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**INSIGHTS FROM THE FEDERAL
RESERVE'S WEEKLY BALANCE
SHEET, 1942-1975**

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Johns Hopkins Institute for Applied Economics,
Global Health, and the Study of Business
Enterprise



Insights from the Federal Reserve's Weekly Balance Sheet, 1942 -1975

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About the Series

The Studies in Applied Economics series is under the general direction of Professor Steve H. Hanke, co-director of the Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise (hanke@jhu.edu). The authors are mainly students at The Johns Hopkins University in Baltimore. Some performed their work as research assistants at the Institute.

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Abstract

We present digitized data of the Federal Reserve System's weekly balance sheet from 1942-1975 for the first time. Following a brief account of the central bank during this period, we analyze the composition and trends of Federal Reserve assets and liabilities, with particular emphasis on how they were affected by significant events during the period.

Acknowledgments

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Keywords: Federal Reserve System, balance sheet, Bretton Woods system, gold, World War II, Korean War, Vietnam War, Treasury-Fed Accord

JEL codes: E51, E58, N22

Introduction

The Federal Reserve's weekly balance sheets have been digitized from 1914 up to 1941 as part of a previous working paper by Justin Chen and Andrew Gibson in the Studies in Applied Economics series.¹ The digitized balance sheets are also available from 1976 onwards, though for the early years apparently only at monthly frequency and only in subscription databases. However, there is a gap from 1942 to 1975 that has not been previously made available in spreadsheet form. This paper offers graphs and an accompanying discussion based on the balance sheets.

Purpose

This paper uses complete, weekly Federal Reserve balance sheet data to understand and analyze how significant economic events such as World War II, the Bretton Woods System, and the Treasury-Fed Accord affected the division of assets between gold, foreign assets, government bonds, and private-sector domestic assets. We begin the paper by discussing the economic environment during World War II and the peacetime expansion that followed.

We divide our analysis into three periods: World War II and after, 1942-1950; the Korean War and after, 1950-1959; and the Keynesian era and the beginning of the Great Inflation, 1960-1975.

The first period extends from beginning of the Second World War to just before the beginning of the Korean War. This period can be divided into years of wartime financing and years of peacetime expansion. We will also examine the impact of the Federal Reserve's fixed interest rate structure during times of inflation and recession as well as the impact of the Bretton Woods Agreement on international monetary cooperation. The Korean War and the aftermath saw the establishment of the Treasury-Federal Reserve Accord, which granted the Federal Reserve independence from the Treasury, changing the role of the Federal Reserve. The Bretton Woods system, in which the U.S. dollar was the key currency, began to work on a worldwide basis as its founders had intended near the end of the period, in 1958. The high tide of the influence of Keynesian economics and the beginning of what was later termed the Great Inflation saw a change in how economists viewed the role of the Federal Reserve and monetary policy. In the early 1960s, many American economists held the belief that there was an inverse relationship between unemployment and inflation, and that the Federal Reserve could use monetary policy to affect this balance. The stagflation of the Great Inflation altered this thinking, and presented a large challenge to the Federal Reserve System.

¹ Chen, Justin and Andrew Gibson, "Insights from the Federal Reserve's Weekly Balance Sheet, 1914-1941," Johns Hopkins University, Institute for Applied Economics, Global Health, and the Study of Business Enterprise, Studies in Applied Economics (working paper series), No. 73, January 2017. http://sites.krieger.jhu.edu/iae/files/2017/04/Chen_Gibson_FederalReservePaper.pdf; accompanying spreadsheet via <http://sites.krieger.jhu.edu/iae/working-papers/studies-in-applied-economics/>.

Chronology

Date	Event
December 7, 1941	Japanese attack on Pearl Harbor begins U.S. role in World War II
March 27, 1942	The Second War Powers Act is passed
April 30, 1942	Fed pegs 90-day and 1-year Treasury bill rates at 0.375% and 0.85%
July 1942	Fed removes reserve requirements on war loan deposits
July 1944	Bretton Woods conference takes place in New Hampshire; Bretton Woods Agreement signed
April 12, 1945	Vice President Harry S. Truman becomes President upon the death of Franklin D. Roosevelt
September 2, 1945	World War II ends
February 20, 1946	Truman signs Employment Act of 1946, which commits the federal government to seek to promote maximum employment
April 15, 1948	Thomas McCabe succeeds Marriner Eccles as Fed chairman
June 25, 1950	North Korea invades South Korea; Korean War begins
March 4, 1951	Treasury-Federal Reserve Accord restores independence to the Fed
April 2, 1951	William McChesney Martin replaces McCabe as Fed chairman
November 4, 1952	Republican Dwight D. Eisenhower is elected President
July 27, 1953	Korean War ends with signing of armistice and creation of the Korean Demilitarized Zone; end of war triggers recession of 1953
November 1, 1955	Vietnam War begins (heavy U.S. involvement begins 1964)
January 1, 1958	Currencies of Western European countries and their colonies become convertible for current account transactions
November 8, 1960	Democrat John F. Kennedy is elected President
November 1, 1961	Gold Pool agreement between the Fed and European central banks
November 22, 1963	Lyndon B. Johnson becomes President after Kennedy is assassinated
1965-1982	The Great Inflation
March 1968	Gold Pool collapses; market price exceeds official \$35/ounce price
November 8, 1968	Richard M. Nixon is elected President
February 1, 1970	Arthur Burns replaces William McChesney Martin as Fed chairman
August 15, 1971	"Nixon shock" occurs when Nixon ends gold convertibility for the dollar, which ends the Bretton Woods system
December 18, 1971	Smithsonian Agreement creates a new dollar peg at \$42.2222/ounce
January 27, 1973	Paris Peace Accords end direct U.S. involvement in Vietnam War
February 1973	Smithsonian Agreement is replaced by free floating currencies
October 1973	Oil crisis begins when OPEC proclaims embargo on the United States; 1973-75 recession begins in November
March 1974	End of the oil embargo
August 9, 1974	Nixon resigns the presidency after the Watergate scandal; he is succeeded by Vice President Gerald Ford
April 30, 1975	Vietnam War ends with North Vietnam's conquest of South Vietnam

I. History

World War II to the Korean War (1942-1951)

The United States entered World War II as a result of the Japanese attack on Pearl Harbor on December 7, 1941, just a few weeks before our analysis begins. The goals of the Federal Reserve policy spanning the period from 1942 to 1951 can be divided into two categories: financing the wartime effort and planning for peacetime expansion. The production and allocation of supplies for the military resulted in the continuation of low interest rates and supply restrictions on durable goods. Since prices were rising at less than half of the 16 percent growth in base money, the Federal Reserve had a harder time financing the wartime effort during World War II than during World War I because inflation eroded less of the real value of monetary expansion.

On April 30, 1942, the Federal Reserve announced a fixed rate structure that pegged the ninety-day Treasury bill rate and the one-year Treasury bill rate at 0.375 percent and 0.875 percent, respectively.² This resulted in long-term rates being capped at 2.5 percent until 1951, which resulted in a higher demand for real money balances by the public (because the rewards for holding less liquid assets were smaller than usual). Compared to short-term interest rates during and shortly after World War I, which rose to as high as 7.97 percent in 1920, short-term interest rates during World War II remained low and flat, never exceeding 1 percent.³ This structure was part of the Federal Reserve's goal to reduce the federal government's financing costs. However, the result was an inability to control the composition of publicly held debt going forward. The general consensus was that if rates were not pegged, bond prices would be volatile, causing instability in the government bond market.⁴ The market reaction also indicated anticipation of future economic expansion and inflation. The fixed rate structure for interest rates made all Treasury securities equally liquid, which eventually allowed banks not only to lend for short periods at rates below long-term debt, but also to buy longer maturities with higher yields after they sold Treasury bills at 0.375 percent to the Federal Reserve.⁵

The Second War Powers Act of March 27, 1942 gave Federal Reserve Banks authorization to acquire direct or guaranteed obligations by purchasing from the Treasury, and removed the former requirement that the remaining maturity of the securities not exceed six months. On April 11, 1942, the Federal Reserve introduced a uniform discount rate of 1 percent and a 0.5 percent preferential rate for loans collateralized by short-term government securities.⁶ By July 1942, the Board also removed reserve requirements on war loan deposits, which allowed banks to determine the volume of the reserves by buying or selling Treasury bills. Because banks were

² *Ibid.*, 594. Treasury bills are securities with maturities up to one year. Treasury securities with maturities of more than one year up to ten years are called notes, and Treasury securities with maturities longer than ten years are called bonds.

³ Allan H. Meltzer, *A History of the Federal Reserve. Volume 1: 1913-1951* (Chicago: University of Chicago Press, 2003), 586.

