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The Federal Reserve System and World War I: Designing Policies without Precedent

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The Federal Reserve System failed to prevent the collapse of intermediation during the Great Depression (1929-1933) and took action as if it was unaware of policies that should have been taken in the event of widespread bank runs. The National Banking Era panics and techniques to alleviate them should have been useful references for how to alleviate a financial crisis. We suggest that the overwhelming effort to finance World War I combined with a perspective held by contemporary Federal Reserve officials that the central bank legislation was sufficient to overcome financial crises are key reasons why the historical experiences were overlooked.

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I Introduction

The Federal Reserve System was established by an Act of the United States Congress and signed by President Woodrow Wilson on December 23, 1913 and it became operational on a minor scale on November 16, 1914. At the onset of the First World War in late July 1914, the United States lacked an operational central bank for the first few months. As a noncombatant at this time, the U.S. had yet to face the massive financial demands of waging war.
By April 2, 1917, when the U.S. entered the military conflict, the nascent Federal Reserve was system was still far from a full-formed and functioning institution. The wartime demands made the Fed temporarily subservient to the needs of the Treasury and thereby stunted the development of its institutional capacity, narrowed the formulation of policy, and limited the exploration of crises response strategies of the central bank.

The banking crises of the National Banking Era (1863-1914), often considered events that the establishment of the Federal Reserve System, were alleviated by the combined efforts of private clearing houses (mainly, the New York Clearing House Association), the United States Treasury, and occasional assistance from abroad.[1] Given this conventional viewpoint, it is curious that the Federal Reserve Act displays scant reference to these crises in the text of the legislation, and leaves an ambiguous role for the Federal Reserve System in crisis alleviation. We explore why lessons of financial crisis prevention from the pre-Federal Reserve National Banking Era were not incorporated into the institutional understanding of the Federal Reserve System. Curiously, the concepts that guided the policies that successfully avoided a panic in 1914 have parallels in the more modern policies implemented in the United States in 2007-2009.

[1] See Sprague (1910), Wicker (2000). On the occasional assistance from abroad, see Rodgers and Payne (2014) on the policy of the Banque de France to aid the U.S. in 1907. See also Silber (2008) and Jacobson and Tallman (2014) for the case of emergency currency issues in 1914.

This paper explores two main factors contributing to the Federal Reserve's failure to retain lessons from historical episodes: the lack of a relevant antecedent for the Federal Reserve to follow during the war years and beyond as well as the notion that the Federal Reserve System was sufficient to overcome financial crises. The last war in which the United States had a central bank was the Revolutionary War (1775-1783). Government and Federal Reserve officials had yet to clarify how the institution could best support the war effort throughout World War I. We emphasize that the Federal Reserve's subservient role helped mobilize the nation's financial resources to support the war effort. This unexpected role, along with the conceited notion that panics would be "mathematically impossible" (Studenski and Krooss 1952: 258), likely contributed to the lack of institutional focus on crises prevention strategies in the subsequent decade.

The paper begins by offering a condensed and narrow discussion of the United States prior to the establishment of the Federal Reserve System, then proceeds to a discussion of the central elements of the Federal Reserve System as conceived before World War I. We then discuss the substantive effects of World War I on the development of the Federal Reserve System, both when the U.S. was noncombatant and after April 1917, when the U.S. entered the war. We discuss the role played by the Fed throughout this period and highlight the difference between that role and the one proposed within the institutional design in the Federal Reserve Act.

II Background: Founding of the Federal Reserve System and World War I

The flaws of the pre-Fed U.S. monetary system were well-known by market participants, economists and economic policy makers and the design of the Federal Reserve System took direct aim at addressing those flaws. The dual banking system, the pyramid structure of bank reserves, the concentration of reserves in New York City as funding sources for call money loans on stock and bond collateral were all structures targeted by the Federal Reserve Act. Federal Reserve System activities in the early years, however, were actions in response to a set of challenges completely different from the ones it was designed to address. As a result, it is unsurprising that assessments of Federal Reserve policies during its early years are unflattering.

Noyes (1916: 32) offers a synopsis of the key elements of monetary reform legislation needed to address to solve the recurrent crises problem in the U.S. Firstly, there should be a way to centralize the pool of gold reserves. Secondly, there should be a central lending authority from which intermediaries could rediscount assets. Thirdly, Noyes suggests that the issues of national bank notes (as notes of issuing banks) should be replaced by notes issued by a central authority. The Federal Reserve Act satisfies all these elements of reform.

Kemmerer (1922: 37) expresses the hopes and aspirations for the system by the reformers:

> The time therefore arrived in the summer of 1917 when commercial banks belonging to the Federal Reserve System ceased tying up their legal reserve money by depositing it in the banks of our money market centers there to be loaned out at call to speculators on the stock and produce exchanges. This divorcing of the legal reserves of over 9800 commercial banks from the speculative and capital loans of the stock market – mainly, that of Wall Street – is one of the big achievements of the Federal Reserve System.

