

2012

A BRIEF REVIEW OF THE MONETARY POLICIES IN THE UNITED STATES: 1970-2010

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A BRIEF REVIEW OF THE MONETARY POLICIES IN THE UNITED STATES:
1970-2010

by

Markum Reed

B.S., Southern Illinois University, 2009

A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
Masters

Department of Economics
Southern Illinois University Carbondale
January 2012

RESEARCH PAPER APPROVAL

A BRIEF REVIEW OF THE MONETARY POLICIES IN THE UNITED STATES:
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Markum Reed

A Research Paper Submitted in Partial

Fulfillment of the Requirements

for the Degree of

Masters of Science

in the field of Economics

Approved by:

Dr. Subhash C. Sharma, Chair

Graduate School

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January 24, 2011

AN ABSTRACT OF THE RESEARCH PAPER OF

Markum Reed, for the Masters of Arts degree in Economics, presented on *December 2011, at Southern Illinois University Carbondale. (Do not use abbreviations.)

TITLE: A BRIEF REVIEW OF THE MONETARY POLICIES IN THE UNITED STATES:
1970-2010

MAJOR PROFESSOR: Dr. Subhash C. Sharma

The essence of monetary policy consists of the introduction of innovative techniques into the system via economic debate. There is a period of incorporation or absorption of ideas, as well as, a period of readjustment. This paper reviews the key economic models that govern modern monetary policy; these constitute the decision making criteria for the Federal Reserve System. This paper reviews the creation of the Federal Reserve System as well as its operating procedures and how it implements monetary policy. We gain factual knowledge of monetary economic models such as the new Keynesian model and we discuss the importance of the Taylor rule. Furthermore, the paper reviewed how the United States economy was affected by variations in monetary policy and how the Federal Reserve adapted to the fluctuation in the economy.

TABLE OF CONTENTS

<u>CHAPTER</u>	<u>PAGE</u>
ABSTRACT	i
CHAPTERS	
CHAPTER 1 – Introduction.....	1
CHAPTER 2 – Monetary Models	8
CHAPTER 3 – The United States Economy and Monetary Policy.....	15
CHAPTER 4 – Conclusion.....	28
REFERENCES.....	30
APPENDICIES	
Appendix A – Figures	33
VITA	37

CHAPTER 1

INTRODUCTION

Few institutions come under as much inspection as the Federal Reserve Systems, more commonly known as 'the Fed'. Economists formulate theories embedded in studies of American economic policy. The Fed's response to crises throughout history has been made a target for critics.

Before the creation of the Federal Reserve, Central Banking Theory was developed under the gold standard. The Bank of England held the most prominent role in the world's banking affairs. The designers of the Fed system accepted the theories of central banking based on the framework and policies available at the time; these policies and operations were derived from the European Central Banks, primarily the Bank of England.

The Federal Reserve System was created in 1913 under the purview of the Federal Reserve Act. The development of a Central Bank in the US was primarily due to a series of financial panics earlier in the new century. Since its creation the Fed's policies have evolved and adapted as further crises have arisen. The Federal Reserve Board (FRB) was created in December 1913. It consists of seven board members, called the Board of Governors, and divides the U.S. into twelve districts with a Reserve Bank for each District. The Fed is charged with maintaining employment, stable prices, low interest rates, and regulating monetary policy. The FRB oversees banks; provide financial services, collects data on the U.S. economy, as well as, foreign economies that have an impact on the U.S. economy.

In monetary economics there have been several schools of thought that have been tested in order to formulate U.S. monetary policy. During the 1960s and early 1970s there were discussions held over the two schools of monetary economic thought Keynesianism and Monetarism. Monetarists claimed that a direct effect on wealth was related to changes in the money supply. The effect of money on aggregate demand operating through the interest rate was viewed as a Keynesian interpretation of the transmission mechanism, whereas most monetarists argued that changes in monetary policy lead to substitution effects over a broader range of assets than Keynesians normally considered. (Ireland, 2008)

By reviewing the expansions and contractions of an economy, economists are able to gauge how monetary policy ought to be changed. These economic contractions are called recessions. The general definition of recession refers to a period of contractionary economic activity. A more accurate definition refers to a situation when demand is sluggish and real output is not rising, and unemployment is increasing. A recession is usually identified when real gross domestic product (GDP) falls for two successive quarters. While not as severe as a depression a recession may have long lasting effects. The Federal Reserve has set forth objectives to help stave off recessions.