⁴ Robert L. Hetzel, "From WWII to the Treasury-Fed Accord," 1.

⁵ Meltzer, *A History of the Federal Reserve*, 596.

⁶ *Ibid.*, 601.

selling Treasury bills at such high prices after the announcement fixing interest rates, the Federal Reserve acquired all outstanding bills by 1945.⁷ By the end of the war, short-term government securities had become the Federal Reserve's principal asset. The rapid growth of the Federal Reserve monetary base and the lower than expected outflow of gold prompted the Federal Open Market Committee (FOMC) to revise the securities allocation formula and the allocation of open market purchases regarding Treasury bills to prevent the gold reserve ratio from falling below 45 percent.⁸

During the war, the Fed also participated, as a distinctly junior partner to the Treasury Department, in international negotiations to shape the postwar world financial system. The conference of Allied nations at Bretton Woods, New Hampshire in July 1944 established the International Monetary Fund (IMF) and the World Bank as apex institutions for international financial cooperation. The Bretton Woods agreements in effect made the dollar the key currency of the postwar monetary system and thereby made the Fed into the world's most powerful central bank. In principle, countries in the Bretton Woods system were on an equal footing because all established pegged exchange rates of their currencies into gold to ensure exchange rate stability. In practice, the United States was the only major economy at the time whose government intended to allow foreign governments to convert its currency into gold without major restrictions after the war, and markets in dollar assets were much more extensive than markets in gold. The dollar was pegged to gold at \$35 per troy ounce, where it had been since 1934.

From February 1945 to October 1945, there was a brief post-war recession where nominal GNP declined by 9.7 percent and real GNP declined by 14 percent.⁹ The recession was much milder than those numbers make it seem. Much of the decline was the shedding of no longer needed wartime production. Government spending fell by \$39 billion (18.9 percent of GNP), but gross private capital spending rose by \$15 billion (7.2 percent of GNP), and for the first time since 1941, private capital spending exceeded government spending in the third quarter of 1946. During this period, there was high monetary base growth and low interest rate volatility. However, since monetary actions were limited by the differences in opinion between Allan Sproul, president of the Federal Reserve Bank of New York, and Marriner Eccles, chairman of the Federal Reserve Board, there was widespread concern that the transition to a peacetime economy would negatively affect private consumption and investment.

In the year following the end of the first postwar recession, there was constant debate between the Treasury and the Federal Reserve regarding monetary policy, which resulted in limited efforts in raising short-term rates and dealing with inflation. The Federal Reserve first decided to end preferential discount rate for loans secured by the government. The Federal Reserve had wanted the Treasury to use its cash balance to reduce outstanding marketable short-term debt

⁷ *Ibid.*, 596.

⁸ *Ibid.*, 605.

⁹ *Ibid.*, 638. At the time, the standard way to measure the size of the economy was gross domestic product (GNP) rather than gross domestic product (GDP) as is now usual.

by issuing more nonmarketable long-term debt; however, the Treasury ended up just shifting its surplus from commercial banks to Federal Reserve Banks. The two entities did agree on a six-point program whereby short-term rates would increase to 1.125 percent by the end of 1947 while raising discount rates and reserve requirements for central reserve city banks.¹⁰ In the third and fourth quarters of 1946, there was a large increase in the gold stock that caused growth of the monetary base and a 12 percent rise in consumer prices.¹¹ Inflation continued to rise, from 4 percent in to 10 percent in six months, while interest rates remained stagnant. In an October 1947 meeting, the FOMC issued a new directive for “maintenance of stable and orderly conditions in government securities market.”¹² This directive signaled that the Federal Reserve would now only be committed to controlling long-term rates.

The next recession occurred from 1948-49 and was characterized by a delayed response from the Federal Reserve. However, the Fed was able to successfully spur recovery. At the end of 1948, prices began falling and inflation did not return until the start of the Korean War in 1950. The Treasury used its account surplus to retire debt from the Federal Reserve Banks while purchasing debt for trust accounts; doing so reduced the volume of publicly held government debt without affecting the monetary base. The 1948 deflation actually had two positive effects on the economy: it increased gold inflows and raised the real value of the monetary base. The common belief that the economy would expand due to an increase in wartime domestic and foreign demand of goods as well, as the failure to distinguish between nominal and real rates, were part of the reason for the onset of the 1948-49 recession. After Harry Truman was elected President in 1948, long-term bond yields fell, prompting the Federal Reserve to sell its long-term securities while buying short-term securities. On June 21, 1949, the Federal Reserve decided to remove the peg on short-term rates after having established the consensus that the System could not control the size of excess reserves while maintaining fixed interest rates.¹³ Instead, the Fed introduced a target range for Treasury bill rates. By the end of the recession, production was rising at 25 percent, real GNP was increasing by 2.5 percent, and nominal interest rates were rising by 0.07 percentage points.¹⁴

From the Korean War to the End of the 1950s (1950-1960)

The 1950s was a time of great change for the Federal Reserve System. The outbreak of the Korean War in June 1950 spurred a strong economic revival in the United States. Memories from the recent world war spurred producers and consumers alike to sharply increase their inventories of physical goods, resulting in a rapid rise in the velocity of money and inflation. Domestic prices rose 16 percent from June 1950 to February 1951.¹⁵

¹⁰ Ibid., 646. Central reserve city banks were those in the nation’s major financial centers and included most of the largest banks in the country.

¹¹ Idem.

¹² Ibid., 652.

¹³ Ibid., 678.

¹⁴ Idem.

¹⁵ Milton Friedman and Anna Jacobson Schwartz, *A Monetary History of the United States: 1867-1960* (Princeton, New Jersey: Princeton University Press, 1963), 597.

As prices rose, the accompanying rise in interest rates pushed up yields to levels that created concern. The Treasury reacted to this by announcing it would maintain the existing yields on its securities. From June 1950 to the end of that year, the Federal Reserve's holdings of government securities increased by \$2.4 billion,¹⁶ or from around 40 percent of Federal Reserve assets in June to 44 percent by the end of the year. The rapid expansion and threat of high inflation that the Korean War brought put pressure on the Federal Reserve to slow the pace of expansion, alerting the government to the dangers of the situation. As a direct result of these pressures, the Treasury-Federal Reserve Accord was agreed in March 1951. The Accord essentially liberated the Federal Reserve System from the Treasury by separating government debt management from monetary policy. The Accord put an end to the Federal Reserve System's debt-support policy, freeing the Fed from the responsibility to support government securities at a pegged price. The Fed gained new independence and could now raise interest rates without prior approval from or consultation with the Treasury. The Fed also adopted a "bills only" or "bills preferably" policy for monetary policy. Under this policy, which the Fed followed until February 1961, it sold only Treasury bills and no other securities, under the justification that Treasury bills had a "broader, more nearly perfect market than other government securities."¹⁷

In January 1953, due to concerns over inflation, the Federal Reserve tightened monetary policy by raising the discount rate 25 basis points to 2 percent. The tightening triggered a mild recession from mid-1953 to August of 1954. The Fed began to ease monetary policy in May 1953 by beginning to buy Treasury bills. The Fed lowered interest rates again in February 1954 and April-May 1954, as well as lowering reserve requirements for commercial banks.

The Federal Reserve went from a period of easing rates in early 1954 to raising rates in late 1954 in order to restrain inflation. The discount rate increased from 1.5 percent to 3.5 percent in seven steps from 1954 to 1957.¹⁸ The economic recovery lasted until August 1957, when the country entered another recession. In October 1957, the Soviet Union set the first rocket and manned capsule into space, beginning the Space Race with the United States. Domestic U.S. concerns over increased defense and space spending triggered a rise in interest rates and a reduction in stock prices. The Standard & Poor's 500 index fell 7 percent over the month of October. The Federal Reserve responded slowly to the economic downturn in late 1957 due to concerns over high inflation. It was not until mid-December 1957 that the Fed reduced the discount rate to 3 percent. The recession worsened over the winter, and the Fed responded by lowering the bank discount rate in February, March, and the end of April until it reached a low of 1.75 percent.¹⁹

¹⁶ Ibid., 611.

¹⁷ Ibid., 632.

¹⁸ Allan H. Meltzer, *A History of the Federal Reserve*, Volume 2, Book 2, 1970-1986 (Chicago: University of Chicago Press, 2010), 117.

¹⁹ Ibid., 175.

The period from late 1958-60 saw recovery from the 1957-1958 recession, and the return of concern over inflation. By December 1959, the Fed had tightened policy and restored the free reserve and the fed funds rate to August 1957 levels. The tightening was able to prevent inflation. A new element was added in 1958 when many Western European currencies became convertible for current account transactions. As had been envisioned in the Bretton Woods agreements, most global trade in goods was finally free from exchange controls, although most countries still applied controls to capital flows, the United States being the chief exception.