However, the assessment was premature and ultimately inaccurate. The Federal Reserve System was unable to weaken the connection between the banks and call money lending. Further, despite dismantling the pyramid reserve structure, the dual banking system and correspondent banking remained essential for effective operation of the U.S. financial system.

The establishment of the Federal Reserve System was only the first step in monetary reform; it took several years for its operations to become fully functional. Wicker (1966) notes that the first two years of Federal Reserve effort was aimed at getting the institution operations up to its capacity. In surveying internal Federal Reserve Board memos for the years 1914-1915, we found that Wicker's comment was accurate. The main concern expressed in Board meeting minutes was on the practical and immediate needs to become a functional intermediary – finding office space to rent, constructing vault space for gold, planning an organizational structure, hiring employees – all the challenges of a newly formed Federal Agency. The difference, however, is that the Federal Reserve System engaged in these activities as the First World War was altering the international financial structure. As a result, the Fed was faced with challenges for which it saw no precedent in the U.S. financial experience since the Revolutionary War (1775-1783). Friedman and Schwartz (1963: 192) note:

> The Federal Reserve System was created by men whose outlook on the goals of central banking was shaped by their experience on money panics during the national banking era. The basic monetary problem seemed to them to be banking crises produced by or resulting in an attempted shift by the public from deposits to currency…
> The act was no sooner passed than the conditions taken for granted ceased to hold. Before the system began operations, World War I had begun.

The belligerent nations had closed their stock exchanges, left the gold standard, and yet war-related demand for U.S. exports by 1915 was rising.[2] Chart 1 displays Federal Reserve notes as a percentage of total currency in circulation as a measure of the institution's penetration into the financial system. The chart indicates that the Federal Reserve System required the first two years to get established, but appears to gain traction in 1917. Once the U.S. entered World War I, the role of the Federal Reserve System in U.S. financial policy shifted notably from what its founders intended. The legislation was designed to make the Federal Reserve System a

[2] These factors led to a massive inflow of gold into the United States. Meltzer (2002) notes that interest rates fell by nearly 200 basis points from mid-December 1914 to February 1915. It is notable that the inflows of gold continued until early 1917, just around the time of the U.S. entry into the war.

source of funding for short-term bank liabilities that facilitated similarly short-term commercial transactions. That is, the "real bills" proponents envisioned the Fed to provide a rediscount function for member banks to fund short-term “self-liquidating” loans for productive purposes.

From the period starting in 1917, the Federal Reserve System adopted policies as necessary to support the Treasury and the war. Features of monetary policy design that were considered key elements of the Federal Reserve System were violated as its role –subservient to the Treasury – took hold. For instance, the Federal Reserve eschewed a penalty rate on discount window loans. The original design of the discount window bore a close resemblance to the issuance of clearing house loan certificates, and the penalty rate was meant to keep borrowers from tapping rediscount funding unless it was a dire need.

During the financing of World War I and the period immediately following the war, the Federal Reserve System instead lent funds to banks at “preferential rates” – rates equal to yields on Treasury Certificates– to encourage bank financing of Treasury debt. Essentially, the Fed, by lending on Treasury debt collateral at interest rates below the rates offered on the Treasury debt, was providing banks with a profitable method of financing purchases of Treasury debt. And as a passive provider of credit, the Fed surrendered control over the size of its balance sheet. Secondly, top level officials at the Federal Reserve – Reserve Bank Governors – took leadership positions as Liberty Bond Committee Chairs to promote their sale. Thirdly, by offering discount loans on Treasury bond and debt collateral at rates below the discount rate on commercial paper collateral, the Fed thereby undermined its own “real bills” foundations – the promotion of productive lending suffered relative to the financing of government debt. Further, the Fed bought some Treasury debt and Fed ownership of government debt was problematic because

Treasury debt could not be used as collateral for its currency – Federal Reserve notes. Discounted commercial paper and gold were the only acceptable backing for currency.

The restriction on the collateral for currency arose from the "real bills" doctrine, which proposed that aggregate credit should fluctuate in tandem with the "needs of trade" or as the economic activity requires. The restriction also arose from experiences with national bank notes that required Treasury debt as collateral; the arguments focused on how the fluctuations in currency issues moved with the federal debt volumes outstanding, and not with the fluctuations in the "needs of business." Hence, matching fluctuations in the currency supply with its demand (the needs of the economy) was an important element of the concern with Treasury debt collateral for Federal Reserve liabilities.

