Understanding Political Pressures, Monetary Policy, and the Independence of the Federal Reserve in the United States From 1960-2019

Lawrence Bauer
Memorial University of Newfoundland

Alex Faseruk
Memorial University of Newfoundland

This longitudinal study analyzes the political pressures, monetary policy, and the independence of the Federal Reserve in the United States over the period 1960-2019. In order to fully appreciate the operations of the Fed during this period, a brief history of the banking system of the United States is made from its inception to the present. The analysis accounts for the various economic factors that have transpired in the United States while examining the various personalities who have been President of the United States and Chair of the Federal Reserve. This study demonstrates that political influences have long influenced the monetary system and have had and continues to have an impact on the independence of the Federal Reserve.

Keywords: Federal Reserve, Central Bank, inflationary gap, political involvement

INTRODUCTION

> If you go through the history of the Federal Reserve, especially the most recent years, you'll find every president has an insight into how the markets work and where interest ought to be, which is always superior to that of the Federal Open Market Committee. The best thing that you can do if you're in the Fed is put earmuffs on and just don't listen. I was at the Fed for 18½ years. I got innumerable notes, pledges, requests, et cetera to lower rates. I do not recall a single instance where somebody in the political realm said, "we need to raise rates, they're too low."
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> Alan Greenspan, Chair, Federal Reserve Board (1987 – 2006), CNBC Squawk Box, October 18, 2018

The purpose of this study is to analyze the political pressures, monetary policy, and the independence of the Federal Reserve in the United States over the period 1960-2019. In this longitudinal study, an in-depth analysis of the tenure of the various chairs of the Fed over this period is provided within the context of recent incumbent presidents who either appointed them or extended their tenure, and subsequently

supported or confounded their actions for various economic and/or political reasons. From the 2018 quote from Greenspan, it is observed that presidents largely prefer to reduce interest rates and follow loose money policies through expansion of the money supply with low interest rates, instead of tight money policies characterized by a contraction of the money supply and the raising of interest rates. While the former policy is often considered to stimulate the economy, it can be incorrectly advocated by politicians interested in a short-term re-election platform. This policy can result in long-term chronic inflation with low economic growth, commonly referred to as stagflation.

In conducting this review an analysis is made of the various tenets of monetary policy using the data outlined in subsequent sections, with an examination of persistent levels of inflation and low economic growth, stagflation. With persistent stagflation a problematic inflationary gap is often observed and is explained by undue political influence, which has observed for decades and may be exacerbated by the late 2019 and early 2020 tension between President Donald Trump (Republican) and Federal Reserve (Fed) Chair Jerome Powell during the former's first term as President 2017-2021.

President Trump appointed Powell, who assumed his office in December 2017. While the Fed raised interest rates four times during 2018, it has also cut interest rates three times in 2019. These actions did not satisfy the desires of the incumbent President who has lashed out at the Fed in a series of tweets on social media. The online, print, and television networks have provided more in-depth analysis which goes beyond mere tweeting to provide an analysis on capital market conditions and macroeconomic variables, most notably the level or inflation, (Binder & Spindel, 2019; Guida, 2019; Helmore, 2019; Shales, 2019; Klebnikov, 2020; Pramuk, 2019; Smialek, 2020).

On August 23, 2019, President Trump tweeted that Jerome H. Powell, chair of the Federal Reserve, might be a bigger enemy than China's president because the Fed refused Trump's demand to lower interest rates significantly (Binder & Spindel 2019).

Trump's actions are not particularly new as Binder & Spindel (2019) contend that presidents have often pressured the Fed to stimulate the economy. They cite that Trump is the first president since Lyndon B. Johnson in the mid-1960s to conduct a year-long aggressive campaign to demonize his hand-selected central bank chair. Past presidents had pushed their Fed chairs when the economy was faltering, facing high inflation, unemployment or both (stagflation). But, when these tweets by President Trump were taking place unemployment was at an all-time low and inflation was below the Fed's target rate of 2%. President Trump's larger issue may well be with the ongoing trade wars with China, and elsewhere. This continual on-again, off-again threatened use of tariffs by the U.S. has dented business confidence, which could generate recessionary pressures or postpone/forestall that potential occurrence. He wants the Fed to lower interest rates at a time when the Fed has observed relevant market signals that its monetary policy is working.

President Trump is hardly the first president in the modern era to exert political pressure on either central banks or the banking sector as demonstrated by Binder & Spindel (2019) and Shales (2019). Consider that in 1951 President Harry S. Truman commanded the Fed not to raise interest rates during the Korean War. When the Fed Chair, Marriner Eccles, refused, Congress came to the defense of the Chair and the White House backed down. Presidents Johnson (physically accosting him) and Nixon (with verbal abuse) both bullied their respective Chair into interest rate cuts, which have had long-term negative consequences for the American economy. Accordingly, this study conducts its in-depth analysis of political pressure, interest rate policy, and inflationary gap beginning in the 1960s and continuing to the present.

The entire issue that political pressure has been exerted on the financial system is not a new phenomenon, but is actually as old as the United States and, as such, an examination of the history of the financial system since the inception is warranted to fully understand the current market situation. Although political pressure on the management of the money supply, interest rates, rates of inflation and unemployment, and stability of the financial system may *prima facie* appear to be a recent historical phenomenon, it is centuries old. To understand the regimes addressed in this paper over the time frame from 1960-2019, the paper first addresses the antecedent conditions in central banking beginning from the

founding of the United States and concluding with a cursory history of the powers and responsibilities granted to the Federal Reserve System of the United States from its inception in 1913 to the present day.

This paper consists of five sections. The first section serves as an introduction and outlines the tenets for research. The second section provides a history of central banks in the United States over five different eras which begin in 1781 and examines the final powers given to the Fed in the 1970s. The third section outlines the data used in this study, while the fourth section analyzes the data vis-à-vis the various chairs of the Federal Reserve over the time period 1960-2019, for which the most representative data are available. Moreover, this period eliminates the extraordinary conditions created by World War Two and demonstrates how monetary and fiscal policy should work in concert with one another, given the accord between the Fed (monetary policy) and Treasury (fiscal policy), mandated in 1951, through the various economic and political situations which have unfolded. The analysis is conducted largely through an examination of graphical representation of the data. The fifth section concludes the paper.

HISTORY OF CENTRAL BANKING IN THE UNITED STATES

The history of monetary arrangements in the United States has always reflected not only economic concerns, but also strong political intrusions and partisan biases since the inception of the United States as initially outlined in the Articles of Confederation in 1781 and later with the adoption of the Constitution in 1789.

In order to outline the central thesis of this paper that politics has always been present in the operations of the banking sector and the central bank, the various eras are explored leading up to the establishment of the Federal Reserve in 1913 and comments on its operational mandate since 1913 until the present.

These eras are: 1. Attempts at a Central Bank 1781-1836 (Bank of North America, First and Second Bank of the United States); 2. Free Banking 1837-1862; 3. The Pre-eminence of National Banks 1863-1913; 4. Antecedent Conditions for the Federal Reserve System 1907-1913; The Federal Reserve from 1913 to the present with an in-depth examination since 1960.

Attempts at a Central Bank 1781-1836 (Bank of North America, First and Second Bank of the United States)

Some of the Founding Fathers of the United States were indeed strongly opposed to the formation of a central banking system, especially in colonial America when Great Britain had attempted to bring the colonies under control of the Bank of England, through a series of currency acts passed by the British Parliament in 1751, 1764, and 1773. Other Founding Fathers, mostly, in what came to be known as the Federalist Party, strongly favored the establishment of a central bank, particularly Alexander Hamilton, first Secretary of the Treasury.

The 1781 Articles of Confederation extended to Congress the power to generate bills of credit, which was then followed in 1782 by the incorporation of the Bank of North America as a privately subscribed national bank modelled after the Bank of England. The latter had been chartered as a private national bank in 1694, which remained in the private sector until nationalization by the Labour Party government under Clement Atlee in 1946. The Bank of England had, and still has, a monopoly on the issue of banknotes in England and Wales, as well as regulating the issue of banknotes by commercial banks in Scotland. An interesting anecdote is that George Washington remained a shareholder in the Bank of England throughout the American Revolution. The Bank of England financed the British government's war efforts against the American colonies in the Revolutionary War.

The Bank of North American fell prey to charges of foreign influence, corruption, and questionable lending practices. In 1785 the Pennsylvania legislature repealed its charter to operate within the Commonwealth.