The Keynesian Era and the Beginning of the Great Inflation (1961 - 1975)

The 1960s saw economic thought in the United States dominated by Keynesian economics. President John F. Kennedy began his presidency in 1961, and his new administration brought many Keynesian economists to Washington D.C. They included Paul Samuelson, Kenneth Arrow, Robert Solow, and James Tobin; the latter three were key in designing the Keynesian economic policy that would be implemented by the administration. Keynesian economic policy was dominated by the belief that there was an inverse relationship between unemployment and inflation, and that the government could set an optimal trade-off between the two — a belief that would be challenged in the 1970s.

The early 1960s were a period of economic expansion and low inflation. The Vietnam War and the expansion of federal social welfare programs in the mid-1960s were the main events that dominated politics and monetary policy development. They resulted in a large increase in government expenditures in the latter half of the 1960s: expenditures rose from 16.6 percent of GDP in 1965 to 19.8 percent in 1968. The Vietnam War proved to be more costly and inflationary even than the Korean War. The federal government ran large deficits in 1967 and 1968, and Federal Reserve holdings of Treasury securities increased markedly over the period. Productivity growth slowed. This was the beginning of stagflation in the United States; from 1965 through the 1970s the country would experience both rising inflation rates and rising unemployment. The combination presented a major challenge to the Federal Reserve System. The Federal Reserve responded by raising the discount rate over the period to a high of 6 percent in 1969 in order to combat the rising rate of inflation.

Under the Bretton Woods system, member countries agreed to maintain pegged exchange rates between their currencies and gold or a gold-convertible currency, which in practice meant mainly the dollar. The world market price of gold, however, showed signs in the early 1960s of exceeding the official price of \$35 per troy ounce. In response, the Fed and seven European central banks created the London gold pool. London was then as now the center of the world gold trade. The pool sold gold on the market when the market price exceeded the official price by a margin considered substantial. Each country agreed to contribute a specified share of the gold and accept a specified share of the losses. The U.S. share was 50 percent and the initial amount of the pool was \$270 million. The pool began on November 1, 1961. Its existence was at first secret but was revealed to the world by a Swiss newspaper in 1962. After the devaluation of the pound sterling in November 1967 the pool was increasingly unable to balance the outflow of gold with buybacks of gold, and maintain its mission. The United States

had sought to maintain the price of \$35.20 per ounce of gold by selling gold reserves to the United Kingdom. However, in early March 1968, \$400 million worth of gold was sold in a single day on the London Gold Exchange. In response, the United States requested that trading be suspended, and the London Gold Pool was closed permanently three days later. A two-tier gold market began, with transactions in gold among central banks occurring at \$35 per ounce but market transactions occurring above the official rate.²⁰

The gold reserve ratio requirement behind Federal Reserve notes (paper money) was 40 percent from 1913, until changing to 25 percent in 1945.²¹ The percentage of gold reserves grew after 1945 as peace allowed the Fed to cease war financing and tighten monetary policy to bring the value of the dollar into closer correspondence with the value of its official equivalent in gold. After 1950, the gold reserve ratio began to decline again due to the increase in total Federal Reserve note liabilities and the outflow of gold to foreign institutions. In March 1965, Congress voted to repeal the gold coverage requirement against deposits, which had stated that deposit liabilities in the Federal Reserve had to be backed 25 percent by gold. The 25 percent requirement for gold backing of notes remained until 1968. The collapse of the gold pool in March 1968 spurred Congress to end the note reserve requirement. The gold reserve ratio stabilized at around 10 to 11 percent at the end of 1975, after the end of the gold standard.

The collapse of the gold pool was one sign of the Fed's unwillingness to restrain growth of its monetary liabilities sufficiently to instill confidence that the official gold parity of the dollar would persist. A less important but more tangible sign to average Americans was the U.S. Mint's reduction of the silver content of dimes, quarters, and half-dollars from the longstanding ratio of 90 percent to 40 percent in 1965. After 1970 the Mint stopped making coins containing any silver, except for commemorative issues. Silver coins largely disappeared from circulation because their value as metal exceeded their face value.

In November 1968, Richard Nixon was elected President of the United States. When William McChesney Martin's term as chairman of the Federal Reserve expired, Nixon's economic adviser Arthur Burns succeeded Martin. Burns immediately set to lowering the Fed funds rate. Between December 1969 and August 1971, foreign holdings of U.S. government debt increased as foreign central banks and governments honored their obligations to maintain a fixed exchange rate with the dollar under the Bretton Woods system. These purchases raised money growth and inflation abroad, creating pressure for a revaluation of foreign currencies or a devaluation of the dollar. Finally, on August 15, 1971 Nixon ended the Bretton Woods system by announcing that the United States would no longer sell gold at \$35 per troy ounce. In December 1971, the Smithsonian Agreement created a new dollar standard, pegging currencies to the U.S. dollar at a new gold parity of \$42.2222 per troy ounce that was only notional because the U.S. government neither bought nor sold gold at the new price. The new

²⁰ Michael Bordo, Eric Monnet and Alain Naef, "The Gold Pool (1961-1968) and the Fall of the Bretton Woods System: Lessons for Central Bank Cooperation," NBER Working Paper Series, No. 24016, November 2017.

²¹ Joseph C. Ramage, "The Gold Cover," *Economic Quarterly* (Federal Reserve Bank of Richmond), (July 1968), 8.

arrangement did not change the Fed's monetary expansion or inspire long-term confidence in the dollar. In February 1973 the United States and other countries ended the last vestiges of the Bretton Woods system of pegged exchange rates and began what Nobel prize winner Robert Mundell has called the "nonsystem" of floating exchange rates.

From 1973 to 1975 the United States experienced a severe recession triggered by the shock of Nixon's economic policies and furthered by the 1973 oil crisis. In October 1973, President Nixon requested \$2.2 billion from Congress to aid Israel in the Yom Kippur War. In response, the Organization of Arab Petroleum Exporting Countries (OAPEC) instituted an oil embargo on the United States. The embargo raised the price of oil from \$2.90/barrel in October 1973 to \$11.65/barrel in January 1974.²² Though the embargo was lifted in March 1974, higher oil prices persisted and so did inflation. For the Federal Reserve, the combination of rising unemployment and rising inflation challenged the existing understanding of monetary policy held by most economists. After an initial lowering of the discount rate in 1971 and 1972, the Federal Reserve reacted to the sharp rise in inflation by increasing the discount rate to a new high of 8 percent in 1974. However, the impact of the oil embargo was severe. Annual US consumer price inflation in 1974 still exceeded 11 percent, and unemployment reached 8.6 percent in 1975.²³ The tightening of the Federal Reserve did not serve to decrease rampant inflation. Overall, the period from 1960-1975 was one distinguished by the rise of stagflation. The rising inflation rate and unemployment rate presented a huge challenge to the Federal Reserve System, one that impacted the beliefs of most economists during the period.

This challenge to the Keynesian economic thought facilitated the rise of monetarist thinking in the United States. The Keynesian model had three main flaws: the model did not distinguish between nominal and real interest rates, it presumed a tradeoff between inflation and unemployment, and it failed to distinguish between a one-time change in price levels and sustained changes in price levels.²⁴ Led by Milton Friedman and Anna Schwartz, monetarist economic theory gained influence beginning in the 1960s. Monetarist theory was characterized by the belief that changes in the money supply played a major role in inflation fluctuations, and therefore the overall health of the economy. The high inflation of the 1970s weakened belief in Keynesian economic theory, allowing monetarist theory to rise in influence. One feature of the monetarist research program was the collection and analysis of monetary statistics. In the era when monetarism rose to challenge Keynesianism, however, digitization of statistics was still expensive. Friedman, Schwartz, and their fellow researchers focused on annual or monthly money supply data. They left the Fed's weekly balance sheet to be digitized by a later generation, a task we have taken up and whose results we will now discuss.

²² Michael Corbett, "Oil Shock of 1973-74," Federal Reserve History (Web site), www.federalreservehistory.org/essays/oil_shock_of_1973_74.