The war also forced many changes on financial markets and on their transactions. Those changes made obsolete a number of the guiding principles that underlie the Federal Reserve Act. In particular, the design of the Federal Reserve Act monetary reforms aimed at using private short-term credit vehicles as the backing or collateral for monetary assets along with a 40 percent gold reserve.[3] Federal Reserve notes were backed by commercial paper or "productive assets" rather than by Treasury debt. Although the enormous issue of Treasury debt offered the Fed an ample supply of assets and a liquid market for open market operations, for the Fed to actively trade in Treasury debt would have been in direct conflict with the intentions of the Federal Reserve Act. As noted above, Treasury debt was the collateral that backed national bank notes during the pre-Federal Reserve era. Federal Reserve legislation sought to remove a dependence of currency on the outstanding stock of federal debt.

[3] Revision of the act reduced the collateral backing of Federal Reserve note currency to the sum of commercial paper (60 percent) and gold (40 percent).

Passive supply of Federal Reserve Credit from 1917-1920 – largely in the form of discounts and loans (much of which was collateralized by Treasury debt) – became the primary form of asset backing Federal Reserve liabilities. These policy decisions --or apparent acquiescence to Treasury initiatives—along with the increased level of gold held by the Federal Reserve banks led to a wartime inflation followed by a post-war inflation. During this post-war period, the Fed struggled to wrench control of monetary decisions away from the Treasury.[4] On the other hand, the Fed was able to dislodge the Independent Treasury System and become the fiduciary agent for the Treasury by 1920, thereby becoming more like a "central" bank in function.

The World War I experience demonstrated the influence that Federal Reserve System policy could have when member banks held substantial borrowing totals from the Fed. There was a clear distinction between the actual behavior of the Federal Reserve System and its anticipated behavior as outlined in the Federal Reserve Act. The contrast was most clearly illustrated in the observation that Treasury debt was the key asset for which the Fed issued loans during this period. In the Federal Reserve Act, the Federal Reserve Banks were designed to offer credit to banks that would be collateralized by self-liquidating loans for productive purposes. That is, the practical concerns of financing the war moved the Fed towards Treasury debt and the promotion of holding such debt as collateral for discount window loans and away from the "real bills" functions that were envisioned in the Federal Reserve Act.

The Fed displayed a perceived aversion to having large-scale lending balances in the 1920s. Chart 2 displays Federal Reserve System discount lending (borrowing by member banks) relative to the monetary base and contrasts that measure with bank reserves held at the

[4] See Friedman and Schwarz (1963), Wicker (1966), and Meltzer (2002) for in depth analysis of this period.

Fed relative to the monetary base. The notable decline in bank discounts following 1920 reflects the Fed's aversion to having large bank indebtedness after war financing demands had diminished. In effect, the lack of lending balances weakened the discount function as a funding source for the banking system and also hindered the evolution toward an alternative method for the Fed to implement monetary policy. World War I financial demands made Treasury debt the predominant form of collateral offered for discount window loans, and although it was an aberration, the situation persisted for several years. The Fed could have weaned the banking system off of the large scale (and subsidized) lending in support of Treasury bond and debt financing and at that same time shifted toward the use of Treasury debt as an additional form of collateral and as a key source of lending to maintain the growth of the monetary base during the 1920s.

By moving away from discount window lending as the key asset backing Fed liabilities, the Fed in the 1920s displayed behavior consistent with an argument posed in Wicker (1966). Wicker contends that the early Fed lacked a coherent idea and an explicit vehicle (an asset to buy) to produce a trend increase in the base money supply to support both the growing economy and the expanding financial sector. The irony is that a discount window interest rate at a penalty interest rate as was intended in the Federal Reserve Act never took hold after the early experience with a preferential rate for Treasury debt. A penalty rate would be consistent with the issuance of clearing house loan certificates, and the concept of discount window lending as a temporary source of liquidity. Further, a penalty rate is analogous to a key component of Bagehot's rule to combat banking crises – lend freely on good collateral *at a high rate*. However, by allowing the discount rate to remain below market interest rates, the Fed instituted the discount window as an administered credit vehicle in which applicants for borrowing faced selective acceptance. Selectivity as well as the later (1927-29) institutional use of “direct pressure” – Fed influence on how the borrower was to employ the borrowed funds to limit “speculation” – likely contributed to the perceived aversion to borrowing at the discount window that persisted through the subsequent decades.

III A New Monetary Authority Without a Relevant Antecedent

The changes in the world financial system arising from World War I had serious ramifications for the nascent Federal Reserve System. The intensity of each of the Federal Reserve’s priorities – becoming functional operationally and then financing the war – dominated Federal Reserve policy and hindered any progress on the formulation of policy, or the strategies to combat financial crises. The same sentiment was expressed in virtually all the secondary sources (Meltzer 2002, Wicker 1966, Friedman and Schwartz 1963, and Chandler 1957) – that the financial requirements from U.S. participation in World War I left no opportunity for the Fed to develop a monetary or credit policy. Further, the Federal Reserve was not able to confront early on and settle the internal policy power struggle between the Board of Governors and the Federal Reserve Banks (mainly, New York) that would ensue after the war.