Federal Reserve Act Overview

The Federal Reserve Act States that,

The Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential to increase production, so as to

promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates. (Federal Government, 1977)

After several years of financial turmoil and panics, particularly the panic of 1907, the U.S. policymakers realized the need for banking and currency reform. The Federal Reserve Act was enacted on December 13, 1913. It was an act of congress that setup the Federal Reserve System. The Federal Reserve Act gave the Federal Reserve System legal authority to issue Federal Reserve Notes, also known as United States Dollars, and the Federal Reserve Bank notes as legal tender. The Act was signed into law by President Woodrow Wilson on December 23, 1913. (Anderson, Rasche, & Loesel, 2003; Freytag, 2005)

The original draft of the Federal Reserve Act called for the creation of a system that contained both private and public entities. Twelve private regional Federal Reserve banks were established each with its own branches, board of directors and distinct boundaries and the system was supposed to be overseen by a seven member board, the Federal Reserve Board, now known as the Board of Governors, made up of public officials appointed by the president and confirmed by the senate. The Federal Reserve Act also created the Federal Advisory Committee. It was decided in the Federal Reserve Act that all nationally chartered banks are required to become members of the Federal Reserve System. In 1980 all depository institutions were required to set aside reserves with Federal Reserve and be entitled to certain Federal Reserve services. State chartered banks were given the option of becoming members of the Federal Reserve System, which meant Federal Reserve oversight. Member banks are entitled to access to discounted loans at the discount window in their respective Federal

regional bank, to a 6 percent annual dividend in their Federal Reserve stock. (Federal Government, 1977)

In the 1930s the Federal Reserve act was amended to create the Federal Open Market Committee (FOMC), consisting of the seven members of the Board of Governors and five representatives from the Federal Reserve Banks. The FOMC meets at minimum four times a year and has the power to direct all open market operations of the Federal Reserve banks.

During the 1970s, the Federal Reserve Act was amended to require the board and FOMC to promote the goals of maximum employment, stable prices and moderate long-term interest rates.

Federal Reserve Operations and Overview

When economists think of monetary policy implementation they primarily focus on instruments, operating targets, intermediate targets, and policy goals. Instruments are the variables directly controlled by the central bank (Flandreau, 2007). These contain, an interest rate charged on reserves borrowed from the central bank, the reserve requirement ratios that govern the level of reserves banks must hold against their deposit liabilities, and the composition of the central bank's own balance sheet. The instruments of policy are employed to accomplish a pre-specified value of an operating target, typically a particular measure of bank reserves, i.e., total reserves, borrowed reserves, or non-borrowed reserves, or a short-term rate of interest, usually an overnight interbank rate such as the federal funds rate.

The federal funds rate is an important benchmark in financial markets. The Federal Funds Rate or FFR is the interest rate at which depository institutions trade

balances held by the Federal Reserve. Institutions with surplus balances in their accounts lend to institutions that need larger balances. The interest rate that the borrowing bank pays to the lending bank to borrow funds is negotiated between the two banks, and the weighted average of this rate across all transactions is the effective federal funds rate. (System)

Objectives such as inflation or deviations of the natural rate of unemployment are the key variables of interest to policymakers; instruments are the actual variables under their direct control. Intermediate target variables fall between operating targets and goals in the system of links that run from policy instruments to real economic activity and inflation. Because observations on some or all of the goal variables are usually obtained less frequently than are data on interest rates, exchange rates, or monetary aggregates, the behavior of these latter variables can often provide the Federal Reserve with information about economic developments that will affect the goal variables.

Instruments, operating targets, intermediate targets, and goals have been described in a structure that begins with instruments directly controlled by the Federal Reserve and end at goals, the ultimate objectives of policy. Policy design operates in the reverse order: from the goals of policy, to the intermediate targets consistent with these goals, to the operating targets needed to achieve the intermediate targets, and finally to the instrument settings that produce the desired operating targets (Flandreau, 2007; Walsh, 2010).

The structure of the Federal Reserve System: The Board of Governors is appointed by the President, The Federal Reserve Open Market Committee (FOMC), and the twelve Federal Reserve Regional Banks, located in major cities across the US.

The FOMC is responsible for setting monetary policy and consists of nineteen members. All seven Board of Governors' members and all twelve Federal Reserve Bank Presidents: However, only five bank presidents are allowed to vote. Therefore, there are only twelve voting members at a given time. The Fed is composed of both private and public components. It was designed to service the interests of the general public as well as private banks. Because of this unorthodox structure, the Federal Reserve System is unique compared to other central banks. It is also unusual that an entity outside of the Central Bank creates the currency being used, i.e., the US Department of Treasury (Meltzer, 2009).

Operating Procedures

Operating procedures vary according to the actual instrument the Federal Reserve uses in its daily implementation of policy. Control over the operating target is attained via short-term interest rate versus a reserve aggregate. The information about policy and the types of announcements the Fed might make, its choice of variables for which it establishes targets such as money supply growth or the inflation rate, and whether these targets are formal or informal determine how they operate (Flandreau, 2007; Walsh, 2010).

The objective in examining monetary policy operating procedures is to understand what instruments are actually under the control of the Federal Reserve, the factors that determine the optimal instrument choice, and how the choice of instrument affects the manner in which short-term interest rates, reserve aggregates, or the money stock might reflect policy actions and non-policy disturbances. After discussing the role of instruments and goals, we will need to discuss the factors that determine the optimal

choice of an operating procedure and the relationship between the choice of operating procedure and the response of the market for bank reserves to various economic disturbances.

The recession has renewed interest in Keynesian economic ideas on how to combat recessionary conditions. Fiscal and monetary policies have been significantly eased to stem the recession and financial risks. Economists have advised that the stimulus should be withdrawn as soon as the economy recovers.