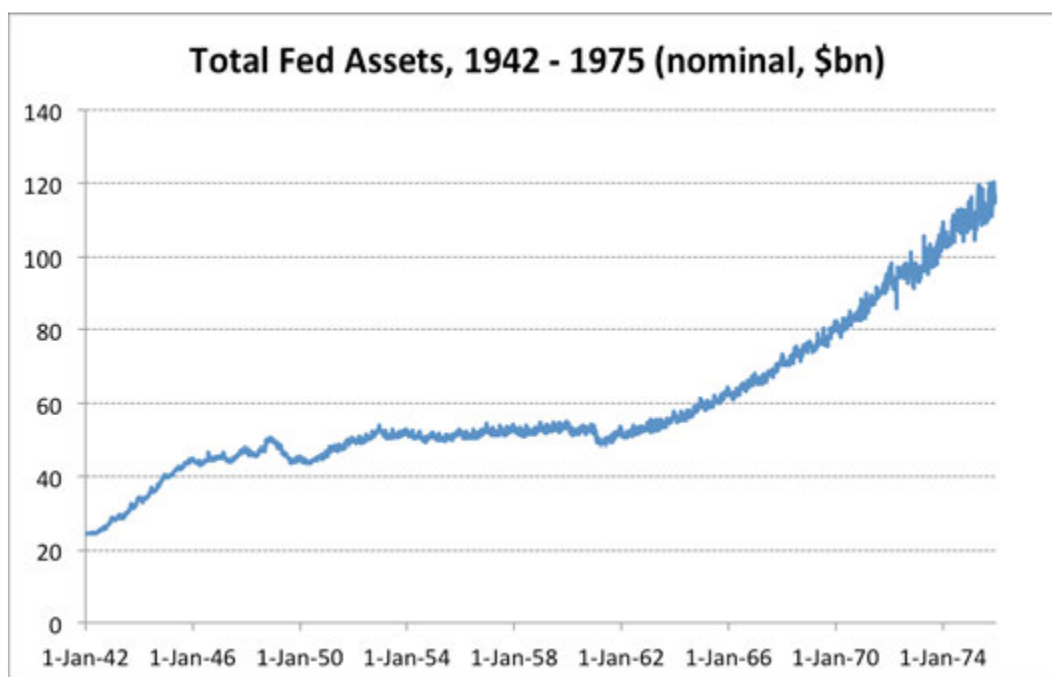
²³ "Unemployment Rate: Aged 15-64," FRED database, 17 April 2017, fred.stlouisfed.org/series/LRUN64TTUSA156N.

²⁴ Meltzer, *A History of the Federal Reserve*, 491.

II. Data and Discussion

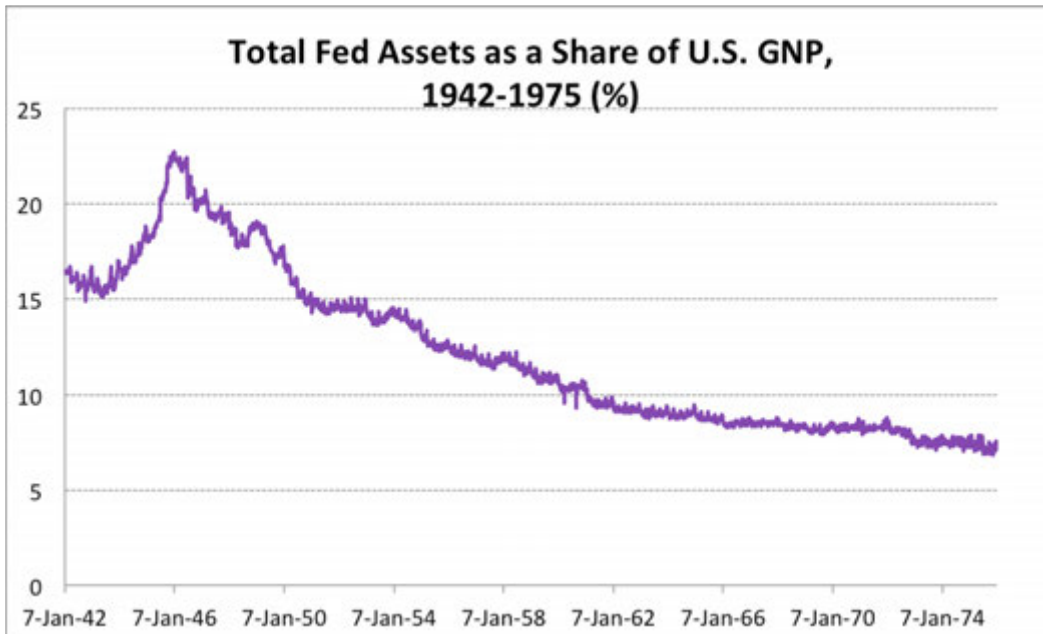
Total Assets

Over the duration of World War II, Fed assets rose significantly due to wartime spending. A modest increase in nominal terms during the Korean War is evident in the graph. After the war, assets remained fairly level for nearly a decade. In the mid to late 1960s, the Vietnam War and expansion of social welfare pushed up spending significantly. The stagflation of the late 1960s and 1970s presented a challenge to the Fed, and Fed assets roughly doubled between 1965 and 1975, from approximately \$60 billion to over \$120 billion.



Total Fed Resources/GNP (graph on next page)

During the final years of World War II, there was a sharp increase in total Federal Reserve resources as a share of Gross National Product due to the heavy war spending. In the years following, Federal Reserve Resources fell as a percentage of Gross National Product as the nominal GNP grew much faster than Fed assets. Following the peak of 22.71 percent in January 1946, total Federal Reserve resources as a share of GNP fell to around 7 percent by late 1975.

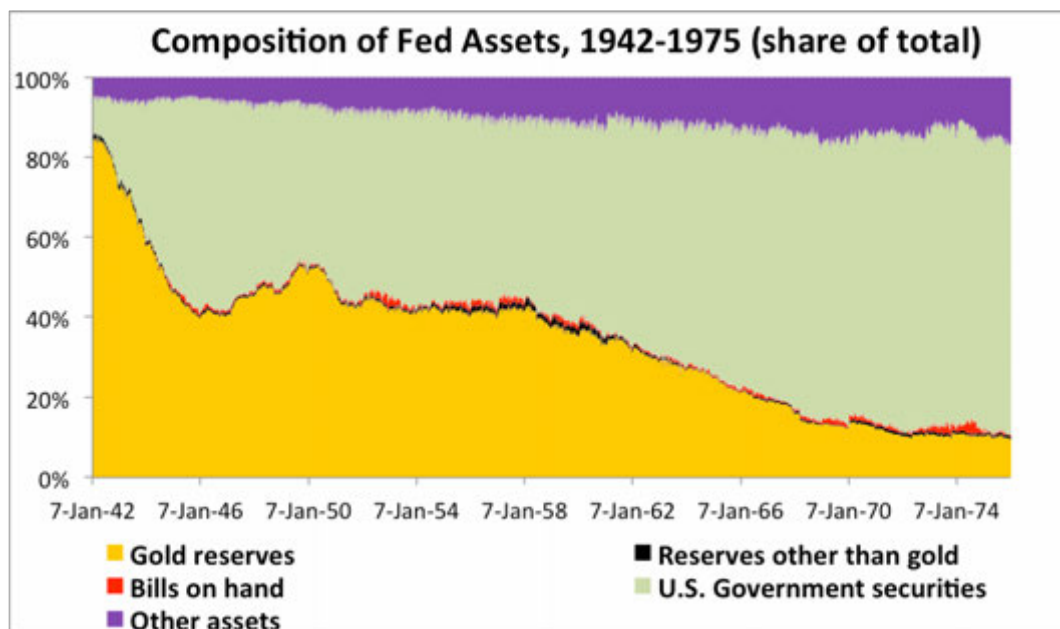
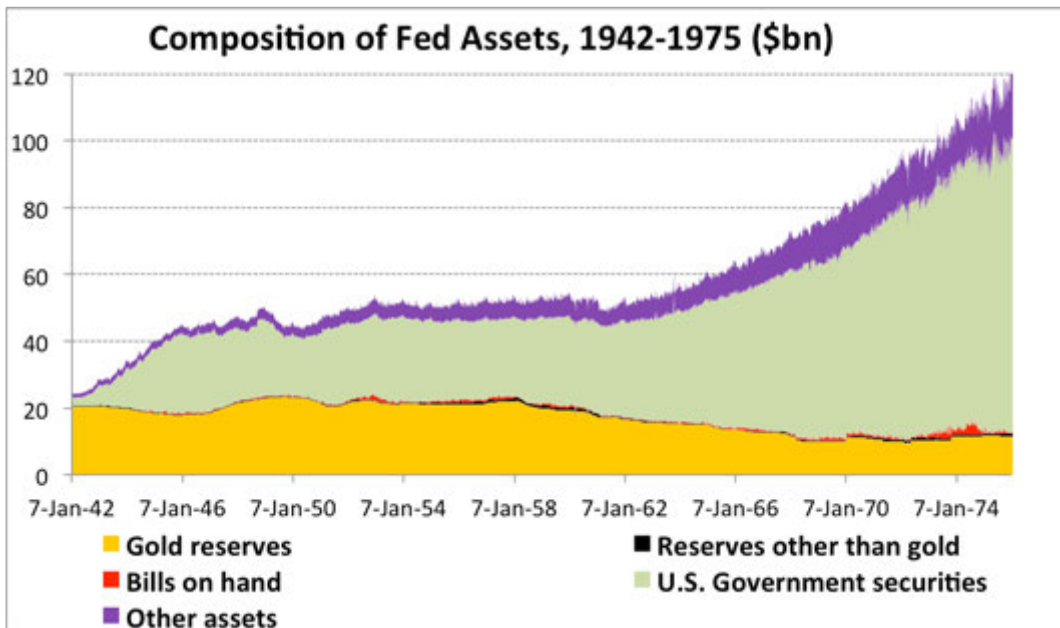