Following ratification of the American Constitution, the Bank of the United States received its charter for an initial 20-year period from Congress. The bill was signed into law by President Washington (elected as an independent) in 1791. The Bank's charter was designed by Secretary of the Treasury,

Alexander Hamilton, who modelled the Bank of the United States after the Bank of England. Hamilton's image adorns the $10 bill of the United States, while Washington appears on the $1 bill. Hamilton was President Washington's second choice to lead the Treasury, as his first choice Robert Morris, known as the Financier of the American Revolution, declined the appointment and recommended Hamilton, who had served as Washington's aide-de-camp during the American Revolution.

There were several controversies with the Bank of the United States. The agricultural interest, which was a dominate force at the time, given that the Industrial Revolution was only at the nascent stage following the American Revolution, feared that the Bank would favor commercial and industrial interest over their own. Moreover, the Bank was perceived as promoting the use of paper currency at the expense of gold and silver specie. Paper currency was held in contempt following the then recent experience of the American populace with the Continental Congress which issued the Continental dollar, essentially a fiat currency, based on future tax revenues. The currency depreciated rapidly and caused massive inflation with economic uncertainty. These circumstances gave rise to the saying, "Not worth a Continental (dollar)."

The Bank of the United States differed from the central banks of today. In the late eighteenth century, the United Sates was a capital deficient country that needed to attract foreign capital and so the Bank was partly owned by foreigners who shared in the profits. Also, the Bank of the United States, unlike the Bank of England, did not have a monopoly over the issuance of banknotes. It was only responsible for 20% of the banknotes in circulation (around $5 million) with state banks accounting for the rest of the circulating notes. However, banknotes issued by states could be discounted from their face value. Whereas federal banknotes had a highly liquid specie/banknote ratio of 40%, state banknotes did not exhibit the same liquidity. Moreover, the Bank of the United States could force convertibility of state bank notes into either gold or silver specie. Such enforcement was consequently an unpopular power by the Bank of the United States; however, it did reflect the Bank of England's role as banker to the banks, which is very much the role of a modern central bank.

During this period, the Bank of the United States was able to enforce discipline on the financial system through regulation of the money supply, interest rates, and inflation. The Bank was profitable through its lending arrangements to government, state banks, and businesses. Having more powers than state banks (especially the enforcement of converting notes into specie) and being profitable made the Bank of the United States unpopular in many quarters.

President Thomas Jefferson (1801-09), a member of the Democratic-Republican Party, saw this Bank, created by the Federalist Party, as an engine for speculation, financial manipulation, and corruption. To finance the Louisiana Purchase in 1803, Jefferson did not rely on the Bank of the United States, but rather sent the first $3 million of the $15 million purchase price in gold, with the remainder financed through a bond issue underwritten in Europe by Francis Baring and Company of London and Hope and Company of Amsterdam, which sent the gold to France. Napoleon used this money to finance his wars of which Great Britain was France's chief opposition. The American $2 bill, the least popular American note in circulation, bears Jefferson's image.

Even after leaving office, Jefferson continued to be a critic of central banks. In 1816 he wrote in a letter to John Taylor, "And I sincerely believe, with you, that banking establishments are more dangerous than standing armies; and the principle of spending money to be paid by prosperity, under the name of funding, is swindling futurity on a large scale" (Jefferson 1816).

By the time, the Bank's charter was up for renewal in 1811 about 70% of its capital was owned by foreign interests. Although these foreign-owned shares carried no voting interests, these shares carried an 8.4% dividend. Given these attributes the foreign-held shares were more akin to preferred shares in today's markets. Had the charter been extended for another 20 years, it was estimated that approximately $12 million of already scarce gold and silver would have been exported to the Bank's foreign owners. Under President James Madison, also a Democratic-Republican, the charter of the First Bank of the United States was not renewed in 1811, following the political mood set by Jefferson's presidency.

Without a federally chartered bank, the next several years witnessed a proliferation of federally issued Treasury Notes to create credit at a time when the American government struggled to finance the War of

1812. There was also a suspension of specie payment by most banks. This policy was an early precursor to President Roosevelt's 1933 decision to take the U.S. off the gold standard until the Bretton Woods Agreement with the establishment of the International Monetary Fund in 1944. President Richard Nixon also cancelled the international convertibility of the U.S. dollar into gold in 1971 during his Phase Two Economic Policy. The American government has adopted and gone off the gold standard several times in its history, creating oscillations in the money supply, rate of inflation, and economic activity.

After five years without a central bank, Congress in 1816 chartered the Second Bank of the United States for a 20-year period. President James Madison signed the charter with the intention of halting the runaway inflation that had haunted the financial system of the United States since 1811. The second bank was a copy of the first bank, but now established various branches across the country, instead of being centralized in the east. While foreigners owned only 20% of the Bank down from the 70% of the First Bank, it was nonetheless plagued by other pressing issues.

The specie/deposit ratio was intended to remain stable at 20%, but actually fluctuated in a rather wide range from 12% to 65%. The state banks became alienated as the Second Bank of the United States returned to the redemption policies of the First Bank, wherein their notes could again be enforced to convert the notes into specie.

President Andrew Jackson (1829-1837), as the first Democrat president, denounced the Bank as an engine of corruption. Galbraith (1990, 1995) contended that the Bank consistently exhibited poor management and, in some cases, outright fraud. The destruction of the Bank was a major goal of Jackson's presidency. Jackson was not opposed to the concept a central bank as some of the Founding Fathers had been, but rather to this institution. However, Jackson had a limited view of the money supply, believing that it consisted solely of gold and silver coins and not banknotes or deposits. At that time in the evolution of the banking industry checkable deposits with clearinghouses did not exist. Interbank transfer through largely time drafts, not sight drafts, constituted the norm and that banknotes from other institutions could be deposited into another bank, often at a discount, which was more acute if the banknote were deposited across state lines. Jackson was able to pay off the American debt on January 8, 1835. The $20 American bill, the most widely circulated bank notes, bears Jackson's image.

Jackson vetoed the bill to renew the charter of the Second Bank of the United States past 1836, which occurred following banking panics in 1833-1834. Another banking panic occurred in 1837, a year after the veto. The interactions between President Jackson and Nicholas Biddle, the third and last President of the Second Bank of the United States, were particularly acrimonious. When President Jackson was threatening to veto the Bank's extension and was moving deposits from the Bank to state banks, Biddle increased interest rates, called loans and refused to extend new ones. The result was a depression, which Biddle tried to blame on the President. Congress, however, struck a Commission to examine the causes. Biddle refused the Commission permission enter to the Bank. After leaving office, Biddle was charged with fraud. From 1837-1913, the United States was without a central bank until the Federal Reserve in 1913.

The Whig Party, despite having had four presidents in the nineteenth century, had little impact on the development and evolution of the central banking system, although they were largely formed during the era known as the Bank War between 1829-1837. In fact, President Tyler was expelled from the Whig Party in 1841 when he vetoed a bill which would have established another Bank of the United States. He was then an independent president.

Free Banking 1837-1862

During the 1837-1862, the Era of Free Banking, only state-chartered banks were in operation. These entities could issue banknotes against specie, either gold or silver coins, held on deposit. The states heavily regulated their own reserve requirements, interest rates for loans and deposits, the necessary capital ratio, etc. These banks had been in existence since 1781. They had operated in parallel with the Bank of North America and during the First and Second Bank of the United States. Given that legislative requirements for banks could vary from state to state, it is not surprising that various economic problems could be created. For example, the Michigan Act (1837) allowed the automatic chartering of banks that

would fulfill its requirements without any additional enactment or scrutiny of the state legislature. This legislation made creating unstable banks easier by lower state supervision in states that adopted this model. The actual value of a banknote was often less than its face value. The issuing bank's financial strength would determine the size of the discount, which could vary widely in a short time period.

In 1797, there were 24 state-chartered banks in the United States, but by the beginning of the Era of Free Banking 712 had received charters. During this period, when the federal government adopted a laissez faire stance and largely divorced itself from attempting to regulate the banking industry, the chartered banks were often short-lived with an average lifespan of five years. About half of the banks failed. Approximately one-third of those failed because they could not redeem their notes. These notes were of variable design and backing. However, some of the stronger local banks assumed the functions that would be hallmarks of a modern central bank.