CHAPTER 2

MONETARY MODELS

Since the 1970s, several industrialized countries, Australia, Brazil, Canada, Chile, Columbia, Hungary, Iceland, Israel, South Korea, Mexico, New Zealand, Norway, Peru, Philippines, Poland, South Africa, Sweden, Switzerland, Thailand, United Kingdom and the United States have pursued a strategy of money supply and inflation targeting as the key concentration of monetary policy. Such strategies have involved setting policy instruments to attain a transitional target, the rate of growth of one or more of the monetary aggregates, with the final aim of influencing the rate of growth of nominal income, particularly inflation, and perhaps affecting real economic variables (Friedman, 1968).

In the post-Keynesian monetary policy the Federal Reserve has been based on interest rate stabilization objectives, which allow the money supply to be determined by demand. The demand for money has shown considerable instability around the world, even in the United States. The evolution of financial innovation, together with changes in the demand for funds has added to this instability. Monetary targeting procedures have become the subject of considerable debate. Although the underlying foundations of a targeting strategy are slightly less secure, the advantages of such strategy are still seen to be strong.

The major reasons behind the switch to monetary targeting are well-known. These included; the acceleration of inflation in the early 1970s (see Figure 1) and the difficulty of interest rate targeting in these circumstances. The expectation, with the introduction of floating exchange rates, those small, open economies would be able to

conduct an independent monetary policy.

The monetary transmission mechanism defines how policy induced changes in the nominal money stock or the short run nominal interest rate effect on real variables such as aggregate output and employment. Specific channels of monetary transmission operate through the effects the monetary policy has on interest rates, exchange rates as well as bank lending. Recent research on the transmission mechanism seeks to understand how these channels work in the context of dynamic, stochastic, general equilibrium model (DSGE). (Berentsen & Monnet, 2008; Black, 1997) DSGE is a branch of applied general equilibrium theory that is used in both monetary and macroeconomics. The DSGE methodology tries to explain aggregate economic occurrences, i.e., economic growth, business cycles and the effects of monetary and fiscal policy, on micro-based macroeconomic models. Monetary DSGE models are widely used because they fit the data well and they can be used to address important monetary policy questions.

Robert Lucas' paper, "Expectations of Money Neutrality", provided theoretical foundations for models of economic fluctuations in which money was the fundamental driving factor behind movements in real output. (Lucas, 1972) The rise of real business cycle models during the 1980s and early 1990s, build around the foundation constructed by (Kydland and Prescott 1977, 1982) and focusing explicitly on nonmonetary factors as the driving forces behind business cycles. These arguments eventually created a division between monetary and macroeconomics. As of late, the real business cycle approach to aggregate modeling has been used to incorporate monetary factors into dynamic general equilibrium models. Today, macroeconomics and

monetary economics share the common tools associated with dynamic stochastic approaches to modeling the aggregate economy.

Keynesianism is an economic theory based on the ideas of John Maynard Keynes, developed in the 1930s. Keynes proposed that the states as well as the private sector played an important role in the development of an economy. Basic components of his theory are the failure of prices and wages, to adjust to clear markets; and the effect of changes in aggregate demand on real output and employment. Keynesian economics emphasizes the importance of aggregate demand on real output and employment and to drive the economy forward. Specifically, during periods of recession the government can spur economic activity by increasing its spending, thereby inducing private sector consumption and investment. Post Keynesian economics, was widely used during the 1960s and 1970s, emphasized the role of uncertainty and path dependence. From the early 1990s Keynesianism had further evolved into New Keynesian economics which derives Keynes' theories via microeconomic foundations. In particular, new Keynesian economics assumes rational expectations for the economic agents.

The new Keynesian model consists of households and firms. Households supply labor, purchase goods for consumption, and hold money and bonds, while firms hire labor and produce and sell differentiable products in monopolistically competitive markets. The basic model of monopolistic competition is from Dixit and Stiglitz (1977). The model of price stickiness is taken from Calvo (1983). Each firm sets the price of its good, but not all firms are able to change their price in each period. We assume that households and firms behave optimally. Households maximize the expected present

value of utility, and firms maximize profits. The central bank controls the nominal rate of interest. The central bank is not assumed to behave optimally. New Keynesian theories rely on the stickiness of prices and wages to explain why involuntary unemployment exists and why monetary policy has such a strong influence on economic activity.