Although the Federal Reserve was founded on the guiding principles of furnishing an “elastic currency” in times of monetary stringency, the inflow of gold from abroad beginning in December 1914 made liquidity provision less of an issue for the financial markets and the threat of financial panic appear minimal. Furthermore, after the U.S. entry into World War I, the large volume of Treasury debt and its perceived liquidity (and acceptability as collateral) made Treasury debt collateral an appealing candidate for an open market operation policy to focus on. Changes in the financial markets took hold as a result of the war, and those changes influenced key Federal Reserve policy makers to address what they perceived as permanent changes that required the creation and adoption of new policies. What we suggest is that the new policies may have been justified on a variety of grounds, but in the deliberations and discussions, there was an apparent disconnection from addressing or heeding any lessons from crisis experiences that took place during the period preceding the war.

Benjamin Strong played an important role in the Federal Reserve System's search for a monetary policy paradigm (see Chandler 1957, Friedman and Schwartz 1963, Wicker 1966 and Meltzer 2002).[5] It is debatable whether the Fed achieved a complete and coherent policy structure during the 1920s, although the policies can be viewed as consistent with a given viewpoint – the so-called "Riefler-Burgess Doctrine." The practical implications of the doctrine effectively led Federal Reserve policy makers to rely on borrowed reserves as a key signal of bank reserve demand (Wheelock 1990: 412). In our view, what is noticeably missing in the "Riefler-Burgess" doctrine is an explicit sense of what effective credit or monetary policy looked like in the National Banking Era, or any expression that suggested that such an historical perspective was worthwhile to develop as the central bank evolved.

From our reading of primary and secondary sources, comments with regard to the Federal Reserve System and its role in credit and money markets are uniformly supportive; the Federal Reserve was an unmitigated success and the preceding years during the National Banking Era were viewed as flawed and without a monetary policy. As early as Taus (1943), economic historians have investigated the monetary policy role of the U.S. Treasury, and more recent contributions by Timberlake (1993) highlight those actions. Treasury actions such as shifting gold from its sub-treasuries into banks was akin to an open market operation to increase the base

[5] It is notable that Strong expressed a firm belief that all banks should become members of the Federal Reserve System for the Fed to be successful (See Chandler 1957: 69). In that case, it is likely that Strong would have struggled to extend liquidity to non-member banks. As was observed in the 1930s, the Fed eschewed allowing members to borrow from the discount window in support of its non-member correspondent banks.

money supply, although these actions were on a smaller scale and dependent upon the Treasury's fiscal balance. Only a Treasury in surplus could inject gold into the financial system. Separately, Timberlake (1984) and Gorton (1985) offer further that the clearing house system of the National Banking Era (1863-1914) provided some imperfect and incomplete elements of monetary policy.

IV Fed Sufficiency and Persistent Flaws

The design of the Federal Reserve System bearing strong resemblance to the clearing house system emphasizes that contemporaries involved in the design of the institution learned lessons from the past. However, the key elements of "policy" during the National Banking Era that preceded the Fed was the issuance of clearing house loan certificates, the suspension of convertibility, and on occasion (when possible) the pooling of cash reserves. In such a view, the crises endemic to the previous era likely seemed less relevant to the Fed in the 1920s than the problems it faced during its tumultuous war-time experience. We also uncovered a notion of "Fed sufficiency" in the documents and communications of Federal Reserve officials that was not necessarily shared by other contemporary commentators.

For a number of informed commentators, the Federal Reserve System was a dramatic improvement upon the clunky emergency currency procedures that was appended upon an awkward currency and monetary system. Had we not seen the subsequent policy mistakes of the Fed in 1920, and in 1929-33 and enduring flaws of the National Banking Era (1863-1914), we might have shared those optimistic views. Instead, we suggest – in accord with Wicker (2000) and Bordo and Wheelock (2011) – that the Fed was not established with the intention of responding to financial panics. Wicker (2000) suggests that holding such a premise provides the most coherent explanation for why the Federal Reserve System was so inept at forestalling banking panics. In the same paper, Wicker acknowledges that the traditional arguments can also explain the Federal Reserve's failure to address consistently and effectively liquidity drains arising from banking panics.[6]

Studenski and Krooss (1952: 334) point out that flaws from the National Banking Era, particularly the persistence of the dual state and national banking system, were not remedied by the introduction of a central bank. White (1983) illustrates forcefully the particulars of this idea in great detail, emphasizing that the dual banking system hindered the widespread provision of liquidity. The Federal Reserve System could not fully fortify the banking system against financial panics while state banks and trust companies still remained outside of the system and were subject to failures throughout the 1920s. In 1914, only 30 percent of all financial institutions holding 50 percent of deposits in the United States were member of the Federal Reserve System. By 1929, the percentage rose slightly to 36 percent of financial institutions holding a 73 percent of deposits.[7] Furthermore, Studenski and Krooss' (1952: 336) remark that although there were over twice as many national banks as state banks in the 1920s, state banks failed at a higher rate. Wheelock (1992) surveys the literature on the distinctions between member and nonmember banks and the respective experiences during the Great Depression. He notes that nonmember banks made up 75 percent of suspended banks between 1930 and 1933 (Wheelock 1992: 25).