In New York, the New York Safety Fund started in 1829 to provide deposit insurance for its member banks by charging a premium for deposit insurance. A century later the Federal Deposit Insurance Corporation was modelled after it. Consequently, banks in this region had fewer failures and a lower discount for their banknotes.

In Boston, the Suffolk Bank guaranteed that banknotes would trade at or near par value, and acted as a private bank note clearinghouse, wherein this bank started to require standardization of a banknote to ensure greater liquidity in transactions, including deposits. By 1825 almost all of New England's banks were in the Suffolk Bank system, which was an early forerunner of modern clearinghouses. While there were these regional successes, this free banking era fraught with a high rate of bank failures was unstable, witnessing large fluctuations in the money supply which impacted not only interest rates and rates of inflation, but could hinder economic growth.

The Pre-Eminence of National Banks 1863-1913

From 1863-1913 there was a growth in national banks during which time the state banks proved to be unstable. The *National Banking Act* (1863), besides providing loans in the Civil War effort of the Union, also allowed: the creation of a system of national banks; establishment of the Comptroller of the Currency to supervisor these banks; creation of a uniform national currency with the Comptroller of the Currency the power to print these notes to ensure uniform quality and prevent counterfeiting; and financing the war with national banks holding Treasury securities to back their notes. This Act led to the creation of the American greenback which to this day is the standard banknote of the United States. The $5 banknote bears the image of Abraham Lincoln who was President when the Act was passed and signed into law by him.

Preferential treatment was given to national banks. A 10% tax was placed on state bank bills, forcing many state banks to convert to national banks. In 1865, there were almost 1,500 national banks chartered. In 1870, 1,638 national banks were in existence and only 325 state banks. This punitive tax led in the 1880s and 1890s to the creation of checking accounts (checkable deposits) as checks were not subject to the 10% tax. By the late 1890s, 90% of the money was in checking accounts held largely in state banks with these checkable deposits increasing the money supply thereby making credit more widely available.

There were still problems in the banking sector. While the *National Banking Act* prohibited American banks from making foreign loans, as the U.S. was still an importer of capital, the Act attempted to have a greater control over the money supply. However, two problems remained.

First, the requirement that Treasuries were used to back up currency was problematic as Treasuries fluctuated in value. With these fluctuations in order to maintain their reserve ratio, banks had to either call loans or borrow from other banks/clearinghouses, which could create unstable capital market conditions.

The second problem was the system created seasonal liquidity spikes. A rural bank could have deposits at a larger regional or urban bank. It would need those deposits when demand for credit was high, e.g. the growing season, but would have excess liquidity after the harvest, resulting in a series of peaks and troughs. These liquidity crises led to bank runs, causing severe disruptions and depressions, including panics in 1873, 1884, 1893, and 1907.

The 1907 crisis, also called the Wall Street Panic, was severe and brought about what at the time was the worst economic depression in the United States' history. Several large banks collapsed; liquidity and confidence were eroded; and unemployment hit 20%. This situation was lessened when J.P. Morgan personally put together a consortium to make short-term, temporary loans to banks. Short-term loans would become the role of the Federal Reserve System in years to come, as it is inconceivable that one person could alone help to bail out a country's financial system. The most important event following the Panic of 1907 was the passage of the *Federal Reserve Act* 1913.

Antecedent Conditions for the Federal Reserve System 1907-1913

Following the financial disaster of 1907, the movement for banking reform gained impetus, particularly among Wall Street bankers, Republicans, and some eastern Democrats. At this time, many sections of the country were distrustful of bankers, including notable Democrats, such as William Jennings Bryan, the Democratic nominee for President in 1896, 1900, and 1908. Bryan was distrustful of the banking establishment and advocated a policy of bimetallism to change the 1879 national policy of the gold standard to allow silver coins to be exchanged 16:1 for gold coins or so-called free silver. This policy would have intentionally created inflation, which he saw as desirable, so that farmers would gain more money for their crops, have cash at planting time to reduce borrowings in spring, and pay off long term mortgages in inflated dollars. He called the gold standard un-American in his 1896 Cross of Gold Speech, which earned him his first Democratic nomination. Bryan did not win any of these elections, but the Democrats did under Woodrow Wilson in 1912.

As the new President, Wilson became the principal mover for banker and currency reform and worked closely Senator Nelson Aldrich (Republican) of Rhode Island, as well as the two chairs of the House and Senate Banking and Currency Committees, Representative Carter Glass (Democrat) of Virginia and Senator Robert Owen (Democrat) of Oklahoma. Wilson insisted that a series of regional Federal Reserve banks be controlled by a national Federal Reserve board appointed by the President, with the advice and consent of the Senate. These bi-partisan initiatives could have been put off-rail by Bryan, now Secretary of State, and still a power broker in the Democratic Party, who threatened to destroy the bill. Wilson came up with a compromise plan that pleased both bankers and the followers of Bryan. The Federal Reserve's currency (now a truly national currency) would be a liability of the government and not of private banks. No ownership of the Fed would be in the hands of the private sector. The Fed would have greater control of the money supply and could deal in Treasuries through open market operations. The 12 regional banks would be responsive to local market conditions and, lastly, federal loans could be provided to farmers. After debate and amendments, the *Federal Reserve Act*, also known as the *Glass-Owen Act* was passed late in 1913. President Wilson signed the act into law on December 23, 1913, just in time for World War One.

The Federal Reserve System 1913 to the Present

The Federal Reserve System, also known as the Federal Reserve, or simply the Fed is the central banking system of the United States. It evolved from previous attempts to regulate the banking industry as a result of many challenging times and failed efforts, which were brought about by various economic conditions and events, poorly designed policies, and partisan tampering over the period 1781-1913. The Federal Reserve's power and direction evolved slowly in part due to the understanding that at its creation its primary function was to act as a reserve, a money creator of last resort to prevent the downward spiral of withdrawal/withholding of funds which accompanied a monetary panic that had resulted in runs on banks. At the outbreak of World War One, the Federal Reserve was in a better position than the Treasury to issue war bonds and so became the primary retailer for war bonds under the direction of the Treasury. With World War One, the United States became an exporter of capital and so American monetary policy became a benchmark for the world, especially after World War Two.

After World War One, the Governor of the Federal Reserve Bank of New York, Benjamin Strong, and Paul Warburg, an influential investment banker, lobbied and successfully convinced Congress to modify the Fed's powers, giving it the ability to both create money (as the 1913 Act intended), but also

withdraw money from circulation, as a true central bank could. During the 1920s, the Fed experimented with several approaches, alternatively creating and then withdrawing money, which Friedman argues helped create the late 1920s stock market bubble and then the Great Depression, (Freidman & Rose 1963).

After the Democrats regained control of the White House in 1933, with President Franklin D. Roosevelt taking over from the outgoing Republican President Herbert Hoover, the Federal Reserve was subordinated to the Executive Branch, where it remained until 1951. Roosevelt's Democratic Party successor, Harry S. Truman, had the Fed and the Treasury Department sign the Monetary Accord of 1951, granting the Fed full independence over monetary matters while leaving fiscal matters to the Treasury. In the 1970s Congress specifically charged the Federal Reserve to effectively promote the goals of maximum employment, stable prices, and moderate long-term interest rates, as well as regulatory responsibility over consumer protection laws.

While the Fed's monetary powers did not change significantly during the latter part of the twentieth century, continuing into the twenty-first century, there were multiple changes of government alternating between Democratic and Republican presidents and congresses, different chairs of the Fed, notable economic and political events, and significant changes in economic paradigms with Keynesian (neo-Keynesian) and monetarist (neo-monetarist) viewpoints. It is the plethora of these changes which provides the thrust of this paper to analyze the data provided in the next section via-a-vis the various chairs of the Federal Reserve and the President who either appointed them or who worked with them.

DATA

The data used for this study comprises quarterly figures for gross national product, money supply, consumer price index, and US business cycle expansions and contractions spanning the 57-year period 1960Q1 through 2019Q3. For consistency, all data were retrieved from the Federal Reserve Bank of St. Louis Research Division FRED database, accessed November 27, 2019. The specific series and sources of the data are outlined as follows.

Gross National Product (GNP)

GNP represents gross domestic product plus income receipts from the rest of the world, less income payments to the rest of the world, and is extracted from the U.S. Bureau of Economic Research Analysis Gross Domestic Product dataset: BEA account code A001RC. The series provides quarterly data in billions of US dollars at a seasonally adjusted annual rate. Real GNP is computed by deflating with the quarterly seasonally adjusted Consumer Price Index.