The central aspect of the new Keynesian model is that there are nominal rigidities, or sticky prices and wages. That is, prices are resistant to change, despite changes in the economy that would suggest that the optimal price is different. This means that prices for a certain product are reluctant to change despite changes in input cost or demand for that product. Since prices are sticky in the new Keynesian model, an increase in the money supply or a decrease in the interest rate will increase output and lower unemployment in the short-run. Besides nominal rigidities, the new Keynesian model assumes imperfect competition, more specifically, monopolistic competition. Without some monopoly power it would not make sense to assume price stickiness, since it would be under perfect competition. Therefore, the new Keynesian model assumes that firms use their monopolistic market share to keep prices above the marginal cost, so that if they are unsuccessful to set their prices optimally they will still gain a profit. New Keynesian economics suggests that recessions are departures from the normal efficient functions of a market. Recessions are caused by an economy-wide market failure. Thus, new Keynesian economics provides a rationale for government intervention in the economy. Other versions of the new Keynesian model suggest that recessions result from a coordination failure. Coordination problems can arise in the setting of wages and prices because those who set them must anticipate the actions of other wage and price setters. New Keynesian models do not support expansive

monetary policy in order to win short-run improvements in output and employment, as it would raise inflationary expectations and thus pass on the problems to future generations. Instead, they support using monetary policy to stabilize the economy. Optimal monetary policy in the new Keynesian DSGE models have focused on interest rate rules, such as the Taylor rules, (Taylor 1993) specifically how the central bank should adjust the nominal interest rate in response to changes in inflation and output.

The end result of the new Keynesian model is the new Keynesian Phillips curve (Walsh 2010).

$$\pi_t = E_t \pi_{t+1} + \beta(y_t - \bar{y}) \quad (1)$$

Where \bar{y} the natural rate of output is, $y_t - \bar{y}$ is the output gap, and π_t is inflation. In this equation there are forward looking expectations of inflation, $E_t \pi_{t+1}$ is next period's expected inflation rate. One way to interpret this equation is that inflation depends positively on the real marginal cost, $y_t - \bar{y}$. Since we are considering a Calvo model, if the ratio of marginal cost to price is getting high then this will spark inflationary pressures because those firms that are re-setting prices will be raising them. Under rational expectations, π_t does not need to equal, $E_t \pi_{t+1}$, therefore, y_t need not equal \bar{y} . Hence, we can see a role for monetary policy.

Monetarism is a tendency in economic thought that emphasizes the role of the government's control of the money supply. Deviations in the money supply have impacts on national output in the short-run and the price level over the long-run and that objective of monetary policy are met by targeting the money supply growth rate. Monetarism is an economic theory which focuses on the macroeconomic effects of the money supply and central banking. Outlined by Milton Friedman (1963), it claims that

excessive expansion of the money supply is naturally inflationary, and that monetary authorities should focus solely on maintaining price stability. Friedman and Schwartz wrote, *A Monetary History of the United States, 1867-1960*, and argued that inflation is always a monetary phenomenon. Friedman backed a central bank policy intended to maintain the supply and demand for money at equilibrium, as measured by growth in productivity and demand. The former head of the United States Federal Reserve, Alan Greenspan, is generally regarded as a monetarist.

New Monetarism was coined by Williamson and Wright (2006); the key concern of New Monetarism is based on the need for strong microeconomic foundations for institutions that enable exchange, i.e., money and central banks. It is clear that new monetarism has not become a widely accepted field of economic thought given the fact that there are many models that are used for monetary policy analysis that either have no money nor banks. When they do, they usually assume a cash-in-advance constraint or by inserting money into the utility function. New monetarists find much that is engaging in 'Old' monetarism although it differs in several aspects. New monetary models have little in common with Keynesian models, new or old.

New Monetarism incorporates research on monetary theory and policy, banking and financial intermediation. The new Monetarism model can be described as a monetary search theory model that uses methods from equilibrium search theory. In sticky price models, such as the new Keynesian model, money usually plays a detrimental role when it is assumed agents must use money and cannot exchange it easily. Money is an intrinsically worthless object that has positive value. It is valued as a medium of exchange and for its liquidity. Monetary equilibria have good welfare

properties relative to a barter economy (Sargent & Wallace, 1999; Williamson & Wright, 2010; Wright, 2005).

CHAPTER 3

THE UNITED STATES ECONOMY AND MONETARY POLICY

The Pre-Volcker Era (1970-1979)

The post-World War II era ended with a number of events: The collapse of the Bretton Woods system in 1971, the 1973 oil crisis, the stock market crash of 1973-1974 and another oil crisis in 1979. These events define the pre-Volcker era and set the tone for the subsequent eras.

The Bretton Woods system of monetary management established rules for commercial and financial relationships between the worlds' leading industrial states. This system setup rules, institutions, and procedures to regulate the international monetary system. It helped establish the International Monetary Fund and the International Bank for Reconstruction and Development, which is now the World Bank Group. On August 15, 1971, the United States ceased convertibility of the dollar to gold. As a result, the Bretton Woods system officially ended and the dollar became a free floating, fiat currency. (NBER)

The 1970s was an unusual period by historical standards. The term stagflation appeared in the 1970s. Stagflation is a period of low or negative output growth, and inflation that is high by historical standards. It is usually caused by an adverse shift in the aggregate supply that lowers output and raises prices. We see that the exogenous oil supply shocks in 1973-1974 and 1978-1979 are primarily responsible for the stagflation of the 1970s and early 1980s.

The recession began as the Federal Reserve raised interest rates dramatically to

fight the inflation of the 1970s. The Iranian Revolution increased the price of oil around the world in 1979, causing the 1979 energy crisis (Hamilton, 2011). The regime change in Iran, led to unreliable oil exports, forcing prices to go up. Strict monetary policy was used to help combat inflation which led to the start of another recession. The changes were made because of inflation carried over from the previous decade thus; stagflation began to affect the U.S. economy.