Editors Welton and Crennan (1922: XV) shed light on the resistance to the central bank from state banks and national banks alike. They describe state banks as "hostile or, at best, only

[6] A recent paper by Bordo and Wheelock (2011) emphasizes the lack of proper structural design of the system as the source of the problem, but also notes that there is no text in the Federal Reserve Act that aims the system toward panic prevention.

[7] White (1983) and the Board of Governors of the Federal Reserve System, *All Bank Statistics*, United States, 1896-1955, pp. 39-41. Board of Governors of the Federal Reserve System, *Banking and Monetary Statistics*, 1914-1941, pp. 22-23.

neutral to the Federal Reserve System." Implementation of mandatory clearing and collection of checks and drafts to be undertaken by the Federal Reserve System, "threw the country banks that were members of the System into spasms of anger and fear. It made the state bank glad that they were beyond such meddling." Their observations emphasize how the implementation of sweeping monetary reform fell short of intended goals and allowed existing weakness to persist.

Bankers were also aware of the shortcomings of the Federal Reserve System and doubted its ability to transform the financial system. Arthur Reynolds (1922), President of the Continental and Commercial National Bank of Chicago communicates his skepticism of the Federal Reserve System:

> The old banking practice of the country had its basis in too many years of actual habit and it was but natural that banks generally should be hesitant and cautious in making radical changes in their methods; indeed a great many of them felt that the Federal Reserve Banks, if supported too generously, would ultimately encroach upon and usurp some of the functions of existing banks.

Chicago was the center of the "asset backed" currency movement making Reynold's resistance to the Federal Reserve System unsurprising. In February 1915, the Commercial and Financial Chronicle, a New York based publication, shares similar doubts when commenting that, "it will hardly be claimed that the Federal Reserve System is yet so firmly established that it can be depended upon in and by itself to cope with a situation of extreme difficulty."

With contemporary and modern commentators often emphasizing the *insufficiency* of the Federal Reserve System to overcome systemic flaws that contributed to the forces of financial panics, why then did Federal Reserve officials themselves conclude that the central bank was a sufficient bulwark? In our view, we suspect that the other components of the Federal Reserve Act gave some influential individuals the confidence that the existence of the Federal Reserve was sufficient to remove the sources of financial panic hence there was no purpose in an explicit mandate in the Act. In effect, such a mandate would be redundant.

Governor Charles S. Hamlin discusses the financial episode in 1914 that occurred at the onset of World War I and prior to the Federal Reserve's operational debut in a speech on October 25, 1916. Hamlin commented on the auspicious performance of emergency currency in banking system without a central bank as a temporary solution inferior to the more permanent Federal Reserve System. His main criticism is that the Federal Reserve would provide confidence and a more elastic currency than that provided by Aldrich-Vreeland Emergency Currency.

> Undoubtedly, the issue of this emergency currency under the amended Aldrich-Vreeland Act was of great assistance to our people. From the banking point of view, however, it could hardly be said to inspire much confidence. The Aldrich-Vreeland Act, even as amended, simply gave currency not confidence to the people. Surely under such an Act little confidence could be inspired from the fact that the banks were permitted to increase their liabilities in the form of notes on security much of which was unliquid, and on a reserve of only 5 percent. …. The real problem, however, is the increase of its loaning power by providing means for rediscounting short-term commercial paper, and that is just what the Federal Reserve Act accomplishes. [Page 8 Speech by Governor Charles s. Hamlin, October 25, 1916.]

The viability of the Federal Reserve System as a semi-independent government initiated institution was still unsettled. Perhaps the dismissive tone aimed toward emergency currency reflects the concern that Congress would have second thoughts about the creation of the Fed given the success of Aldrich-Vreeland notes.

In a 1918 speech, Federal Reserve Board of Governors member W.P.G Harding briefly mentions the 1914 episode. Although contemporary and modern economic commentators attribute the successful avoidance of a financial crisis in 1914 to the rapid, decisive, and widespread issuance of Aldrich-Vreeland Emergency Currency,[8] Harding, claims that the opening of the Federal Reserve Banks on November 16, 1914 calmed financial trepidations. Washington University at St. Louis Professor of Banking and Finance, Harold Reed, shares Harding's view in saying that, "it was undoubtedly unfortunate that the reserve system was not in operation at the time of the crisis in [1914]," (Reed (1922)).