Money Supply (M1)

M1 represents narrow money, including currency plus overnight deposits, and is extracted from the Organization for Economic Co-operation and Development (OECD) Main Economic Indicators database: OEDC descriptor MANMM101, OECD unit STSA, OECD country USA. The series is available from 1960Q1 and provides seasonally adjusted quarterly data for M1 for the United States expressed in US Dollars.

Consumer Price Index (CPI)

CPI reflects changes in the cost of acquiring a basket of goods and services and is extracted from the OECD Main Economic Indicators database: OECD descriptor CPALTT01, OECD unit IXOBSA, OECD country USA. The series is available from 1960Q1 and provides seasonally adjusted quarterly index data for all items for the United States, index 2010=100.

US Business Cycle Expansions and Contractions

The National Bureau of Economic Research (NBER) defines a recession as, "a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real

GDP, real income, employment, industrial production, and wholesale-retail sales." The NBER Business Cycle Dating Committee maintains a chronology of the US business cycle comprising alternating dates of peaks and troughs. The period between a peak and the subsequent trough represents a recession. For the purpose of this study, both the period in which the peak occurred and the period in which the trough occurred are included in the recession. The FRED series USRECQM interprets the NBER Datings as a time series of dummy variables that represent periods of expansion and recession.

Sub Sample Periods

The full sample period is broken into subsamples based on the chair of the Federal Reserve board and based on significant milestones in the US economy. Results are presented for the full sample period and for five sub-periods based on the chairs of the Federal Reserve for whom a recession occurred during their tenure: William M Martin, Arthur F Burns, Paul Volcker, Alan Greenspan, and Ben Bernanke.

ANALYSIS

In order to comment on the various actions of the chairs of the Fed, the analysis is undertaken by using the excess inflationary gap. It is important to appreciate what an inflationary gap is before moving onto the excess inflationary gap. An inflationary gap describes the difference between the current level of real gross domestic product (GDP) and the anticipated GDP that would be experienced if an economy were to achieve full employment, which is also referred to as the potential GDP.

For the gap to be considered inflationary, the current real GDP must be the higher of the two metrics, otherwise it would be a deflationary gap. The inflationary gap occurs when the demand for goods and services exceeds production due to factors such as higher levels of overall employment, increased trade activities or increased government expenditure, which leads real GDP to exceed GDP. The inflationary gap is so named because the relative increase in real GDP causes an economy to increase its consumption, which causes prices to rise in the long run. Production lags demand.

The main cause of the gap is expansionary monetary policy (low interest rate and freely available funds) carried out by a central bank. An inflationary gap is usually a signal that the economy is in the boom part of the trade cycle with resources being used over capacity. Production facilities face increased costs and wage rates increase. Interest rates should increase along with any other factor of production to dampen speculative demand through slowing the growth rate of the money supply. At this point a soft landing for the economy may well be prudent to reduce the probability of a speculative bubble.

While the inflationary gap ultimately results in decreased demand with higher prices, the gap is eliminated through long-term higher prices. So, if presidents were to follow expansionary fiscal policies and attempt to influence central bankers to follow suit when prudent monetary policies should have been followed, the economy will be stimulated in the short-term but have problems in the long-term with persistent levels of higher inflation. Swamy, as illustrated in Bauer and Faseruk (2012), went a step further to describe an excess inflationary gap which in formulation did not confine itself to the crude quantity theory of money, but rather to the growth rate in the money supply which he postulates should be twice the growth rate of real output to maintain long-term price stability. Thus, the difference between the money supply and real output is the inflationary is the actual inflationary gap, while the excess inflationary gap is the difference between real output and double (permissible) inflationary gap. This enhanced definition more readily considers unproductive enterprises and non-preforming assets, while capturing the effect of a speculative premium.

What follows is an analysis of the actions undertaken by various chairs of the Fed, the economic policies followed beginning from 1960 until the present, and comments on the political pressures that they faced. In so examining them the analysis begins with Chair of the Fed in 1960, William M. Martin, who was appointed in 1951. Figures 1-6 provide a graphical representation of the excess inflationary gap in relation to the CPI. If no excess inflationary gap existed these two lines in all the graphs would be coincidental. Widening of the lines means the gap grows larger while a narrowing means the gap decreases. Non-contemporaneous observations can also be observed as there can be a speed of adjustment

in the markets, as such a series of lags would be observed. What, however, becomes highly problematic is when these two lines move in opposite directions and, as is demonstrated was observed during the prolonged deep recession beginning in 2008 as explained in the following paragraph.

In Figure 1 a longitudinal analysis is shown with periods of recession marked in grey shading over the entire length of the study. This figure should demonstrate periods of stagflation (periods where the excess inflationary gap exceeds the rate of inflation) versus periods of true inflation (periods where the rate of inflation exceeds the excess inflationary gap). For example, the greatest changes take place in the 2008 recession when the excess inflationary gap greatly increases while the CPI moves in the opposite direction, which is explained by quantitative easing.

FIGURE 1
EXCESS INFLATIONARY GAP 1960-2019

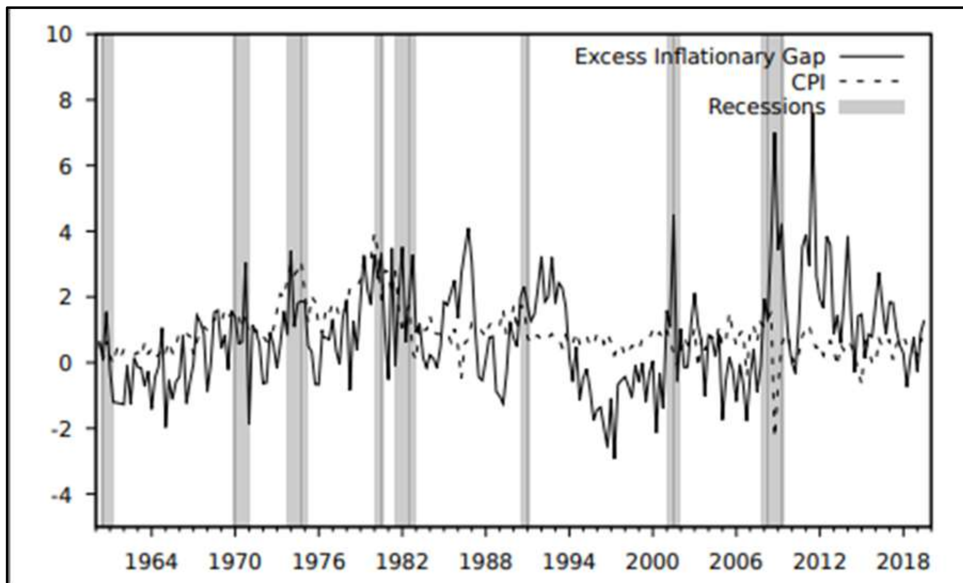

Figure 1 shows the excess inflationary gap relative to changes in the Consumer Price Index covering the full sample period, 1960Q1 through 2019Q3. This figure should demonstrate periods of stagflation (periods where the excess inflationary gap exceeds the rate of inflation) versus periods of true inflation (periods where the rate of inflation exceeds the excess inflationary gap). Periods in which the US economy was in recession as defined by the NBER Business Cycle Dating Committee are shaded grey.

Table 1 provides a summary of the tenure, education, party affiliation, and presidents served for each chair of the Federal Reserve for the period 1951 to present. For each Chair, the following section provides a more in-depth discussion with comments on significant widening and narrowing.