Unemployment had risen from 5.1% in January 1974 to a high of 9.0% in May 1975. Although it had gradually declined to 5.6% by May 1979, unemployment began rising again thereafter.

The Volcker Era (1979-1987)

Paul Volcker was appointed Chairman of the Federal Reserve in August 1979 by President Jimmy Carter and reappointed in 1983 by President Ronald Reagan. Volcker's Fed has been credited with ending the United States' stagflation crisis of the 1970s. Volcker recognized that ending inflation required control of money and that it could be realized by targeting reserve growth or the interest rate. What mattered was how much the interest rate changed to achieve the desired amount of control. Volcker acknowledged that commitment to a policy rule allowed the Federal Reserve to develop understanding of the expectations of citizens.

If policymakers commit to a rule, the rule can be used to define rational expectations of future policy actions under the assumption that the Federal Reserve continues to behave according to that rule. One could derive an optimal policy rule by specifying an objective function for the Fed and then determining the values of the parameters in the policy rule that maximizes the expected value of the objective

function.

But what ensures that the Fed will find it necessary to follow such a rule? At times may be optimal to deviate from the rule once citizens have made up their minds based on the belief that the rule will be followed. Firms and workers may agree to set nominal wages or prices based on the expectation that monetary policy will be conducted in a particular manner, yet once these wage and price decisions have been made, the Fed may have reason to deviate from the rule. If deviations are possible, then agents will need to consider policymakers' incentives to deviate from the previously set rule. They can no longer base their expectations on the rule that policymakers agreed to follow.

In 1979, inflation extended to around 11% and in 1980 reached 13.5% (see Figure 1). A brief recession occurred in 1980. Inflation began to fall in 1981. A short recession occurred in 1980 followed by a short period of growth and then a deep recession. Unemployment increased to 6.9% in April 1980 and to 7.5% in May 1980. A minor recession from January to July 1980 kept unemployment high, but despite economic recovery unemployment remained at levels around 7.5% through the end of 1981 (see Figure 2). Inflation peaked at 13.5% in 1981 was lowered to 3.2% by 1983 (see Figure 1). At the start of 1981, the Federal Funds rate (FFR) peaked at around 20% (see Figure 3). The FFR dropped slightly but stayed around 15% through the second half of 1982, as inflation dropped from over 10% to about 5% (see Figure 3). And unemployment remained relatively high (see Figure 2). The Federal Funds rate fell to under 9% in late 1982.

In September 1982, the Federal Reserve Board declared that it would pay less attention to M1 and would instead focus on the broader monetary aggregates, i.e., M2 (see Figures 4 and 5). The reasons for this general change in monetary policy are numerous; Policy has usually been influenced by recessions and accompanied by high unemployment. The federal funds rate, which was approximately 11% in 1979, rose to 20% by June 1981. The prime interest rate eventually reached 21.5% in June 1982 (see Figure 3). By mid-1982, the number of bank failures was escalating. The bank failures reached a post-depression high of 42 as the recession and high interest rates took their toll. By the end of the year, the Federal Deposit Insurance Corporation (FDIC) had spent \$870 million to purchase bad loans in an effort to keep various banks afloat (FDIC, 1999).

In July 1982, Congress enacted the *Garn–St. Germain Depository Institutions Act of 1982*, which deregulated banks, savings and loans.(FDIC, 1999) The Garn–St. Germain act allowed banks to offer money market accounts. This was in order to increase deposit inflows. The Act also removed legal restrictions in real estate lending and relaxed borrower limits.

The height of the recession was in November and December 1982, when the nationwide unemployment rate was 10.8%, highest since The Great Depression (see Figure 2).

In the pursuit of moderate monetary growth in 1984, the Federal Open Market Committee (FOMC) established growth rate ranges for various monetary aggregates. From late 1983 until the end of 1984, M1's growth rate range was established between 4 to 8 percent, while the range for M2 was set between 6 to 9 percent. As the FOMC

implemented monetary policy in 1984, the Committee acted to tighten bank reserve positions. This tightening in the short-run was effected in response to greater than expected growth in the monetary aggregates, (see Figures 4 and 5). The FFR began to rise in mid-1983 and peaked around 11% in the late spring of 1984. By the end of 1983, the inflation rate had decreased to less than 5 percent per year and it declined even further during 1984 and 1985 to between 2.5 and 3 percent (see Figure 1).

The U.S. economy continued on an upward path in 1985; but slowed considerably in the first half of the year. Interest rates were lower in 1985 than previous years. After peaking in March, interest rates began to decline. Monetary policy in 1985 continued to be focused on providing sufficient growth in the monetary aggregates needed to promote sustainable economic growth in a noninflationary environment. From the first quarter to the fourth quarter of 1984 through November 1985, M2 rose at 8.6 percent, (see Figure 5)

In 1986, the task of monetary policy was to provide adequate growth in monetary aggregates to support balanced economic expansion and progress toward stable prices. This was achieved by establishing tentative growth rates for the monetary aggregates.

