisingly, the bill did not pass. Positive Money (2013) has drafted a much more detailed bill to implement FRB in the UK, but it has not been introduced yet.

The UK parliament, nevertheless, debated on money creation for the first time in 170 years on 20 November 2014. The debate was entitled 'Money Creation & Society'. Although no voting on legislation followed the debate, it certainly raised awareness of the monetary system and its alternatives among members of the UK parliament. Indeed, in the following year, the Green Party UK (2015) included FRB in their political agenda in their general elections manifesto.

Iceland is considering how to concretely put the idea of FRB into practice. Iceland's Prime Minister, Sigmundur David Gunnlaugsson, commissioned a report authored by Frosti Sigurjonsson (2015). The report has a chance to lead to legislation which would implement FRB in Iceland.

Sigurjonsson's (2015) report is very similar to Jackson and Dyson's (2012) proposal, but it gives more precise numbers. For instance, Sigurjonsson (2015) suggests a 45-day minimum maturity or notice period for time deposits. He would also set the interest rate on the conversion liability equal to the average current interest rate on demand deposits in order to avoid making banks better or worse off than in the current system.

Worldwide there are a number of political parties, NGOs and civil movements demanding FRB. Reforming money to function according to the FRB principle is one of the main goals of the following political parties: Green Party (UK), Money Reform Party (UK), Canadian Action Party (Canada), Humanwirtschaftspartei (Germany), Alternativet (Denmark) and Democrats for Social Credit (New Zealand). In Switzerland, Vollgeld-Initiative (Sovereign Money Initiative in English) is a project preparing a referendum on adopting FRB.

The International Movement for Monetary Reform is an umbrella organisation for national NGOs and civil movements propagating the idea of FRB. In addition to Positive Money in the UK, there are many national NGOs and civil movements advocating FRB, for instance, American Monetary Institute (US); Progressive Money (Canada); Sensible Money (Ireland); Fair Money (Australia); Positive Money NZ (New Zealand); Monetative (Germany); MoMo (Switzerland); Ons Geld (Netherlands); Monnaie Honnête (France); Moneta Positiva

(Italy); Dinero Positivo (Spain); Boa Moeda (Portugal); Dinero Justo (Puerto Rico); Positiva Pengar (Sweden); Gode Penge (Denmark); Betra Peningakerfi (Iceland); and Suomen Talousdemokratia (Finland).

6.3 Academic Modelling

Although in recent years there has been a revival of interest in FRB, it has so far been modelled little and with mixed methods. Indeed, it was never formally modelled until the GFC. After the GFC, FRB has been modelled in a dynamic stochastic general equilibrium (DSGE) framework, in a system dynamics framework, in a dynamic multiplier framework and in a stock-flow consistent (SFC) framework. Regardless of the diverse modelling approaches, according to the results, the consequences of adopting FRB seem to be widely positive. Next I will briefly go through these modelling results.

Benes and Kumhof (2012) conducted their study at the IMF and used the methodology of neoclassical economics – DSGE modelling – to reach the same conclusions as Irving Fisher (1935) almost eight decades earlier. According to Benes and Kumhof (2012), FRB would 1) provide better control of money supply and bank credit, which are a major source of business cycle fluctuations; 2) eliminate bank runs; 3) reduce public debt; and 4) reduce private debt. Furthermore, they found that output would increase by almost 10 percent and inflation could be dropped to zero without causing any problems. Later, Benes and Kumhof (2013) revised their paper but the results remained unchanged.

Yamaguchi (2010) modelled the NEED Act, and later refined the modelling in Yamaguchi (2011; 2014), using accounting system dynamics approach. Yamaguchi (2010; 2011; 2014) found that, in stark contrast to the current monetary system, under FRB government debt can be liquidated without triggering recession, unemployment or inflation.

Flaschel et al (2010) and later Chiarella et al (2011) showed in a dynamic multiplier framework that FRB provides a more stable financial environment than the current fractional-reserve banking system – even if appropriate monetary policy is conducted. Furthermore, they showed that under FRB a sufficient loan supply can be guaranteed (and that bank runs do not occur, which should be obvious, since the logic of FRB makes bank runs redundant).

Most recently, in Lainà (2015b) I modelled FRB in a SFC framework popularised by Godley and Lavoie (2006). I found that FRB can accommodate a zero growth economy and provide both full employment and zero inflation. In addition, FRB would not cause credit crunches or excessively volatile interest rates. Not surprisingly, money creation through government spending would lead to a temporary increase in real GDP and inflation. More surprising, however, is that money creation would also lead to a permanent reduction in consolidated government debt.

Until now, there are only a few attempts to model FRB – and even those have been conducted very recently. The results of various modelling methods seem to be tentatively promising – at least for proponents of FRB. However, for more general conclusions, more modelling is required.

7. Concluding Remarks

This paper provided a comprehensive outlook on historical and contemporary proposals for FRB. FRB was first proposed by David Ricardo in 1823. Ricardo's proposal served as a guideline for the Bank Charter Act which implemented FRB in the UK in 1844. Two decades later, FRB was also implemented in the US. Nevertheless, bank deposits slowly replaced

bank notes fully-backed with government money. Since then, bank deposits have remained the dominant means of payment.

The FRB proposals have become particularly popular after serious financial crises, especially the Great Depression and the GFC – which both sparked a number of proposals for FRB. The supporters of FRB included many prominent economists such as Irving Fisher, Milton Friedman, Herman Daly and James Tobin. One of the most recent proposals came from Martin Wolf, the chief economics commentator at the *Financial Times*.

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