TABLE 1
CHAIRS OF THE FEDERAL RESERVE 1951-2019

Name	Tenure	Education	Party Affiliation	Presidents Served
William M. Martin	April 2, 1951 to February 1, 1970 (6,880 days)	Undergraduate: Yale (English and Latin) Graduate: Columbia (did not graduate)	Democrat	Truman (D) Eisenhower (R) Kennedy (D) Johnson (D) Nixon (R) (377 days)
Arthur F. Burns	February 1, 1970 to January 31, 1978 (2,921 days) February 1, 1978 to March 7, 1978 (Pro Tempore)	Undergraduate: Columbia BA Graduate: Columbia MA, PhD PhD Supervisor: W.C. Mitchell	Republican	Nixon (R) Ford (R) Carter (D) (376 days)
G. William Miller	March 8, 1978 to August 6, 1979 (516 days)	Undergraduate: U.S. Coast Guard Academy (Engineering) (Berkley (Law)	Democrat	Carter (D) (516 days)
Paul Volcker	August 6, 1979 to August 11, 1987 (2,927 days)	Undergraduate: Princeton BA Graduate: Harvard MA LSE (Rotary Foundation Ambassadorial Fellow)	Democrat	Carter (D) Reagan (R) (2,394 days)
Alan Greenspan	August 11, 1987 to January 31, 2006 (6,748 days)	Undergraduate: New York University Graduate: New York University (MA, PhD), Columbia (dropped out) Supervisor (Columbia): A.F. Burns	Republican	Reagan (R) G.H.W. Bush (R) Clinton (D) G.W. Bush (R) (1,837 days)
Ben Bernanke	February 1, 2006 to January 31, 2014 (2,921 days)	Undergraduate: Harvard BA Graduate: MIT PhD PhD Supervisor: S. Fischer	Republican (to 2015) Independent (since 2015)	G.W. Bush (R) Obama (D) (1,837 days)
Janet Yellen	February 3, 2014 to February 3, 2018 (1,461 days)	Undergraduate: Brown Graduate: Yale PhD Supervisors: J. Tobin and J. Stiglitz	Democrat	Obama (D) Trump (R) (379 days)
Jerome Powell	February 5, 2018 to present	Undergraduate: Princeton BA (politics) Graduate: Georgetown JD	Republican	Trump (R)

Table 1 summarizes the tenure, education, party affiliation, and presidents served for each chair of the Federal Reserve for the period 1951 to present. In each case, the Chair was appointed by the first President served.

FEDERAL RESERVE CHAIRS SINCE 1951

William M. Martin (1951 – 1970)

William McChesney Martin, Jr., served as Chair of the Board of Governors of the Federal Reserve System from April 2, 1951, to January 31, 1970. He was appointed by President Harry Truman after the former was the protagonist in negotiating the Monetary Accord of 1951 during his tenure as the assistant secretary of the Treasury. This accord ensured that the Fed would have control over monetary policy and

Treasury over fiscal policy. Under Martin the role of the modern Fed came to be one of macroeconomic stabilization and price-level stability (Smith & Boettke, 2015).

Notwithstanding the change in direction of the Fed, Martin was under some pressure to provide accommodating monetary policy throughout the 1950s (Havrilesky 1995, 54) and met frequently with President Dwight Eisenhower, the Treasury secretary, and the chair of the Council of Economic Advisors to discuss the economy (Bach 1971, 91; Meltzer 2009, 261). The Eisenhower presidency followed largely laissez faire policies, as Eisenhower fundamental beliefs were that a free market economy should develop its own measures for self-regulation and oversight with minimal government involvement and only when necessitated by exceptional circumstances (Pollock & Cranfield, 2011). The *Bank Holding Company Act, 1956* passed just before the General Election of 1956 provided the Fed with additional oversight of the banking industry. Following the 1960 narrow loss in the presidential election, Richard Nixon blamed the lack of either monetary or fiscal stimulation by Eisenhower for his loss to Kennedy.

Martin was known for his tight money policies and anti-inflation bias and emphasized the importance of empirically based statistics over the tenets of economic theory. At the same time, he also pushed for the Fed to have flexibility and discretion in policymaking. He rejected the idea that the Fed could achieve its own policy objectives through the targeting of a single indicator. Instead he made policy decisions by examining a wide array of economic data. In 1956, he described the Fed's purpose to Congress as "leaning against the winds of deflation or inflation, whichever way they are blowing."

Throughout his tenure, which spanned almost 20 years and five presidencies, Martin received global recognition as a strong central banker by pursing independent monetary policies while still addressing the policy objectives of the incumbent administration. Under Martin, all Reserve Bank presidents participated in the Federal Open Market Committee (FOMC) meetings, which gathered the opinions of all governors and presidents within the system. As a result, his decisions often reflected consensus prior to final approval and were then subsequently supported by unanimous votes on the FOMC.

Although he had a reputation for being compromising, Martin did not shy from conflict. On November 28, 1961, President Kennedy halted sales of silver by the Treasury Department and later issued Executive Order 11110 on June 4, 1963, which allowed the Secretary of the Treasury (and not the Fed) the President's authority to issue silver certificates and then replace these certificates with Federal Reserve notes. These actions were unpopular with the Fed as the Federal Government could issue currency without the Fed's involvement. As such the Fed's ability to control the money supply would have been curtailed. The silver would then be depleted from the reserves and put into coinage. Very few silver certificates were issued and were withdrawn from circulation following the assassination on November 22, 1963. One of the more outlandish conspiracy theories is that the Fed orchestrated the assassination (Lambert 2016, Kiger n.d., Knuth n.d.). President Kennedy is remembered in the Kennedy half dollar, which has been issued from 1964 until the present, often with a notable silver content. It is the least used coin in circulation and is often hoarded by collectors.

In late 1965, the Fed raised short-term rates, alarmed by signs of inflation following tax cuts and the war in Vietnam ramping up. President Johnson summoned Martin to his ranch and proceeded to bully him to get the Fed to reverse course. Johnson reportedly physically shoved Martin around the living room, saying he did not care about the boys in Vietnam. Martin did not back down, and the discount rate rose in early 1966 for the first time in five years. Martin admitted later that he was shaken but determined to stick to his position. (Robb, 2018), Malone (2019)

Figure 2 shows the last ten years of Martin's tenure at the Fed. One readily notes the CPI showed low volatility over that time period and that the excess inflationary gap showed low variability in a period before both the effects of the Vietnam War and shocks of the OPEC oil price increases in 1974.

FIGURE 2
EXCESS INFLATIONARY GAP 1960-1970 (W.M. MARTIN CHAIR OF FEDERAL RESERVE)

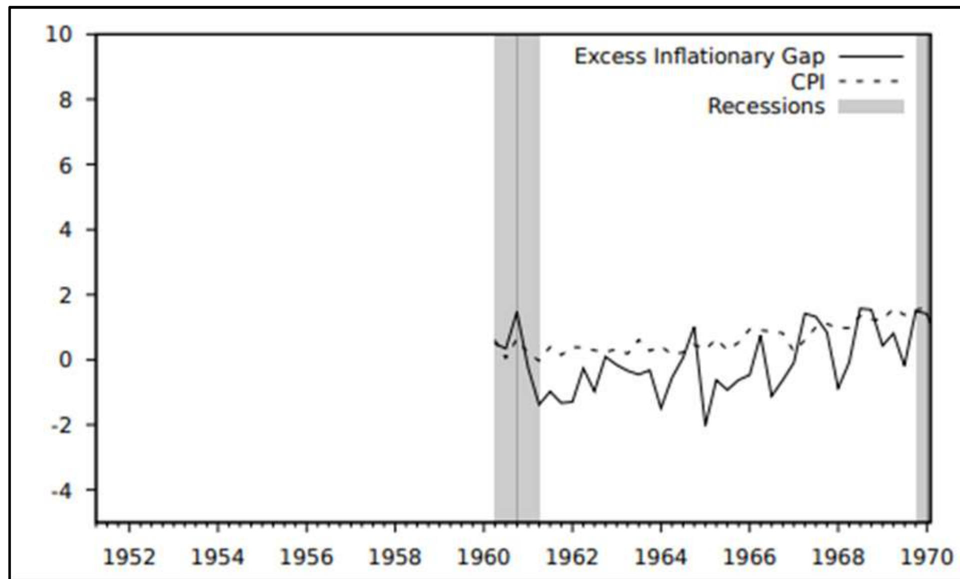

Figure 2 shows the excess inflationary gap relative to changes in the Consumer Price Index covering the portion of the sample period during which William M Martin was chair of the Federal Reserve, January 1, 1960 through February 1, 1970. This figure should demonstrate periods of stagflation (periods where the excess inflationary gap exceeds the rate of inflation) versus periods of true inflation (periods where the rate of inflation exceeds the excess inflationary gap). Periods in which the US economy was in recession as defined by the NBER Business Cycle Dating Committee are shaded grey. William M Martin was chair of the Federal Reserve from April 2, 1951 through February 2, 1970. This study comprises the period 1960Q1 through 2018Q1.