Asset Composition (graphs on next page)

In 1942, gold reserves made up more than 80 percent of Federal Reserve assets. The Second War Powers Act of March 1942 gave commercial banks authorization to acquire direct or guaranteed obligations by purchasing from the Treasury and granted the Federal Reserve the permanent authority to purchase long-term government securities. As a result, the Fed expanded its balance sheet through the purchase of U.S. government securities, providing the government with wartime funding. Over the next few years, U.S. government securities rose from about 9 percent of Fed assets in 1942 to 50 percent by late 1945. The Fed purchased approximately \$21.7 billion in U.S. government securities in this short period.

The Fed's total assets remained relatively stable over the next 20 years, until the early 1960s. After the early 1960s there was huge growth in the purchases of Treasury securities. The government used the proceeds for the Vietnam War and a rise in social welfare spending.

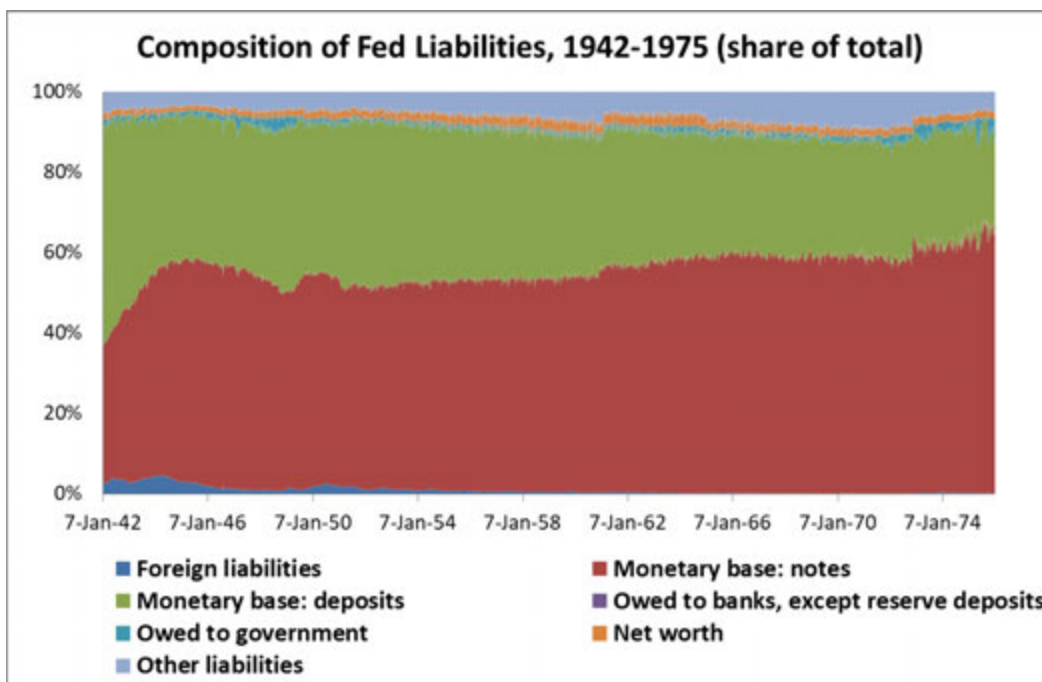
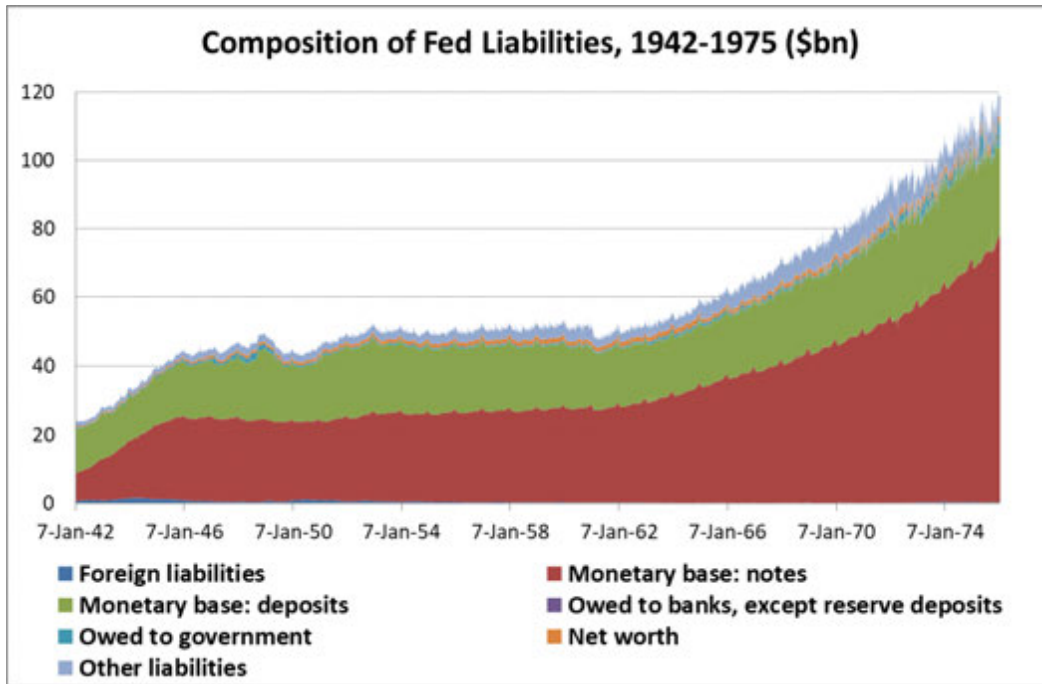
While overall Federal assets rose, the amount of gold reserves gradually decreased over the period. Due to the dissolution of the Bretton Woods agreement, the U.S. dollar transitioned from a gold-backed currency to a fiat currency in 1971. As a result, gold reserves waned over the following years, falling sharply as a percentage of total assets, though leveling off in dollar terms. The U.S. gold stock is officially valued at \$42.2222 per troy ounce, the price still on the books today, even though the market value has a times been a large multiple of the official price.



Liability Composition

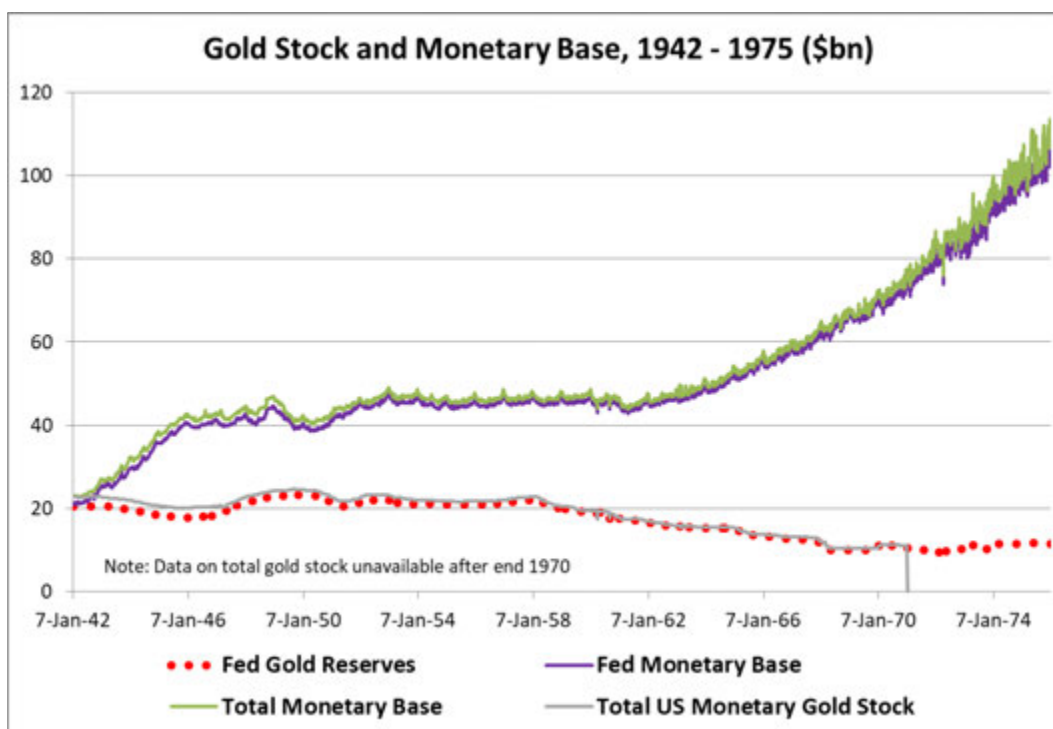
Notes in circulation rose sharply during World War II, accounting for the majority of Federal Reserve liabilities by the end of the war. Notes in circulation tripled from the beginning of 1942 until the end of 1945, from approximately \$8 billion to \$24 billion. Afterwards, the amount of notes in circulation held relatively steady, rising only by \$6 billion to \$30 billion by the end of 1962, 18 years later. In the mid 1960s notes in circulation began to grow more rapidly, perhaps more from rising demand abroad than from domestic demand. As government spending was rising during the period, the Fed allowed the monetary base to increase to prevent a change in interest rates when the budget deficit increased. The Vietnam War was twice as expensive in