Silber (2008) discusses "a greater sense of hope and confidence in the Federal Reserve System reform among these contemporaries… These hopeful assessments were made before the glaring failure of the Federal Reserve System during the Great Depression."[9] While Hamlin (1916), Harding (1918), Reed (1922) may have perceived the central bank's existence as sufficient to end calamitous financial crises, the Federal Reserve role in World War I financing, along with the policy failures of the 1920s and 1930s furnish evidence of Fed *insufficiency*. A central bank alone was not enough to remedy the dual banking system and the concentration of reserves in New York City which would eventually contribute and exacerbate the financial carnage of the Great Depression.

The enduring flaws of the National Banking Era proved problematic for early Federal Reserve policy makers and we suggest that policies from the historical financial system may have offered lessons on how to contain financial turmoil. From our perspective, one of the key lessons of the Pre-Federal Reserve period is from the 1914 episode. The Treasury's provision of Aldrich-Vreeland emergency currency along with the actions of private clearing houses

8 Sprague (1915), Noyes (1916), Friedman and Schwartz (1963), Wicker (2005), Silber (2005 and 2008), Jacobson and Tallman (2014).

[9] Federal Reserve liquidity provision in New York City following the 1929 stock market crash was adequate, appropriate, and effective. It is not a counter-example to our thesis. The lack of consistency in the application of liquidity provision is the issue. A decentralized Fed could have partial adoption of liquidity provision policies and still fail to provide adequate liquidity nationwide. The idea of a "central lending authority" as suggested by Noyes could have been firmly in place throughout the Federal Reserve System, in other words, it could have become an institutionalized procedure for responding to extreme liquidity demands.

throughout the country provided liquidity in large quantities across a variety of intermediaries and on collateral of varying quality on a national scale. This liquidity policy contrasts the Federal Reserve's policy throughout the Great Depression in which only select institutions were permitted access to liquidity and had to post collateral of high quality from a restricted set of qualifying assets in order to borrow at the discount window.

Curiously the lending principles employed in 1914 were implemented in the U.S. during the Financial Crisis of 2008-09. For the rediscovery, we attribute an influential role to financial economic history, namely, the timely works by William Silber – Silber (2007) and his more extensive book Silber (2008). The book highlights the role of pre-emptive financial policy, specifically Federal Government policies to allow commercial banks to acquire a rapid increase in liquidity (cash), when the New York Stock Exchange was closed down for nearly 4 months. Silber further highlights key amendments to the Aldrich-Vreeland Act that were passed as the crisis unfolded in order to make the liquidity provision mechanism accessible to the largest banks.[10]

One of the more important factors linking the 1914 experience to the modern one is the composition of the assets taken as collateral for extensions of liquidity loans. Emergency currency had tighter collateral restrictions than those of clearing house loan certificates. Similarly, in 2008-09, the various liquidity programs offered by the Federal Reserve System enabled borrowing institutions to liquefy a wider array of assets as collateral for the loans than would have been acceptable through standard discount window mechanisms available during

[10] Silber credits an astute Treasury Secretary William McAdoo with the insight to anticipate the need for liquidity and the political acumen to achieve the required legislative outcome.

standard conditions. Further, the Fed expanded the set of institutions toward which it could allocate the liquidity, and the liquidity was available on a national scale.

V Summary and Conclusions

World War I financing, following soon after the Federal Reserve System became operational at near full capacity in 1917, distracted the new institution from learning its purpose. The watershed event, the First World War, overwhelmed the Fed's process of settling on its legislated purposes, ultimate goals, procedures, and policies. There is no question that the priority of financing the war effort was paramount for the Federal Reserve System; the primacy of that role, however, hindered development of the core elements of the institution as designed.

Regardless of cause, the lesson to supply a huge infusion of liquidity throughout the country when necessary to quell a financial panic was nevertheless forgotten when the Federal Reserve System failed to increase the monetary base as the first financial panics struck in 1930 and 1931 during the Great Depression. The subsequent performance of the Federal Reserve System during the 1920s and 1930s did not fulfill the goals and intentions of the “framers” of the Federal Reserve Act. Our research suggests that the failed institutional learning is the result of the dominant role -- an unforeseen role -- of the central bank as fostering Treasury funding for World War I and an erroneous perception that the establishment of the Federal Reserve System as an institution had successfully remedied the susceptibility of the United States financial system to banking panics. The latter viewpoint overlooked the legacy flaws from National Banking Era (like the dual banking system) that were not eliminated with the Federal Reserve Act.

