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The Federal Reserve's Evolving Monetary Policy Implementation Framework

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1. Introduction

The Federal Reserve has employed a number of monetary policy frameworks during its history. This memo provides examples of how the Federal Reserve's monetary policy framework has evolved in response to changing policy objectives and market conditions.[2] It proceeds in four sections and a conclusion:

- Section 2 describes the money markets at the time of the founding of the Federal Reserve. The Federal Reserve System was an institutional response to flaws in the pre-1914 banking system that resulted in frequent panics and depressions. The Federal Reserve's initial policy framework was adopted to address these flaws and stabilize existing money markets.

- Section 3 describes the first evolution of the Federal Reserve's policy framework in response to new policy objectives during World War I. Financing the Great War required an enormous increase in Treasury issuance. The Federal Reserve adopted a policy designed to keep long-term Treasury borrowing rates low. To achieve this objective, the Federal Reserve used existing facilities in new ways, such as increased open market purchases of Treasury debt and the creation of preferential discount rates for Treasury collateral, and also adopted a new instrument, specifically repurchase agreements, to expand its set of counterparties and address an unanticipated consequence of new wartime taxes.

- Section 4 describes the Federal Reserve's 1922-23 income-driven open market purchases which resulted in the discovery that the U.S. money market was geographically integrated and that monetary policy objectives could be achieved by either adjusting the discount rate or open market purchases. After much debate about the appropriate role of balance sheet versus discount rate tools and the appropriate size of the balance sheet, the Federal Reserve adopted what would be known as the 1923 framework, which codified the goals

[1] Of the Federal Reserve Banks of Chicago and New York, respectively.
[2] The examples are not intended to constitute an exhaustive list of Federal Reserve policy implementation frameworks. Instead, the examples in this memo are drawn from the authors' previous and forthcoming publications.

of open market purchases and established the Open Market Investment Committee—a forerunner of the FOMC.

- Section 5 describes the adoption of a new framework in 1951 after the Treasury-Federal Reserve Accord returned full control of U.S. monetary policy to the Federal Reserve for the first time in nearly two decades. The new framework was adopted to meet new goals—the targeting of free reserves—and the Federal Reserve revived a long dormant policy instrument, the repurchase agreement, to interact with new counterparties known as primary dealers.

2. Money Markets at the Founding of the Federal Reserve and the Original Policy Implementation Framework

The Federal Reserve System was an institutional response to flaws in the 1863-1913 National Banking Era banking system that, in the words of one architect of the Federal Reserve System, "appeared to do violence to almost every banking tenet held sacred."[3] Pre-1914 money markets suffered frequent panics due to three flaws in the National Banking Acts' regulations:

1. U.S. currency was comprised of Treasury notes, gold and silver coins, and private banknotes collateralized by U.S. government bonds. Because the amounts of Treasury notes, coins in circulation, and U.S. government bonds were difficult to alter, none of these instruments could be quickly expanded to meet an increased demand for currency by the public.[4]
2. Commercial bank loans were largely in the form of illiquid commercial paper.[5]
3. Banks therefore relied upon call loans on New York Stock Exchange collateral as their chief liquid asset.

This system was prone to panics in the harvest season when banks increased leverage to meet customers' demand for financing the purchase and movement of crops. With an inelastic currency, the increase in bank lending resulted in a decrease in the ratio of currency backing bank liabilities. Both banks and depositors understood that the risk of bank failure increased with bank leverage and this was reflected in equilibrium interest rates on deposits and commercial loans which increased during the harvest season. Unexpected demand for currency resulted in severe panics in 1873, 1884, 1890, 1893 and 1907, with dire consequences for the real

[3] Paul Warburg, *Federal Reserve System: Its Origins and Growth* (1930 p.17).
[4] The amount of Treasury notes and US Bonds was set by statute, and increasing coins in circulation required free stocks of gold or silver and time to mint.
[5] The early 20th century definition of commercial paper can be gleaned from the Federal Reserve Act, which defined commercial paper to include "notes, drafts, and bills of exchange arising out of actual commercial transactions; that is, notes, drafts, and bills of exchange issued or drawn for agricultural, industrial, or commercial purposes, or the proceeds of which have been used, or are to be used, for such purposes" with a time until maturity of no more than 90 days for industrial and commercial purposes or 6 months for agricultural purposes.

economy. After the panic of 1907, Congress established the National Monetary Commission to study the world's banking and money markets and recommend legislative changes to stabilize the U.S. money markets. The Commission recommended a number of reforms including the establishment of a central reserve bank. After two years of debate, Congress acted on this recommendation with the passage of the Federal Reserve Act.