nominal terms as the Korean War, and Cold War spending as well as increased spending in social welfare spending all contributed to a rising budget deficit. From 1961-64, the Fed increased the base enough to finance 33 percent of the annual budget deficit, from 1965-71 it increased the base enough to finance 50 percent of the deficit. As a result, inflation rose. The Fed acted as it did due to its belief in Phillips curve of the Keynesian model – that there was a tradeoff between inflation and unemployment. Fed officials expected that by allowing for higher inflation, lower unemployment and therefore economic prosperity would occur.

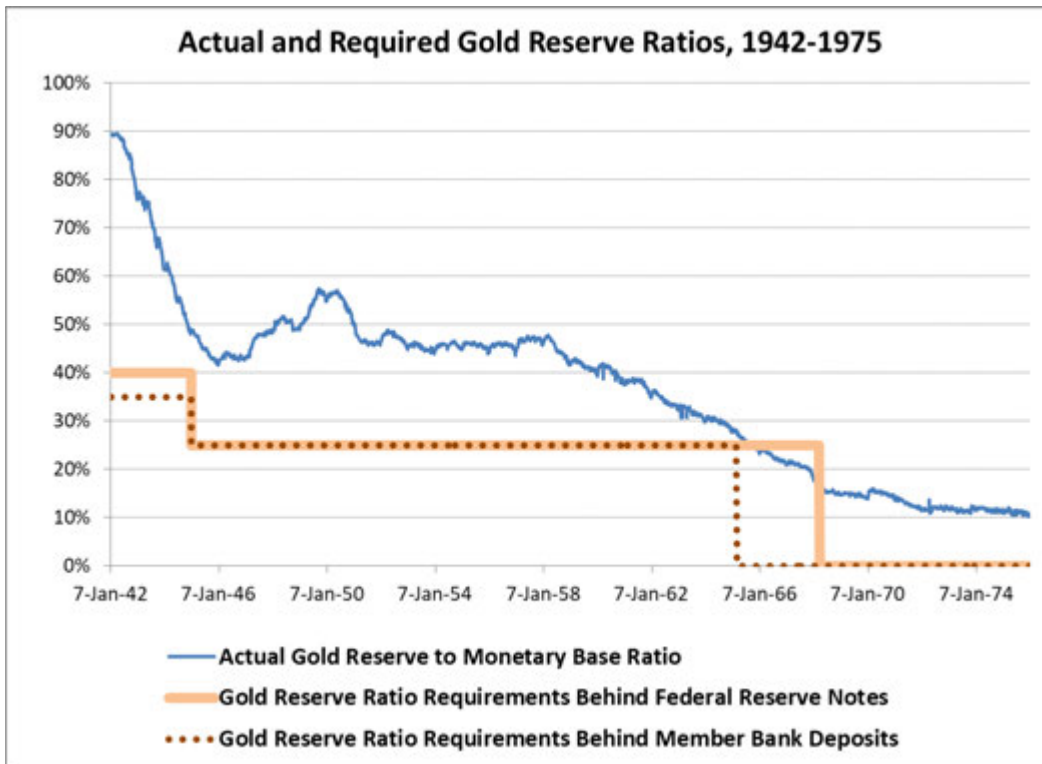


The Gold Stock and the Monetary Base

The total U.S. monetary gold stock, total monetary base, Fed gold reserves, and the Federal Reserve's portion of the monetary base grew substantially from 1942 to 1948. (The total monetary base also includes Treasury-issued currency such as silver certificates and coins, which however diminished in relative importance during the period of our analysis.) The growth of the gold stock and the monetary base then slowed significantly from 1948 to 1961. The total gold stock and monetary base experienced steady increases up to 1948 followed by a stagnant period up to 1961 before continued steady growth up to 1975. While the total monetary gold stock was still growing, the Fed's gold reserves had begun to taper down starting in 1942 and continuing until 1975, when the level of gold that the Federal Reserve was holding was lower than the level of gold in the mid 1930s.²⁵ This reveals a shift away from the gold standard in practice well before it became official. Overall, although the Fed and total monetary bases were following similar trends, the Fed monetary base was changing less dramatically than the total monetary base from 1942 to 1975.



²⁵Chen and Gibson, "Insights," 22. Note that we follow Federal Reserve practice in valuing gold at the official price of \$35 per troy ounce until December 17, 1971 and \$42.2222 per troy ounce thereafter. After the collapse of the gold pool in March 1968, described above, the official price of gold was below the market price.



Before the Fed began operations, gold had been held by the Treasury Department to provide international reserves and a reserve backing for the paper money that the Treasury issued. The backing was called the gold cover. The Federal Reserve Act of 1913 outlined gold reserve requirements to be held against Federal Reserve notes (paper money) and against deposits of member banks at the Fed. These requirements would also act to control the expansion of domestic money supply by placing an upper limit. The gold reserve ratio requirement behind Federal Reserve notes was 40 percent in 1913 before changing to 25 percent in 1945.²⁶ As was mentioned above, the gold reserve ratio requirement behind member bank deposits at Federal Reserve Banks was 35 percent in 1913 before changing to 25 percent as well in 1945.²⁷ The ratio of gold reserves to the monetary base grew after 1945 as peace allowed the Fed to cease war financing and tighten monetary policy to bring the value of the dollar into closer correspondence with the value of its official equivalent in gold. After 1950, the gold reserve ratio began to decline again because of the increase in total Federal Reserve note liabilities and the outflow of gold to foreign institutions.

In March 1965, the gold cover requirement behind deposits was removed. As the graph shows, the Fed was close to falling below the minimum required gold cover at the time. Afterwards the actual gold reserve ratio continued to fall. The collapse of the gold pool in March 1968 spurred Congress to end the gold cover requirement behind Federal Reserve notes. Consequently, the Fed no longer had to maintain any minimum ratio of gold to liabilities.

²⁶ Joseph C. Ramage, "The Gold Cover," *Economic Quarterly* (Federal Reserve Bank of Richmond), (July 1968), 8.

²⁷ *Idem.*

William McChesney Martin in 1968 rather unrealistically stated that the removal of the gold cover represented international and domestic confidence in the U.S. dollar.²⁸ The fact that the law regarding gold reserve requirements would be so quickly changed when it became a limiting factor to the growth of domestic money shows that the Federal Reserve, ultimately, had control over this rate of growth. The gold reserve ratio stabilized at around 10 to 11 percent at the end of 1975, after the end of the gold standard.

State and Private Money

Unlike the thirty years before 1942, when there were significant changes in Federal monetary base and Treasury monetary base compared to “broad money,” such as the quick drop of the Treasury monetary base as a share of “total money” and the quick rise of the Fed monetary base as a share of “broad money” from 1914 to 1919, in the period we survey, there was a constant trend in the behavior of Federal monetary base and Treasury monetary base during the period discussed in this paper.²⁹ “Broad money” is the most inclusive method of calculating money supply that includes the most liquid assets such as cash and cash equivalents (the monetary base, M0), and illiquid assets that households and businesses use to either make payments or hold as short-term investments. In this paper, “broad money” from 1948-1958 refers to the M3 money supply as calculated by Richard G. Anderson.³⁰ From 1959 onwards, “broad money” refers to M4 money supply calculated as all deposits at commercial banks and thrift institutions except large denomination. Time deposits as a ratio of “state money” issued by the Federal Reserve to “private money” reached a high of 20.1 percent in June 1945 before beginning a steady descent to approximately 10 percent at the end of 1975. In this paper, “private money” refers to the M4 money supply and is defined as money private organizations lend to households or businesses, while “state money” refers to the M0 money supply and is defined as the monetary base issued by the Federal Reserve and the Treasury. The ratio of “state money” issued by non-Federal Reserve entities to “private money” shows a relatively low constant trend with changes no greater than 1 percent from 1942 to 1975 (see next page).