Arthur F. Burns (1970 – 1978)

Arthur F. Burns served as Chair of the Board of Governors of the Fed from February 1, 1970, to January 31, 1978. After his term as Chair, he served as the Pro Tempore Chair from February 1, 1978 through March 7, 1978. He remained a member of the Board until March 31, 1978. Prior to becoming Chair of the Fed, Burns was an academic, teaching at Rutgers for more than a decade before going on to Columbia in 1941. Burns also served as president and chair of the National Bureau of Economic Research and, in 1946, published "Measuring Business Cycles" with Wesley C. Mitchell. The book presented the method by which the NBER datings used in this work were created.

Burns assumed leadership of the Federal Reserve during the first term of President Richard Nixon in the middle of what would later become known as the Great Inflation (1965–82). During this period there were four economic recessions, two severe energy shortages, and the unprecedented peacetime implementation of wage and price controls. It was, according to Jeremy Siegal, "the greatest failure of American macroeconomic policy in the postwar period" (Siegel 1994). Easy monetary policy during this period led to a surge in inflation and inflationary expectations. This was exacerbated by the wage and price control program that artificially held down inflation, oil and food price shocks, and government fiscal policies that stretched economic capacities. As Burns later reflected, "In a rapidly changing world the opportunities for making mistakes are legion."

The Nixon tapes reveal that Nixon pressured Burns to take easing actions ahead of the 1972 election. Although it remains controversial, many economists think Burns relented to the pressure (Robb, 2018), Malone (2019). Figure 3 begins to show more variability in both the CPI and the excess inflationary gap. In 1971, the U.S. left the gold standard and the excess inflationary gap dipped as the money supply

contracted. In 1974 with the near quadrupling of oil prices the excess inflationary gap peaked, but then decreased as a result of the recession that ensued. However, the long-term effects did not stop there.

FIGURE 3
EXCESS INFLATIONARY GAP 1970-1978 (A.F. BURNS CHAIR OF FEDERAL RESERVE)

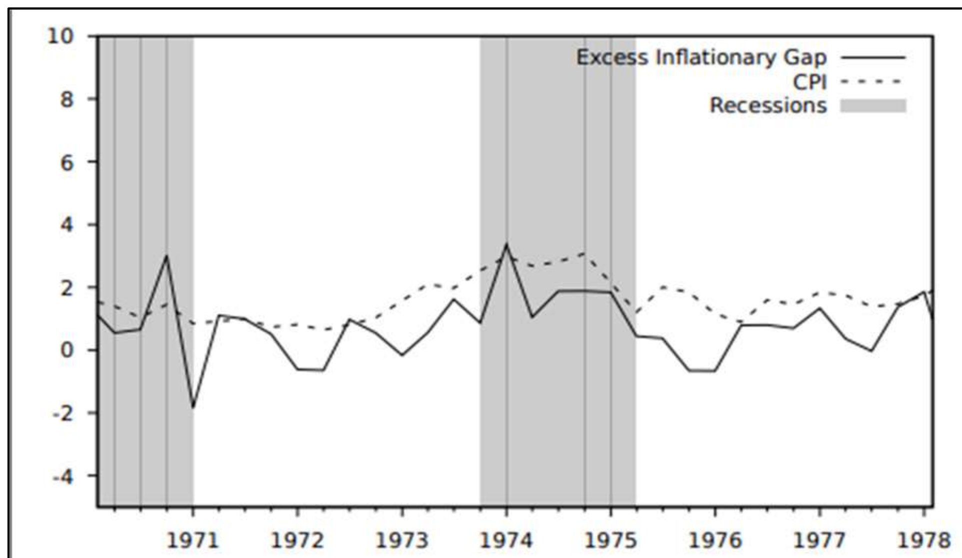

Figure 3 shows the excess inflationary gap relative to changes in the Consumer Price Index covering period during which Arthur F Burns was chair of the Federal Reserve, February 1, 1970, through January 31, 1978. This figure should demonstrate periods of stagflation (periods where the excess inflationary gap exceeds the rate of inflation) versus periods of true inflation (periods where the rate of inflation exceeds the excess inflationary gap). Periods in which the US economy was in recession as defined by the NBER Business Cycle Dating Committee are shaded grey.

G. William Miller (1978 – 1979)

G. William Miller served as Chair of the Board of Governors of the Federal Reserve System from March 8, 1978, to August 6, 1979. Miller was known for expansionary monetary policies. Unlike some of his predecessors, he was less focused on combating inflation than he was on promoting economic growth, even if it resulted in inflation. He argued that the Federal Reserve should take measures to encourage investment instead of fight rising prices, believing that inflation was caused by many factors beyond the Board's control. His brief tenure as chair was characterized by persistent, high levels of inflation that resulted from the shock of rapid increases in oil prices from OPEC that had begun in 1974.

Despite these high levels of inflation, Miller believed that it was not too high and would ultimately self-correct. As a result, he was opposed to raising interest rates, which ultimately depressed the value of the American dollar. By November 1978, 11 months into Miller's term, the dollar had depreciated nearly 34% against the Deutsche Mark and almost 42% against the Japanese Yen, prompting President Carter's administration to launch a dollar rescue package. This package included a pledge by the Treasury and Fed for a massive U.S. intervention in the foreign exchange markets to buy up dollars, a sharp increase in U.S. interest rates, an increase in reserve requirements, a $10 billion issue of foreign-denominated U.S. securities, a quadrupling previously announced gold sales by the Treasury, U.S. drawings from its tranches at the International Monetary Fund, and an increase in credit arrangements with West Germany, Japan and Switzerland (Pine, 1978).

While the dollar was stabilized in the short-term as a result of these interventions, it soon resumed its fall. The term stagflation, the combination of high inflation with high unemployment and stagnant demand, was commonly used to describe the high rate of inflation that failed to spur the economy during

this period. The high inflation that Miller allowed required strong measure by Paul Volcker, his successor, to bring inflation under control. These strong measures ultimately sent the U.S. economy into recession from 1980 to 1982.

Paul Volcker (1979 – 1987)

Paul A. Volcker served as Chair of the Board of Governors of the Federal Reserve System from August 6, 1979, to August 11, 1987. Prior to being appointed Chair by President Jimmy Carter in 1979, he had served the Federal Reserve as an economist from 1952 – 1957, served as director of the Treasury's Office of Financial Analysis from 1962 – 1963, and served as deputy undersecretary for monetary affairs from 1963 – 1965 and again from 1969 – 1974, when he left the Treasury for Princeton, where he was a visiting fellow. He was named president of the Federal Reserve Bank of New York in 1975, where he was actively involved with monetary policy decision making processes and became a proponent of monetary restraint.

During his first term, Volcker focused on reducing inflation and reassuring the public that increased interest rates were the result of market pressures and not Board actions. He also monitored the debt crisis in developing countries and supported the expansion of the International Monetary Fund's reserve fund. He made expanding the money supply without increasing inflation his priority during his second term, and gave focused structural reform aimed at protecting the Federal Reserve's regulatory authority while restricting commercial banks' activities that were considered risky.

Volcker's monetary policies were ultimately successful in curbing both the inflation rate and inflationary expectations. Inflation peaked at 14.8% in March 1980 but fell below 3% by 1983. The federal funds rate had averaged 11.2% in 1979, but rose to a peak of 20% in June 1981. The prime rate correspondingly rose to 21.5% in 1981. This exacerbated the 1980 –1982 recession, during which the national unemployment rate rose to over 10%. The tight monetary policy was eased in 1982, which then led to the resumption of economic growth and the end of the economic downturn.

Volcker revealed in his memoir, "Keeping At It: The quest for sound money and good government" that President Reagan's chief of staff, James Baker, ordered him not to raise interest rates ahead of the 1984 election. Volcker said he was not planning to tighten but that he was "stunned." (Robb, 2018)

Figure 4 captures the back-to-back recessions from 1980-1982, with high inflation, interest rate cuts and increases. Volker saw the recessions through and dealt with the onslaught of Reganomics and its four principles: lower marginal tax rates, less regulation, restrained government spending and non-inflationary monetary policy. Although a rocky road at the beginning of President Regan's presidency, recessions were overcome, and the excess inflationary gap decreased towards and had a stable CPI. However, the national debt of the United States doubled over the period of the Regan presidency.