The Federal Reserve's original monetary policy framework was reflected in the official title of the Federal Reserve Act: *"An Act to provide for the establishment of Federal reserve banks, to furnish an elastic currency, to afford means of rediscounting commercial paper..."*

The means to furnish an elastic currency and rediscount commercial paper was created by the discount window facility. The Act made "commercial paper" eligible collateral at the discount window and granted the Federal Reserve the right to issue legal tender Federal Reserve Notes collateralized by any discount window eligible collateral.[6] These two provisions assured that the nation's currency supply could expand when there was an increase in demand for money and bank credit, and that banks would no longer view commercial paper as an illiquid asset on their balance sheets. To discourage bank loans on stock market collateral, the Act excluded financial loans from the set of discount window eligible collateral.

The Federal Reserve's original discount window policy followed Bagehot's rule: *lend freely, at a penalty rate, against good collateral*. The discount rate was set slightly above prevailing market rates and allowed to fluctuate with market rates. There was no intention of using the discount rate as a policy tool to target the price level or steer economic activity. Instead, the discount window was operated as a standing liquidity facility designed to buffer the seasonal strains that had plagued the money markets for the previous half century.

The original framework worked well for achieving the Federal Reserve's initial goals. After the founding of the Fed, the frequency of financial panics and the size of seasonal movements in money market rates both declined substantially.[7]

3. Financing the Great War

The Federal Reserve's original framework was in its infancy when the United States' entry into World War I created new policy objectives. In addition to money market stability, the Federal Reserve adopted a wartime policy objective designed to keep long-term Treasury borrowing rates low without disrupting short term money markets or encouraging an inflationary credit boom. To achieve this new objective, the Federal Reserve engaged in outright purchases of U.S.

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[6] Federal Reserve Notes were not legal tender for private debts but were redeemable in gold at the Treasury and legal tender for all government obligations and debts owed to national banks.

[7] Jeffrey Miron, "Financial Panics, the Seasonality of the Nominal Interest Rate, and the Founding of the Fed", *American Economic Review*, 1988, pp.125-140.

government securities and encouraged private purchases of Victory and Liberty bonds by offering preferential discount rates against U.S. bond collateral.

Outright purchases were limited to short-term securities such as Treasury tax anticipation notes and certificates of indebtedness. These purchases were used to support Treasury issuance rather than as a monetary policy tool.

To support the price of longer-term government bonds the Federal Reserve embarked on a campaign known as the "borrow and buy" program. As the name implies, this program sought to encourage private purchases of Treasury debt by offering preferential financing to counterparties that posted U.S. government bonds as collateral. The Federal Reserve understood that long-term government bonds would be an appealing investment for banks if the discount rate was significantly below the yield on these bonds.[8] However, lowering discount rates below government bond yields ran the risk of creating speculative commercial lending and inflation. The Federal Reserve resolved this conflict by offering borrowers with U.S. bond collateral preferential haircuts and discount rates compared to borrowers with commercial or agricultural paper.

The borrow and buy program was an immediate success. Member banks realized that with the help of the Federal Reserve's liquidity facility they could buy large quantities of newly issued U.S. debt and carry it on their balance sheet at a positive spread. The scope of the program, however, was limited to member banks eligible to borrow at the discount window. To expand the program to counterparties beyond the Federal Reserve System, the Federal Reserve Banks began offering funding through repurchase agreements (repos). Repos were not unknown but this was the first time they had been employed by the Federal Reserve.[9] The Reserve Banks successfully used their new repo tool to offer preferential financing to non-member state banks who wished to participate in the borrow and buy program.

The new repo tool proved valuable when a new wartime tax threatened the stability of short-term money markets. Congress passed a bevy of new taxes to finance World War I. One tax—the stamp tax—had the unintended consequence of disrupting the market for short-term government debt. This small lump-sum tax was levied on certain financial transactions including discount loans from the Federal Reserve but not repos. Although the amount of the tax was small, it was sufficiently large to disrupt the market for short-term Treasury tax anticipation notes and certificates of indebtedness. As a result, banks were reluctant to purchase these securities, which they viewed as illiquid because the tax would consume their profits if they were forced to borrow at the discount window. The Federal Reserve stepped in and employed the new repo tool to

[8] Analogous to the European Central Bank's TLTROs and "funding for lending" programs.
[9] The Bank of England introduced repos to stabilize money markets during panics of the 1820s. The U.S. Secretary of the Treasury employed repos to relieve pressure on the New York money market in 1847 and U.S. national banks entered into repurchase agreements in 1913 (Garbade. *The U.S. Treasury Market from the Great War to the Great Depression*. 2012, p.193 Box 13.2).

assure the market that affordable financing would be available to banks which owned short-term government debt.