We can observe that in 1975, “state money” was 4.7 times as large in nominal terms as it had been in 1942 in nominal terms, but “private money” had grown more than twice as fast and was 10.1 times as large in 1975 as in 1942. The ratio of “private money” to “state money” is an important metric, referred to in this paper as the gearing ratio, that tracks how broad money supply (M4) is growing.³¹ There is a strong link between this growth in money supply and growth in nominal GDP. We can attribute the steady growth of the gearing ratio from 3.8 in 1942 to 8.1 in 1975 to an increase in economic prosperity and interpret it as a sign that the central bank was continuing to “purchase assets from the non-bank public.”³²

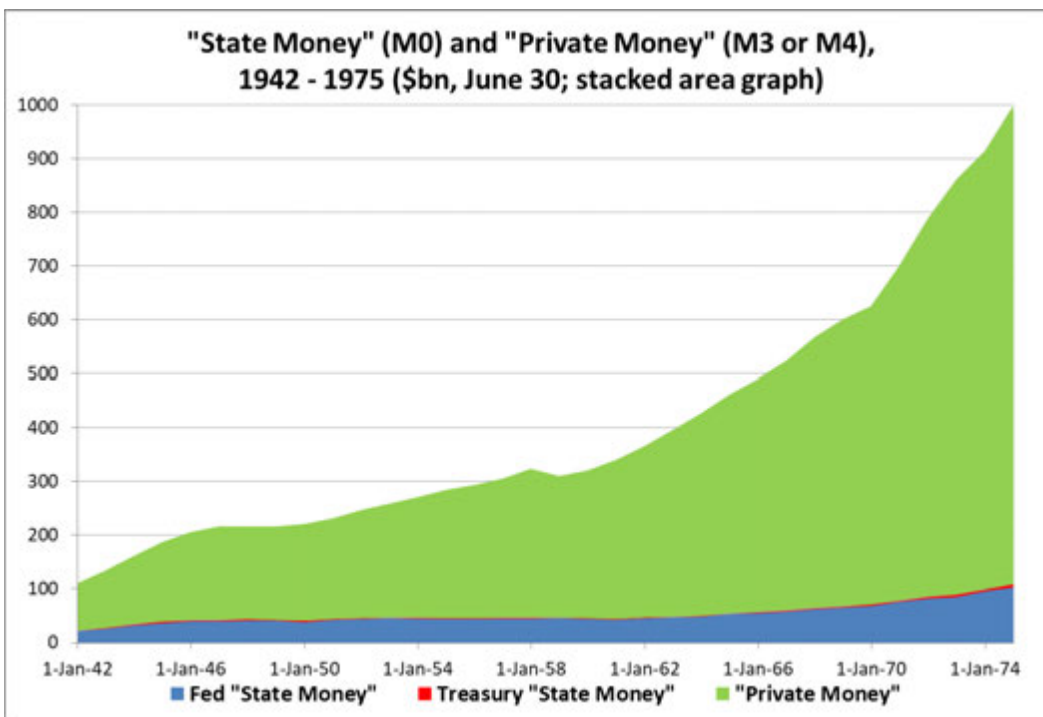
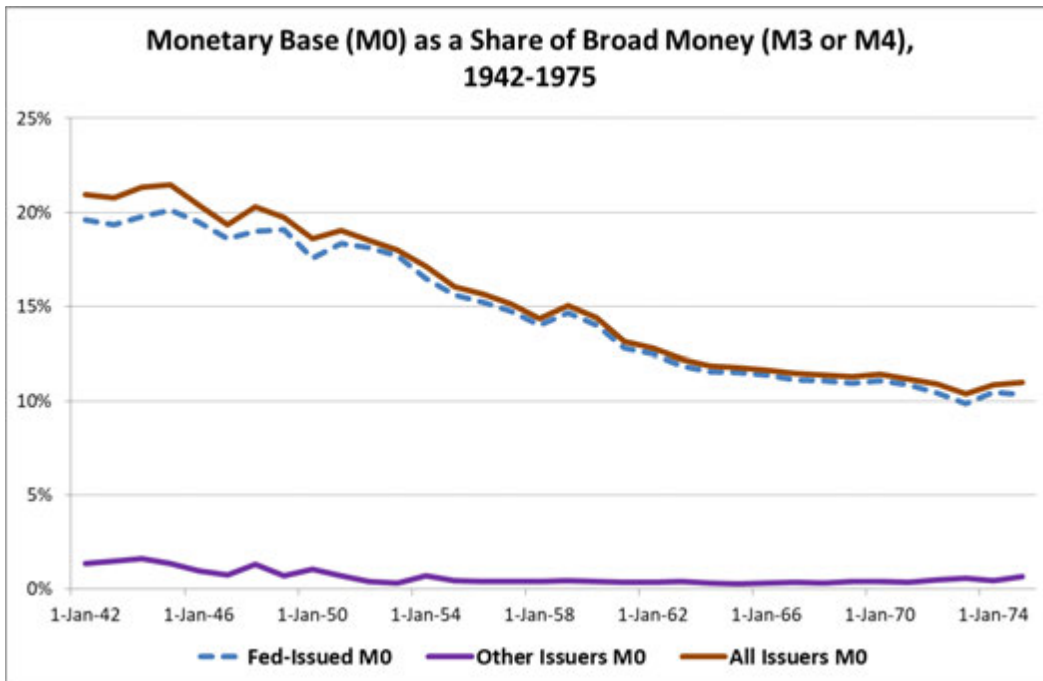
²⁸ Ibid., 10.

²⁹ Chen and Gibson, “Insights,” 20.

³⁰ Richard G. Anderson, “Some Tables of Historical U.S. Currency and Monetary Aggregates Data,” Federal Reserve Bank of St. Louis Working Paper 2003-006, April.

³¹ Data for the gearing ratio are in the “State & Private Money” section of the accompanying Excel workbook. Note that M3 and M4 include M0 held by the public as a minor component.

³² Steve H. Hanke, “State Money and Bank Money: Lifting the Fog Around QE,” Cato Institute, 6 June 2016.

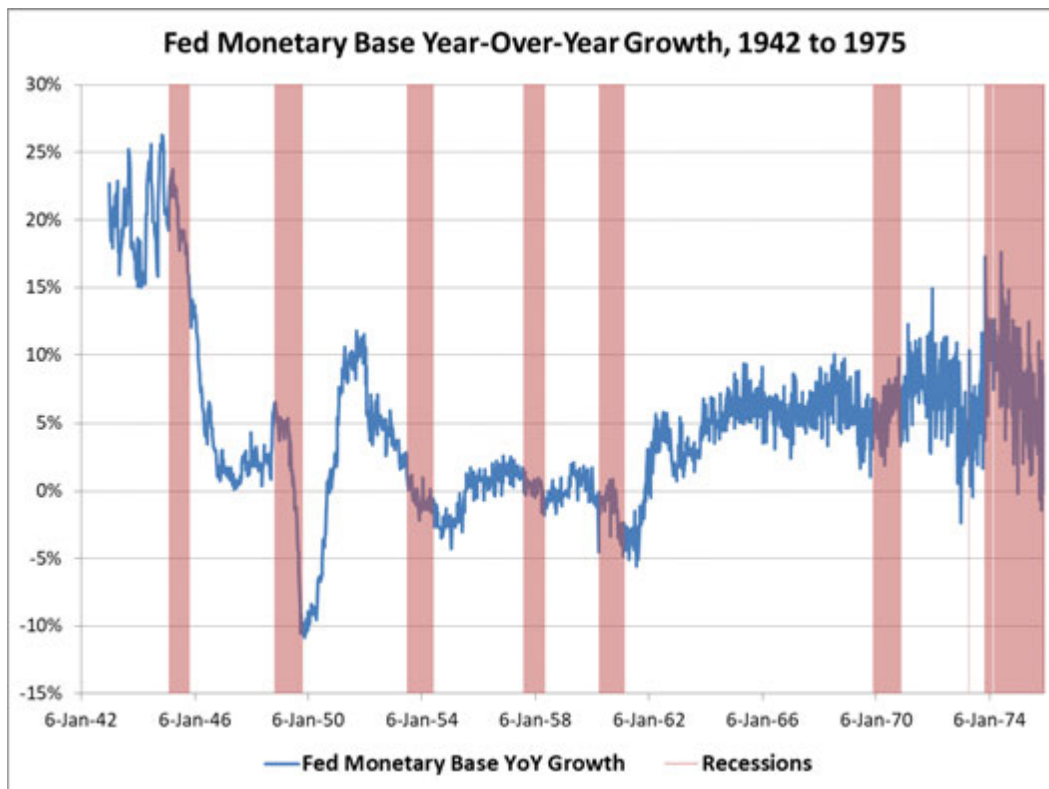


Growth Rate of the Federal Reserve-Issued Monetary Base

The recessions from February 1945 to November 1945 and November 1948 to November 1949 had the most dramatic impact on the growth rate of the Fed's portion of the monetary base. The first recession saw growth in the monetary base drop from 26.3 percent year-over-year in October 1944—the highest in the whole of the period we survey—to a low of 0.15 percent in