FIGURE 4
EXCESS INFLATIONARY GAP 1979-1987 (P. VOLCKER CHAIR OF FEDERAL RESERVE)

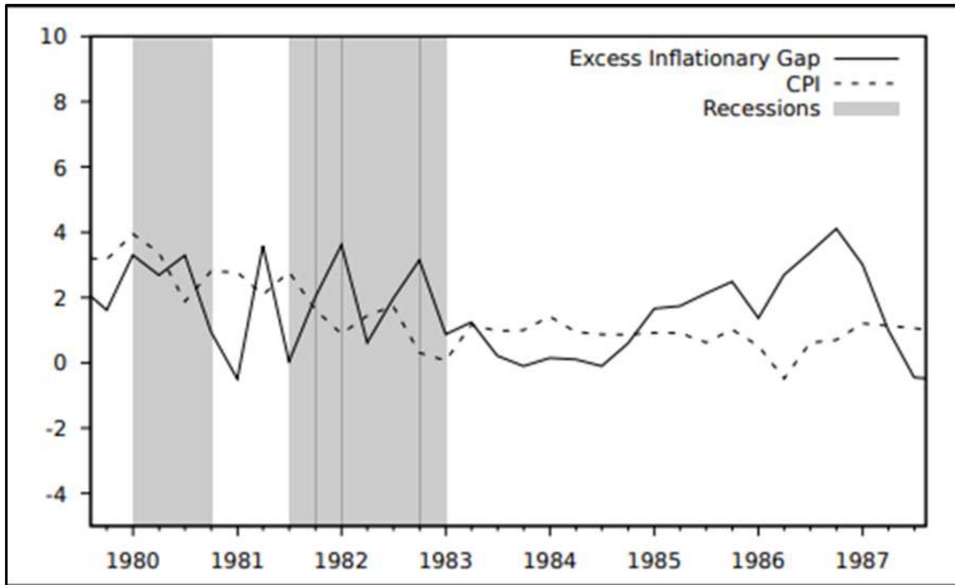

Figure 4 shows the excess inflationary gap relative to changes in the Consumer Price Index covering the period during which Paul Volcker was chair of the Federal Reserve, August 6, 1979 through August 11, 1987. This figure should demonstrate periods of stagflation (periods where the excess inflationary gap exceeds the rate of inflation) versus periods of true inflation (periods where the rate of inflation exceeds the excess inflationary gap). Periods in which the US economy was in recession as defined by the NBER Business Cycle Dating Committee are shaded grey.

Alan Greenspan (1987 – 2006)

Alan Greenspan served as Chair of the Board of Governors of the Federal Reserve System starting on August 11, 1987, served as Pro Tempore Chair from March 3, 1996, to June 20, 1996, while awaiting confirmation by the Senate for his third term as Chair, then continued to serve as Chair until his term expired on January 31, 2006. His nearly 20-year tenure, serving four presidents, is second only to William Martin in length, and followed the U.S. economy through the 1987 stock market crash, the dot-com bubble, the September 11, 2001 attacks, and the corporate scandals that plagued the U.S. in the early 2000s, which later led to the Sarbanes-Oxley Act.

Greenspan demonstrated the Fed’s readiness to provide liquidity to support the economic and financial system through easing of the existing monetary policies following the October 19, 1987 stock market crash. He played a key role in organizing the American bailout of Mexico during the 1994–95 Peso crisis. Greenspan raised interest rates several times during 2000, which was believed by many to have resulted in the bursting of the dot-com bubble. He supported President Bush's proposed tax decrease in 2001, contending that the federal surplus could accommodate a significant tax cut while still paying down the national debt.

Following the September 11, 2001, attacks and the various corporate scandals that undermined the economy, the Fed initiated a series of interest cuts that brought the Federal Funds rate to 1% by 2004.

In the July 2002 Federal Reserve's Monetary Policy Report, Greenspan argued that financial markets need to be regulated by demonstrating that the methods by which greed could be played out had grown enormously. He expressed further concern in May 2005 over the continued rise in derivatives markets and concentration in certain market segments, notably the over-the-counter (OTC) markets for U.S. dollar interest rate options.

In late 2004, Greenspan contended that Saddam Hussein was more disruptive to the world economy than bin Laden because Hussein could significantly impact oil markets. He suggested that a moderate disruption to the flow of oil could translate into higher oil prices, leading to chaos in the global economy, bringing the industrial world to its knees. He also opposed tariffs against People's Republic of China for its refusal to let the yuan rise and suggested that displaced American workers could be supported through unemployment insurance and retraining programs. From Figure 5, the excess inflationary gap increased as the CPI fell. The successive interest rate cuts, as described below during Bernanke's tenure, explain how this phenomenon arose.

FIGURE 5
EXCESS INFLATIONARY GAP 1987-2006 (A. GREENSPAN CHAIR OF FEDERAL RESERVE)

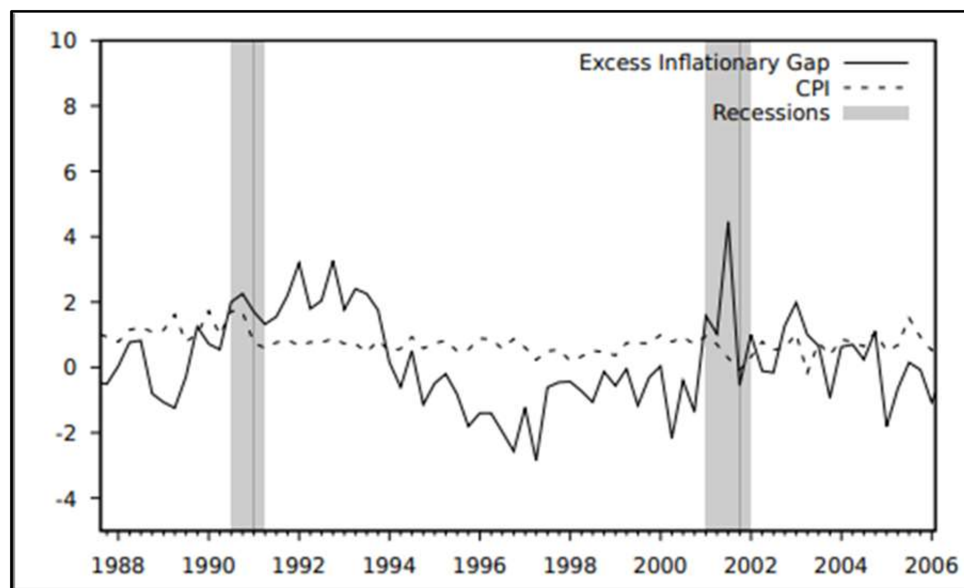

Figure 5 shows the excess inflationary gap relative to changes in the Consumer Price Index covering the period during which Alan Greenspan was chair of the Federal Reserve, August 11, 1987 through January 31, 2006. This figure should demonstrate periods of stagflation (periods where the excess inflationary gap exceeds the rate of inflation) versus periods of true inflation (periods where the rate of inflation exceeds the excess inflationary gap). Periods in which the US economy was in recession as defined by the NBER Business Cycle Dating Committee are shaded grey.

Ben Bernanke (2006 – 2014)

Ben S. Bernanke served as Chair of the Board of Governors of the Federal Reserve System from February 1, 2006, to January 31, 2014. Prior to that, he was a member of the Board from August 5, 2002, to June 21, 2005.

As chair, Bernanke led the Federal Reserve's response to the financial crisis and Great Recession of 2007 – 2010. As the recession deepened, Bernanke reduced the federal funds rate from 5.25% to 0.0% in less than a year. When this this proved unsuccessful in curbing the liquidity crisis, the Fed took unprecedented steps to implement Quantitative Easing, which created $1.3 trillion between November 2008 and June 2010, using the created money to purchase mortgage-backed securities and long-term treasuries to stimulate economic growth, and tilt the yield curve. He was an advocate of more transparent Fed policy and clearer statements than Greenspan and enhanced the Fed's transparency and communications by holding quarterly press conferences to explain the decisions of the FOMC, providing forward guidance on short-term interest rates, and adopting a formal inflation target of 2 percent.

Bernanke was confirmed for his second term as chair by a 70–30 vote of the Senate, the narrowest margin for any incumbent. He has faced criticism on many grounds, including failing to foresee the financial crisis, bailing out Wall Street, and injecting $600 billion into the banking system to boost the slow recovery. The excess inflationary gap greatly increased in 2008 while the CPI decreased as shown in Figure 6.