The Federal Reserve's facilities successfully supported the Treasury market throughout the war. The Treasury was able to issue long-term bonds at 3 to 4.5 percent at a time when interest rates on overnight call loans and 90-day commercial paper ranged from 4 to 6 percent.

4. The 1922-23 Open Market Purchases and the 1923 Framework

1923 marked a watershed in the Federal Reserve's monetary policy implementation framework. Before 1923, open market purchases were conducted to support Treasury issuance or to increase the earnings of the Federal Reserve Banks and monetary policy was conducted via changes in the discount rate. This changed when the Federal Reserve "discovered" that open market operations and discount rate changes could both be employed as policy tools.

The Federal Reserve's support of Treasury issuance during World War I swelled the Reserve Banks' balance sheets and dramatically increased their income. Federal Reserve expenses also increased sharply as the Reserve Banks increased employment and other expenses. Following the war, a depression lowered demand for discount loans and the Federal Reserve Banks found their income precariously close to expenses. The Federal Reserve Banks responded by unilaterally purchasing government bonds in the open market to increase earnings. These open market purchases led to, in the words of one participant, an "*almost accidental discovery*" that "*the country's pool of credit is all one pool and money flows like water throughout the country. When Government securities were bought in Dallas, the money so disbursed did not stay in Dallas, but flowed through the whole banking system and reappeared in New York or Chicago or Kansas City, and vice versa.*"[10]

The discovery that open market purchases in Dallas could result in lower demand for discount loans in New York had obvious implications:

1. There was one national monetary policy rather than twelve regional policies.
2. Policy could be implemented with discount rate changes or open market operations.
3. Any policy actions would have to be coordinated across the various Federal Reserve Banks.

[10] W. Randolph Burgess, "Reflections on the Early Development of Open Market Policy", *Federal Reserve Bank of New York Monthly Review,* Nov 1964, p.220

At the next Presidents conference the Federal Reserve Banks created the Open Market Investment Committee comprised of four Reserve Bank Presidents to coordinate policy and open market operations in government securities.[11] This committee was the forerunner of the FOMC.

The Federal Reserve Act vested control of discount rate policy in the hands of the Board of Governors but left open market purchases entirely up to the discretion of the Reserve Banks. Therefore, the Open Market Investment Committee effectively moved monetary policy decision making from the Board of Governors to the Reserve Banks. The Board of Governors objected and in March 1923 attempted to place the Open Market Investment Committee under the Board of Governors' control. The Board asked the Reserve Banks to sell their Treasury holdings and insisted that future open market purchases be conducted with the same policy intentions as changes in the discount policy. The Reserve Banks protested. Benjamin Strong advocated a large balance sheet for financial stability reasons and the Presidents noted that the Federal Reserve Act left open market purchase decisions in the hands of the Reserve Banks.

Détente was reached in autumn 1923 when by mutual agreement the Board and Reserve Banks reached what would be known as the 1923 framework:

- A "System Open Market Account" was created.
- Open Market Purchases were entrusted to five Reserve Bank Presidents whose actions were approved "from time to time" by the Federal Reserve Board.[12]
- Ownership of the account was prorated among the twelve Reserve Banks provided their boards of directors voted to participate.

At the same time the Board of Governors issued a statement confirming that open market purchases would hereafter be used to further monetary policy objectives tool rather than as an income generating operation; "*the time, manner, character, and volume of open market investments purchased by the Federal Reserve Banks [is to be] governed with primary regard to the accommodation of commerce and business, and to the effect of such purchases or sales on the general credit situation*."[13]

The 1923 Framework was in place until 1933 when the Treasury took effective control of monetary policy.

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[11] The position currently known as President was known as Governor at the time. To avoid confusion between references to the members of the Board of Governors and the Governors (Presidents) of the twelve Federal Reserve Banks, we refer to heads of Federal Reserve Banks as Presidents throughout this paper.
[12] The coordinating committee was expanded to include all twelve Presidents in 1930.
[13] W. Randolph Burgess, "Reflections on the Early Development of Open Market Policy", Federal Reserve Bank of New York Monthly Review, Nov 1964, p.221.

5. Repurchase Agreements as an Instrument of Monetary Policy at the Time of the Accord

Following the announcement of the Treasury-Federal Reserve Accord on March 3, 1951, the Federal Reserve System took full control of U.S. monetary policy for the first time in nearly two decades. The question was, what to do?