May 1947. The growth rate remained relatively constant before a small hike at the end of October 1948 at 6.53 percent. However, the second recession, which began in the following month, caused a further drop of approximately 17 percentage points in the growth rate. For the first time since 1930, the Fed monetary base was shrinking year-over-year, hitting a low of -10.9 percent at the end of November 1949. After the second recession ended in November 1949, the monetary base soared again as the Fed eased monetary policy. Although the growth rate of the monetary base was negative between 1948 and 1949, deflation in 1948 actually increased the real value of the monetary base.

As outlined in the section above discussing events from World War II to the Korean War, the Treasury was able to control the effects that changes in publically held government debt had on the monetary base by using its account surplus to retire debt from Reserve Banks while purchasing debt for trust accounts after the Korean War of 1950. We can see from the graph below that after the 1948-49 recession, subsequent recessions did not have such dramatic impacts on the growth rate of the monetary base.

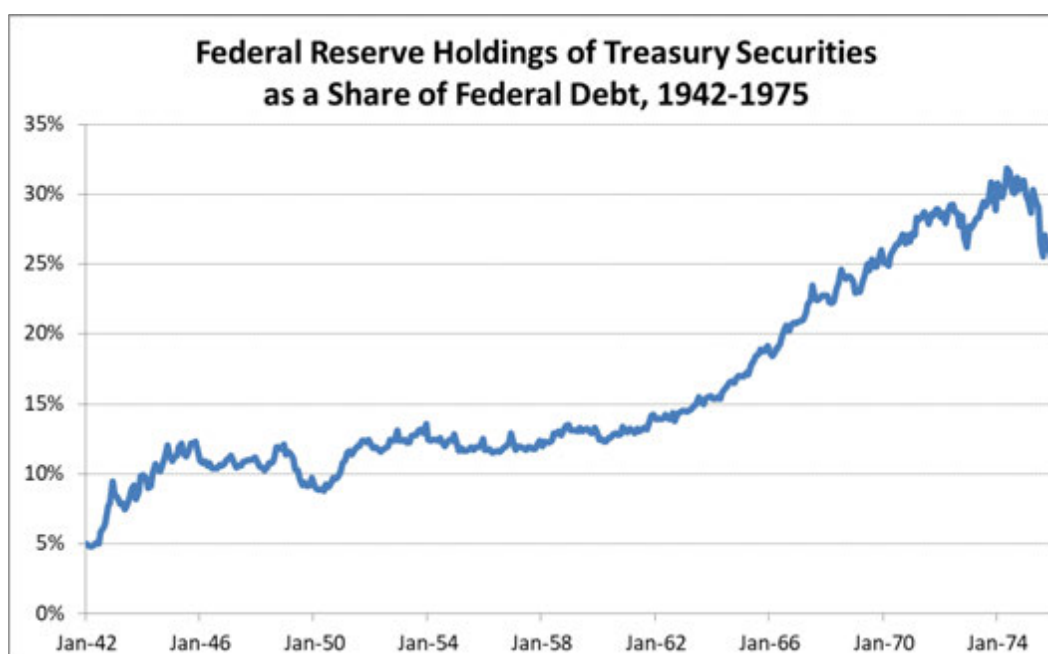


The severe recession from November 1973 to December 1975, triggered by Nixon’s economic policies and the oil embargo, marked the first time in about a decade that the year-over-year growth rate of the Fed monetary base plummeted significantly. This decrease in the growth rate reflects the Federal Reserve’s tightening policy in an attempt to reduce inflation. We can also observe an increase in the volatility of the annualized growth rates week-to-week as the time-axis on the graph approaches the 1975. This volatility could be attributable to the

challenge that the combination of rising unemployment and rising inflation imposed on the Federal Reserve and the then-current understanding of the effects of monetary policy.

Federal Debt

The 7 percentage point increase in Federal Reserve holdings of government securities as a percentage of net interest-bearing federal debt from 1942 to 1945 is a direct effect of the Second War Powers Act of 1942. The act granted the Federal Reserve permanent authority to purchase government securities of any remaining maturity, resulting in more freedom in the government securities market. The only significant dips in Federal Reserve holdings before 1974 were from January 1949 to May 1950, shortly before the Korean War, and August 1972 to February 1973.



Although the Federal Reserve's share of federal debt outstanding remained relatively constant from the ten-year period of 1951 to 1961, it rapidly ascended in the next ten-year period from about 13 percent in the beginning of 1961 to about 29 percent in 1971. This dramatic increase in Federal Reserve holdings was a result of the Fed helping to finance increased government expenditures and increased deficits. It is evidence that the Vietnam War not only cost more than the Korean War, but also put greater inflationary pressure on the U.S. economy. However, after 1974, the percentage of Federal Reserve holdings of government securities as a share of federal debt experienced a dramatic 7 percent drop from 32 percent in May 1974 to 25 percent in December 1975. The explanation is that the Fed's holdings of Treasury securities increased much more slowly than total federal debt outstanding. Monetary policy was in a tightening phase during the recession of the period.

In comparison to the period from 1914 to 1941, which saw large fluctuations in the ratio of Federal Reserve holdings of government securities to federal debt, there was a steadier trend from 1942 to 1975. During the 1914 to 1941 period there were two instances of significant government deficit increase and inflationary pressure, comparable to the increases seen during the Vietnam War period from 1951 to 1961. The first instance was during World War I, particularly from 1915 to 1917, when the percentage of Federal Reserve holdings of government securities as a share of federal debt grew 10 percentage points.³³ The second was from early 1930 to early 1934 during the Great Depression, when Federal Reserve holdings of government securities percentage rose about 11 percentage points, from 1 percent to a high of 12.4 percent in October 1933. During the 1914 to 1941 period there were also episodes of substantial decreases in Federal Reserve holdings of federal government securities, most notably from June 1922 to November 1923, when they fell by more than five-sixths.³⁴ Nothing remotely comparable occurred during the era we have analyzed.

Conclusion

During the period from 1942–1975, the Federal Reserve began to resemble far more closely the institution we know today. The Treasury–Fed Accord in 1951 enabled the Federal Reserve to act independently, and removed the peg on interest rates that had formerly existed. The shrinking of the Federal Reserve’s gold reserve in the 1960s, which is evident in the graphs, and the Fed’s reluctance to tighten monetary policy sufficiently to stop losing gold reserves, led to the end of the gold standard. It is clear that the end of the Bretton Woods gold standard can be attributed to the policies that changed the Federal Reserve’s asset composition from mainly gold to mainly Treasury securities. While the gold reserve ratio rose in the years immediately following the war, the subsequent outflow of gold and rise of Treasury securities as the Fed’s major asset made the gold standard unsustainable. The U.S. dollar transitioned to the freely floating, fiat currency that it is today. The period from 1942–1975 also witnessed several historical events that affected the Fed’s balance sheet. World War II, the Korean War, and the Vietnam War all had a significant impact on the Fed, visible to the naked eye in graphs. The beginnings of the “Great Inflation” presented a large test to the Federal Reserve. The stagflation during that period challenged Keynesian economic thought, giving rise to the prominence of monetarist theory.

Postscript: Accompanying Spreadsheets

An accompanying spreadsheet workbook contains all the important data, graphs and calculations associated with this paper. It includes the fully digitized weekly Federal Reserve balance sheets from 1942 to the end of 1975. The workbook also contains a bit of data not explicitly used in the paper that still may be useful to other researchers. For data from 1942 to 1975, we relied entirely on the weekly H.4.1 statements, which are available from the Federal

³³ Chen and Gibson, “Insights,” accompanying spreadsheets – Fed Federal Debt sheet.

³⁴ Ibid.

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