The Greenspan Era (1987-2006)

In June 1987, President Ronald Reagan nominated Alan Greenspan as a successor to Paul Volcker as chairman of the Board of Governors. The Senate confirmed him in August 1987, he was reappointed at successive four-year intervals until retiring on January 31, 2006.

The Federal Reserve acted to increase pressure on reserves on two occasions in the spring and in September 1987. On September 4, the Federal Reserve increased the discount rate from 5.5% to 6%.

On October 19, just two months into his tenure, Greenspan faced the 1987 stock market crash. The market crash of 1987 is a major event not just because of the speed and severity of the market decline, but also because it showed the flaws of the trading system. The Federal Reserve announced on October 20 that it was ready to serve as a source of liquidity to support the economic and financial systems. The Federal Reserve eased short-term credit conditions by conducting extensive open market operations, issuing public statements upholding its commitment to providing liquidity and temporarily loosening the restrictions governing the lending of Treasury securities from its portfolio. The liquidity support was important by itself, but the public nature of these actions helped bolster market confidence. The Federal Reserve also encouraged the commercial banking system to extend liquidity support to other financial market participants. (System)The Federal Reserve supported open market operations that pressed the federal funds rate down to around 7% (see Figure 3). This was done to help provide significant liquidity to relieve the instability and pressure in the wake of the financial market disruption.

By 1990, economic hardship had returned with the launch of the Gulf War and the resulting sharp increase in the price of oil, (see Figure 6), which increased inflation but not as much as the oil crisis of the previous decade. After the relatively mild recession ended in March 1991, the country hit a delayed unemployment rate peaked at 7.8% in mid-1992 (see Figure 2).

In 1993 Greenspan supported Clinton's deficit reduction program. Greenspan was essentially monetarist in orientation and had various views on the economy, and his monetary policy decision principally followed standard Taylor rule recommendations (Henderson, 2006).

The Taylor principle is an important policy lesson that emerged from the new Keynesian model. The Taylor rule is a monetary policy rule that specifies how much the central bank should change the nominal interest rate in response to changes in inflation and output. The rule requires that for each one-percent increase in inflation, the central bank should raise the nominal interest rate by more than one percentage point. This aspect is called the Taylor principle (Walsh, 2010). According to Taylor's rule, the nominal interest rate should respond to deviations from actual inflation rates from target inflation rates and of real GDP from potential GDP:

$$i_t = \pi_t + r_t^* + \delta_\pi(\pi_t - \pi_t^*) + \delta_x(x_t - \bar{x}_t) \quad (2)$$

In this equation, i_t is the target short-term nominal interest rate (the federal funds rate), π_t is the rate of inflation as measured by the GDP deflator, π_t^* is the desired rate of inflation, r_t^* is the assumed equilibrium real interest rate, x_t is the logarithm of real GDP, and \bar{x}_t is the logarithm of potential output, as determined by a linear trend. In this equation, both δ_π and δ_x should be positive. According to the above equation, instead of responding to only inflation, the central bank responds to both inflation and the output gap ($x_t - \bar{x}_t$). (Asso, Kahn, & Leeson, 2010; Walsh, 2010)

Determinacy depends on both the policy parameters δ_π and δ_x . An increase in x could produce a rise in the real interest rate that serves to contract spending if δ_x were large. Thus, a policy rule with $\delta_\pi < 1$ could still be consistent with a unique stationary

equilibrium. However, δ_x would need to be large enough to offset a value of δ_π that is below 1 (Taylor 1993).

This rule has given rise to a new way of thinking about monetary policy among policymakers at central banks. The Taylor rule is a monetary policy rule that stipulated how much central banks should change the nominal interest rate in response to changes in inflation, output, or economic indicators. The Taylor rule has been used as an instrument to input monetary policy deliberations and decision making at central banks. The Taylor rule has changed the way many policy makers at the central banks consider the implications of monetary policy. It outlines policy actions as responses to new information about economic conditions, as opposed to a period by period optimization problem. It has emphasized the importance of adjusting policy rates more than one for one in response to an increase in inflation. And, other versions of the Taylor rule have been incorporated into macroeconomic models that are used at central banks to understand and forecast the economy (Asso, et al., 2010).

From 1994 to 2000 real GDP increased, inflation was under control and unemployment dropped to below 5%, resulting in a rising stock market known as the Dot-com boom. The Fed raised interest rates six times between June 1999 and May 2000 in an effort to ease the economy's shock to the bubble's burst. The actual burst came in March 2000 when the NASDAQ crashed. Growth in gross domestic product slowed noticeably in the third quarter of 2000.

While Greenspan's role as Chairman of the Federal Reserve has been widely discussed there is also the argument that Greenspan's actions in the years 2002–2004

were actually motivated by the need to take the U.S. economy out of the early 2000s recession.