We suggest a lesson from our re-evaluation – the financial system and policy tools of historical episodes clearly differ from modern episodes, and yet despite notable differences, the historical episodes may still be informative for analysis of modern financial events. In order for modern researchers and policy makers to gain insights from the study of history, one must expend additional effort to gain a grasp of underlying fundamental differences in institutional structure, and assess how these differences affect the inferences. In some cases, it may appear challenging to uncover any lessons drawn from the past, and yet in the case of 1914 in the United States, there is a clear analogy from that event to the policies implemented during the 2008-2009 financial crisis. As a result, we conclude that the continued investigation of historical episodes of financial crises may contribute to the discovery of solutions for any future crises.

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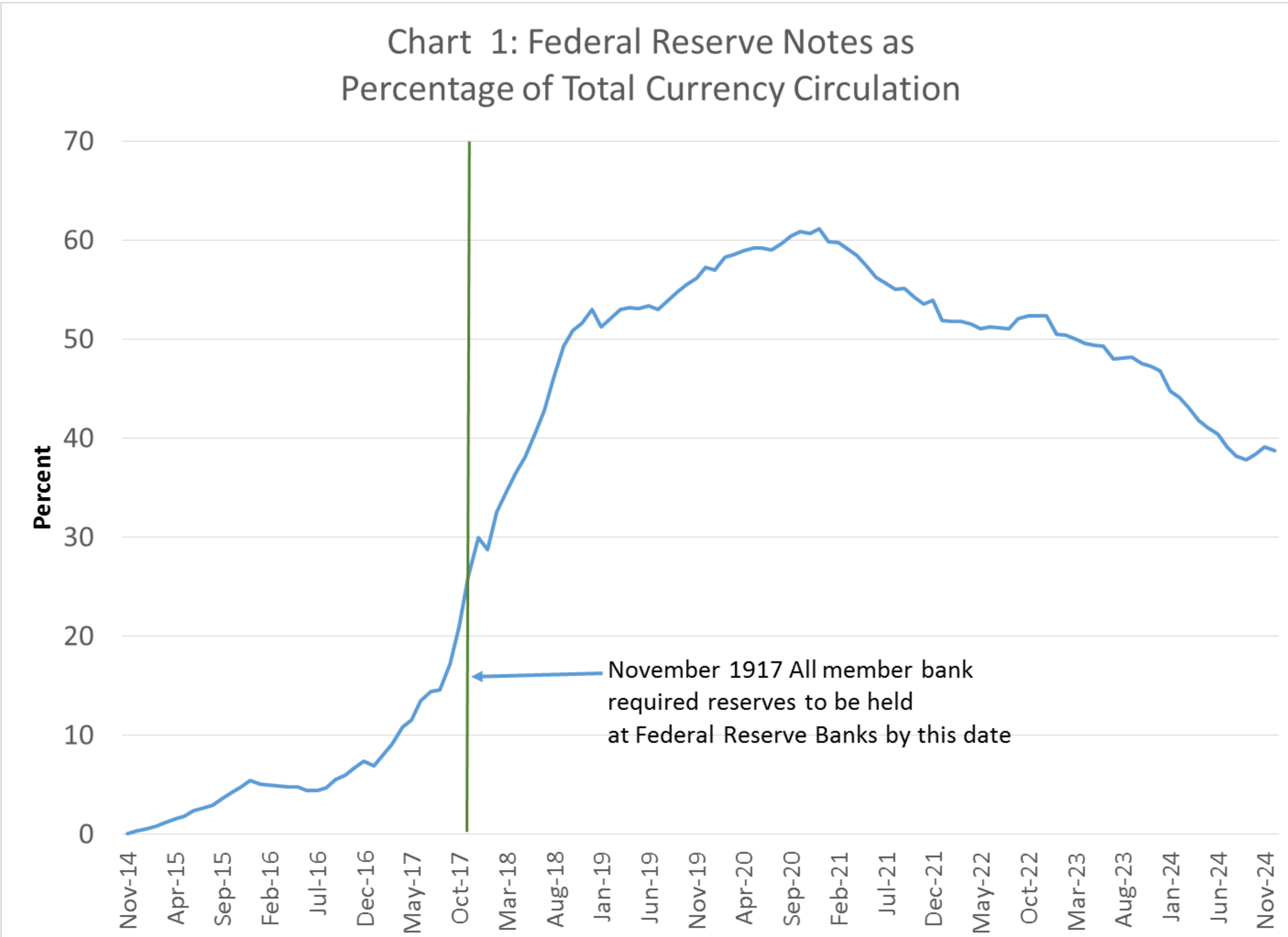
Chart 1: Federal Reserve Notes as Percentage of Total Currency Circulation
Percent
70
60
50
40
30
20
10
0
Nov-14
Apr-15
Sep-15
Feb-16
Jul-16
Dec-16
May-17
Oct-17
Mar-18
Aug-18
Jan-19
Jun-19
Nov-19
Apr-20
Sep-20
Feb-21
Jul-21
Dec-21
May-22
Oct-22
Mar-23
Aug-23
Jan-24
Jun-24
Nov-24
November 1917 All member bank required reserves to be held at Federal Reserve Banks by this date