FIGURE 6
EXCESS INFLATIONARY GAP 2006-2014 (B. BERNANKE CHAIR OF FEDERAL RESERVE)

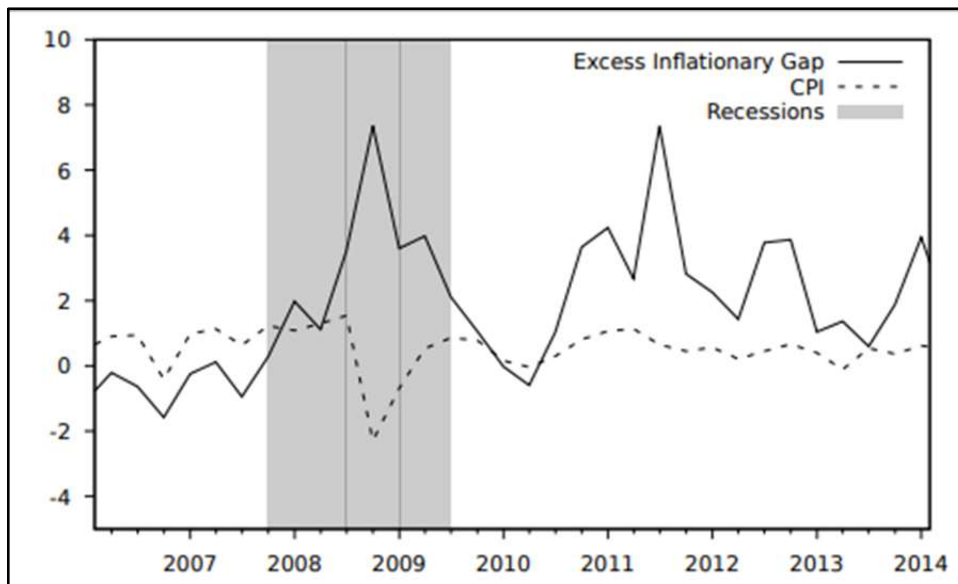

Figure 6 shows the excess inflationary gap relative to changes in the Consumer Price Index covering the period during which Ben Bernanke was chair of the Federal Reserve, February 1, 2006 through January 31, 2014. This figure should demonstrate periods of stagflation (periods where the excess inflationary gap exceeds the rate of inflation) versus periods of true inflation (periods where the rate of inflation exceeds the excess inflationary gap). Periods in which the US economy was in recession as defined by the NBER Business Cycle Dating Committee are shaded grey.

Janet L. Yellen (2014 – 2018)

Janet L. Yellen served as Chair of the Board of Governors of the Federal Reserve System from February 3, 2014, to February 3, 2018. Prior to that, she served as a member of the Board from 1994 – 1997 and served as Vice Chair from 2010 – February 3, 2014.

Yellen was confirmed by the Senate by a 56-26 vote (18 members did not vote or voted "present"), representing the narrowest margin in history for the confirmation of the position. During her confirmation hearings, she defended the more than $3 trillion in stimulus that the Fed had injected into the economy and stated that the Fed would revert to a more traditional monetary policy once the economy was back to normal. Under her leadership, the Fed increased the federal funds rate by 25 basis points on December 16, 2015, the first increase since 2006. She went on to increase the rate again in 2016 and three additional times in 2017.

Following the election of President Donald Trump, Yellen was a staunch defender of the Dodd-Frank Act that Trump had called a "disaster" and had repeatedly vowed to roll back.

Yellen received generally high marks from both supporters and critics. In December 2017, the Washington Post noted:

> By most measures, Janet L. Yellen's leadership of the Federal Reserve has been a great success. Unemployment is far lower now than it was when she took the helm of the central bank in February 2014; the stock market has hit record highs; and inflation is low, but not anemically so. A clear majority of economists surveyed by the Wall Street Journal give her an "A" grade, a very high mark for any leader in Washington. (Long, 2017)

Jerome Powell (2018 – Present)

Jerome H. Powell began his term as Chair of the Board of Governors of the Federal Reserve System on February 5, 2018. Prior to that, he was a member of the Board, starting on May 25, 2012.

Powell was confirmed by the Senate by a vote of 84-13, following a 22-1 vote in favor of his nomination by the Senate Banking Committee. Senator Elizabeth Warren cast the sole dissenting vote in the Committee. His predecessor, Janet Yellen, was the first Fed chair not reappointed after serving a first full term. Trump considered her and four other candidates for the job. In the end, Trump chose Fed governor Powell, the candidate who was widely viewed as the most like Yellen (with some on Wall Street dubbing him "Janet-lite") (Long, 2017).

Trump has subsequently complained frequently about the activities of the Fed in general, and about Powell in particular, during speeches, interviews, and on Twitter. Trump's complaints revolve around the Fed's interest rate policies and lack of quantitative easing. For example, on June 26, 2019, Trump said of Powell in an interview on the Fox Business Network:

> "He's decided to prove how tough he is, because he's not going to get pushed around? Here's a guy, nobody ever heard of him before. And now, I made him, and he wants to show how tough he is. OK. Let him show how tough he is." … "He's not doing a good job."
>
> Trump added that the Fed's policy of raising interest rates and cutting back on its bond-buying quantitative easing had gone too far and was "insane". (Jolly, 2019)

On August 19, 2019, Trump tweeted:

> Our Economy is very strong, despite the horrendous lack of vision by Jay Powell and the Fed, but the Democrats are trying to "will" the Economy to be bad for purposes of the 2020 Election. Very Selfish! Our dollar is so strong that it is sadly hurting other parts of the world… …The Fed Rate, over a fairly short period of time, should be reduced by at least 100 basis points, with perhaps some quantitative easing as well. If that happened, our Economy would be even better, and the World Economy would be greatly and quickly enhanced-good for everyone!

Four days later, on August 23, 2019, he tweeted:

> As usual, the Fed did NOTHING! It is incredible that they can "speak" without knowing or asking what I am doing, which will be announced shortly. We have a very strong dollar and a very weak Fed. I will work "brilliantly" with both, and the U.S. will do great… …My only question is, who is our bigger enemy, Jay Powell or Chairman Xi?

During the House Financial Services Committee semi-annual hearing on monetary policy on July 10, 2019, Powell strongly reasserted the Fed's independence and said that he would refuse to step down if Trump attempted to fire him (Torres & Litvan, 2019).

Despite this strong statement of independence by the Chair, Bianchi, Kind, & Kung (2020) found that Trump's Twitter attacks on the Fed influence expectations about monetary policy. The average effect on

the expected fed funds rate is negative and statistically significant, with an average cumulative effect of around -10 bps and a peak of -18.5 bps at the longest horizon. The authors noted, "Our results suggest that markets do not perceive the Federal Reserve Bank as a fully independent institution immune from political pressure," and, "We provide evidence that market participants believe that the Fed will succumb to the political pressure from the President, which poses a significant threat to central bank independence."

CONCLUSIONS

Overall, it has been shown that the central banks and the Fed have been shrouded in politics and economics, as well as part of the legal system beginning with the founding of the United States. The initial partisan policies and attacks on central bank initiatives, which were started in the era of the Federalist and Democratic-Republican parties, were later observed with the Whig and Democratic parties, and continue on to this very day with the Republican and Democratic parties. The language used by presidents Jefferson and Jackson is perhaps no less inflammatory than that used more recently by Truman and Johnson, as well as the incumbent president, Trump, although the last has access to social media. In examining the effect of the political process on the central banking system and monetary policy outright orders have been given and, in many cases, ignored. Elections have had many of these issues in political platforms over more than two centuries. Fights between presidents and Congress have taken place. Bills have been vetoed. It is also interesting to note that the first time that articles of impeachment were introduced into the House of Representatives was after President Tyler vetoed a bill to establish another Bank of the United States. While Tyler was expelled from the Whig Party, the articles for impeachment were defeated in the House. The answer to the question of whether the ongoing political pressure on central banks and monetary policy that began with the founding of the United States will be continued in the future is a definite yes. The central idea for this paper has been shown to be prevalent at all stages through the history of the United States and has been especially noted through an examination of the chairs of the Fed since 1960 to the present. In conclusion return to Alan Greenspan's response to the follow-up question in the October 18, 2018 Squawk Box interview cited in the introduction to the paper:

> Interviewer: But did you ever get direct either letters or conversations with the occupant of the Oval Office directly on that issue?
>
> Alan Greenspan: **All the time**.

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