The National Bureau of Economic Research, or NBER, is a private, nonprofit, nonpartisan organization charged with determining economic recessions. The NBER determined that a peak in business activity occurred in the U.S. economy in March 2001. A peak marks the end of an expansion and the beginning of a recession. Thus determination of a trough date in March 1991 marks the beginning of an expansion and it ended in March 2001 giving rise to the recession. (NBER)The U.S. economy was in recession from March 2001 to November 2001, a period of eight months at the beginning of President George W. Bush's term of office. During this period economic conditions did not satisfy the common definition of recession, which is a fall of a country's real gross domestic product for two or more consecutive quarters. This has led to some confusion about the procedure for determining the starting and ending dates of the recession. The NBER's Business Cycle Dating Committee, or BCDC, uses monthly, rather than quarterly, indicators to determine peaks and troughs in business activity, as can be seen by noting that starting and ending dates are given by month and year, not quarters.

From 2000 to 2001, the Federal Reserve made consecutive interest rate increases. Using the stock market as an unofficial benchmark, a recession would have begun in March 2000 when the NASDAQ crashed following the collapse of the Dot-com bubble. Other markets were relatively unaffected until the September 11, 2001 attacks, after which the DJIA was hit with one of the largest point losses in history. The market rebounded, only to crash again in the final two quarters of 2002. In the final three

quarters of 2003, the market finally rebounded permanently, supported by the unemployment statistics during this time period (see Figure 2).

Through 2001 to 2007, the housing market across the United States fueled a false sense of security regarding the strength of the U.S. economy. Housing prices peaked in early 2006, started to decline in 2006 and 2007.

The Bernanke Era (2006-2010)

On February 1, 2006 President Bush appointed Ben Bernanke as Chairman of the Fed. Bernanke is an advocate of a transparent Federal Reserve System. Bernanke was nominated for a second term by President Barack Obama on August 25, 2009. His first months as chairman of the Federal Reserve System were marked by difficulties communicating with the media. An advocate of more transparent Fed policy and clearer statements than Greenspan had made, he had to back away from his initial idea of stating clearer inflation goals as such statements tended to affect the stock market.

According to the NBER the 'Great Recession' began in December 2007. The financial crisis is connected to irresponsible lending practices by financial institutions and the growing trend of securitization of real estate mortgages in the United States. The US mortgage-backed securities, which had risks that were hard to assess, were marketed around the world. A more broad based credit boom fed a global speculative bubble in real estate and equities, which served to reinforce the risky lending practices. The fragile financial situation was made more difficult by a spike in oil prices during 2007 and 2008 (see Figure 6). The emergence of Sub-prime loan losses in 2007 began the crisis and exposed other risky loans and over-inflated asset prices. With loan losses mounting and the fall of Lehman Brothers on September 2008, a major panic broke out

on the inter-bank loan market. As share and housing prices declined, many large and well established investment and commercial banks in the United States suffered losses, resulting in massive public financial assistance. Real GDP started to contract in the third quarter of 2008 and continued to fall until mid-2009.

The subprime mortgage crisis led to the collapse of the United States housing bubble. Falling housing-related assets contributed to a global financial crisis. The crisis led to the failure of many of the United States' largest financial institutions: Bear Stearns, Fannie Mae, Freddie Mac, Lehman Brothers and AIG. The government responded with a 700 billion dollar bank bailout and a 787 billion dollar fiscal stimulus package. The late-2000s recession was part of an ongoing global economic problem that began in December 2007 and took a sharp downward turn in September 2008.

Monetary and Fiscal Policy respond to one another, which can produce policy conflicts. Fiscal Policy is important in understanding the workings of monetary policy. Budget deficits can force monetary policy to monetize debt. Policy conflict over different objectives can produce sub-optimal outcomes. Coordination between Fiscal and Monetary policy instruments made more difficult by independence of Central Banks. In times of crisis coordination is more important. The financial crisis led to emergency interventions in many national financial systems. As the crisis developed into a genuine recession, economic stimulus became the most common policy tool. After implementing stimulus packages for the banking system, the U.S. announced its plan to relieve the economy.

The stimulus packages were brought about by the Emergency Economic Stabilization Act and Troubled Asset Relief Program or TARP. The Emergency

Economic Stabilization Act of 2008 was enacted in response to the subprime mortgage crisis authorizing the United States Treasury to spend up to 700 billion to purchase distressed assets and make capital injections into banks. After congressional enactment, President George W. Bush signed the bill into law creating the Troubled Asset Relief Program (TARP) to purchase the failing bank assets (Ferguson & Johnson, 2009; Shachmurove, 2011).

The government took significant amounts of portfolio risk in large financial institutions. The Treasury supported the government-sponsored enterprise and the deposits of money market mutual funds. The FDIC has guaranteed the debt of large commercial banks and small industrial banks and has extended the coverage of insured deposits. TARP money added capital to the banking system. The scale of the intervention in credit markets was monumental.

The Federal Reserve, Treasury, and Securities and Exchange Commission took several steps in September 2008 to intervene in the crisis. To stop the potential run on money market mutual funds, the Treasury announced a 50 billion dollar program, on September 19, 2008, to insure investments, similar to the Federal Deposit Insurance Corporation (FDIC) program. Part of the announcements included temporary exceptions that allow financial groups to more easily share funds within their group. In an effort to increase available funds for commercial banks and lower the fed funds rate, in September 2008 the Federal Reserve announced plans to double its Term Auction Facility to 300 billion dollars.