History offered a place to start. During the 1920s, officials had focused on *borrowed* reserves as an important indicator of money market conditions.[14] Member banks were believed to be reluctant to borrow, so large borrowings reflected tighter credit conditions, and conversely. Borrowings dried up after 1933 but *excess* reserves (which previously had been negligible) exploded, and officials shifted to excess reserves as a measure of credit market conditions. Following World War II, the banking system as a whole exhibited *both* excess reserves *and* a large amount of borrowings. Officials adopted the concept of *free* reserves, the difference between the two, as the new touchstone of monetary policy.

Managing free reserves effectively required policy instruments that could inject and drain large quantities of reserves quickly at low transaction costs, because highly variable and not easily predicted "autonomous factors"—including float, Treasury balances at Federal Reserve Banks, and currency in the hands of the public—induced volatility and unpredictability in total reserves and thus in free reserves. The two leading candidates for policy instruments were outright purchases and sales of Treasury bills and repurchase agreements with securities dealers.

Outright transactions were certainly useful for managing the level of reserves over the course of weeks and for longer periods, but had significant drawbacks for short-term "in-and-out" operations, when reserves were needed for only a few days. Repos, on the other hand, were ideally suited to short-term operations.

As noted above, repos had been used by the Federal Reserve Bank of New York during World War I to facilitate war finance and in the 1920s to support dealer operations, but went dormant during the New Deal and World War II. In October 1947, Robert Rouse, the Manager of the System Open Market Account, requested reinstatement of the repo authority. The FOMC agreed in early 1948, and adopted a new repo program with several significant features:

- participation was limited to primary dealers,
- repos could not be priced below the discount rate, and
- repo collateral was limited to short-term Treasury securities.

Additionally, repos were to be used only "in periods of strain" with "care and discrimination."

[14] Borrowed Reserves are funds that member banks borrow from the Federal Reserve to meet reserve requirements.

By 1952 two important features had been revised: the minimum repo rate was set at the *lesser* of the discount rate and the issuing rate for 3-month Treasury bills and participation was limited to *non-bank* primary dealers. The new minimum rate avoided discouraging dealer use of repos when bill rates were well below the discount rate. The limitation to non-bank dealers avoided giving dealer banks access to Federal Reserve credit on terms more favorable than those available to non-dealer banks. The two changes mark the transition of the repo program from one aimed primarily at dealer support to one targeted at relieving short-lived money market stringencies.

Relieving money market stringencies required keeping the repo rate in line with money market rates. This created a problem in the post-Accord environment, when repos became increasingly common. Since the discount rate was sometimes well in excess of money market rates, keeping the repo rate in line with market rates sometimes required setting it below the discount rate. In a series of discussions in the second half of 1954 and early 1955, Governor J. L. Robertson made it clear that he considered Reserve Bank repos

- illegal, i.e., *ultra vires* – because there was no specific statutory authority for the Banks to enter into repo contracts,
- inequitable – because bank dealers could not participate, and
- unneeded – because outright purchases and sales for cash settlement could accomplish the same thing.

Other members of the FOMC, keenly aware of the utility of repos for implementing monetary policy, ignored Robertson's arguments.

6. Conclusion

These brief narratives suggest three lessons relevant to the development of a long-run framework for implementing monetary policy:

1. The attractiveness of a facility depends on policymakers' choice of policy goals. The discount window was an ideal policy tool when ensuring liquidity of member bank commercial paper holdings was the goal.

2. Policymakers' choice of policy implementation tools is affected by evolving market conditions. Repos were preferred when non-member holdings of Treasury bonds or the amount of free reserves—and the need to offset high-frequency fluctuations in autonomous factors—increased the attractiveness of a facility that could inject large quantities of reserves quickly for short periods of time at low cost.

3. Necessity being the mother of invention, a facility adopted for one purpose may end up being used for quite another. The discount window that was originally conceived

as a facility to stabilize seasonal fluctuations in demand for currency proved ideal for targeted support of long-term Treasuries. A repo program that was originally intended to support secondary market dealer activity was reconfigured into a facility for reserves management.

4. Finally, a successful program can be expected to evolve, and may develop offshoots, to accommodate additional needs. The original fixed-price repo program, limited to short-term collateral and non-bank dealers, later evolved into a competitive auction program open to all dealers that accepted collateral of any maturity. Additionally, officials developed a *reverse* repo program when they needed to *drain* reserves for short periods of time.