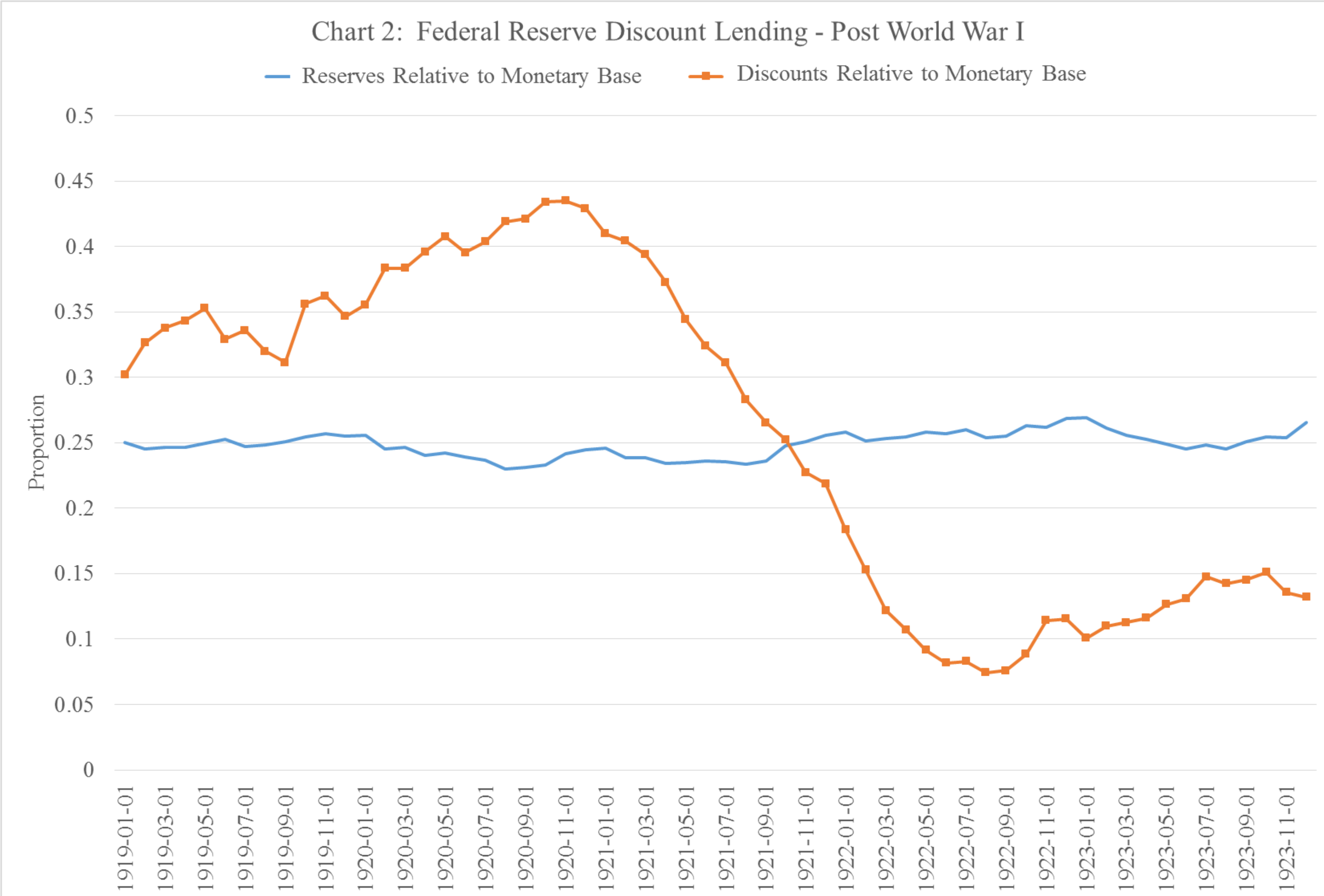
Chart 2: Federal Reserve Discount Lending - Post World War I
Reserves Relative to Monetary Base
Discounts Relative to Monetary Base
Proportion
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1919-01-01
1919-03-01
1919-05-01
1919-07-01
1919-09-01
1919-11-01
1920-01-01
1920-03-01
1920-05-01
1920-07-01
1920-09-01
1920-11-01
1921-01-01
1921-03-01
1921-05-01
1921-07-01
1921-09-01
1921-11-01
1922-01-01
1922-03-01
1922-05-01
1922-07-01
1922-09-01
1922-11-01
1923-01-01
1923-03-01
1923-05-01
1923-07-01
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