As of December 2008, the Federal Reserve had spent 1.2 trillion on purchasing numerous financial assets and making emergency loans in an attempt to stabilize the

financial crisis, beyond the 700 billion authorized by Congress from the federal budget. This includes emergency loans to banks, credit card companies, and general businesses, temporary swaps of treasury bills for mortgage-backed securities, the sale of Bear Stearns, and the bailouts of American International Group (AIG), Fannie Mae and Freddie Mac, and Citigroup (System). The NBER announced in September 2010 that the 2008-2009 recession had ended in June of 2009, making it the longest recession since World War II (NBER).

CHAPTER 4

CONCLUSION

The Federal Reserve Act gave birth to the Federal Reserve System in 1913. The purpose of its construction was to maximize employment, stabilize prices and moderate the interest rate. The Federal Reserve implements monetary policy by focusing on instruments, operating targets, intermediate targets, and policy goals. How the Fed uses these tools and strategies depends on the theory being put into practice. Given that no monetary policy is being followed consistently; nonetheless, economist can see a tendency prefer one theory over another.

The introduction of Keynesian economics placed importance on aggregate demand and employment. It was thought that these two factors were the driving force in the economy. With all economic models there is a need for improvement; Keynes' model is no different. Post and new Keynesian economics emphasized uncertainty and rational expectations of economic agents. The new Keynesian model is a more complete depiction of the economy. This model leads to the new Keynesian Phillips curve which is a linear representation in terms of an inflation adjustment equation.

Monetarism, unlike Keynesianism, places importance in the government's control of the money supply. By varying the money supply the Fed is able to affect output and the price level.

The lead up to the Volcker era was plagued by stagflation. By implementing a mixture of Keynesian ideals with monetarist theory the 'Great Stagflation' came to an end in 1983. This began to shift the Fed's focus to Monetarist theory.

By the Greenspan era, Monetarism had become the prominent theory being used. However, after the start of the housing crisis and the 'Great Recession', there has been renewed interest in the New Keynesian model and its application.

The foundation of monetary policy in the United States has changed due to the innovative techniques brought about by scholarly debate and reaction to economic turmoil. There is a period in which new theories are incorporated into monetary policy. As with all change there is a period of adjustment. This paper studied the basic economic models that direct monetary policy in the United States.

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APPENDICES

APPENDIX A

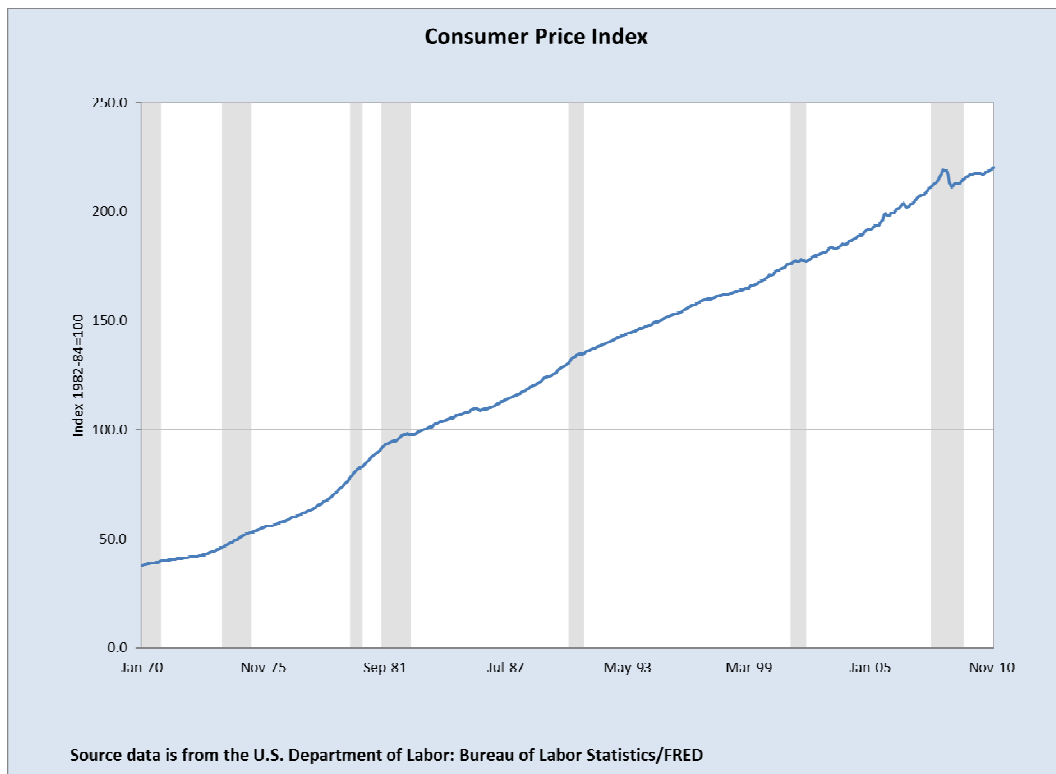


Figure 1



Figure 2

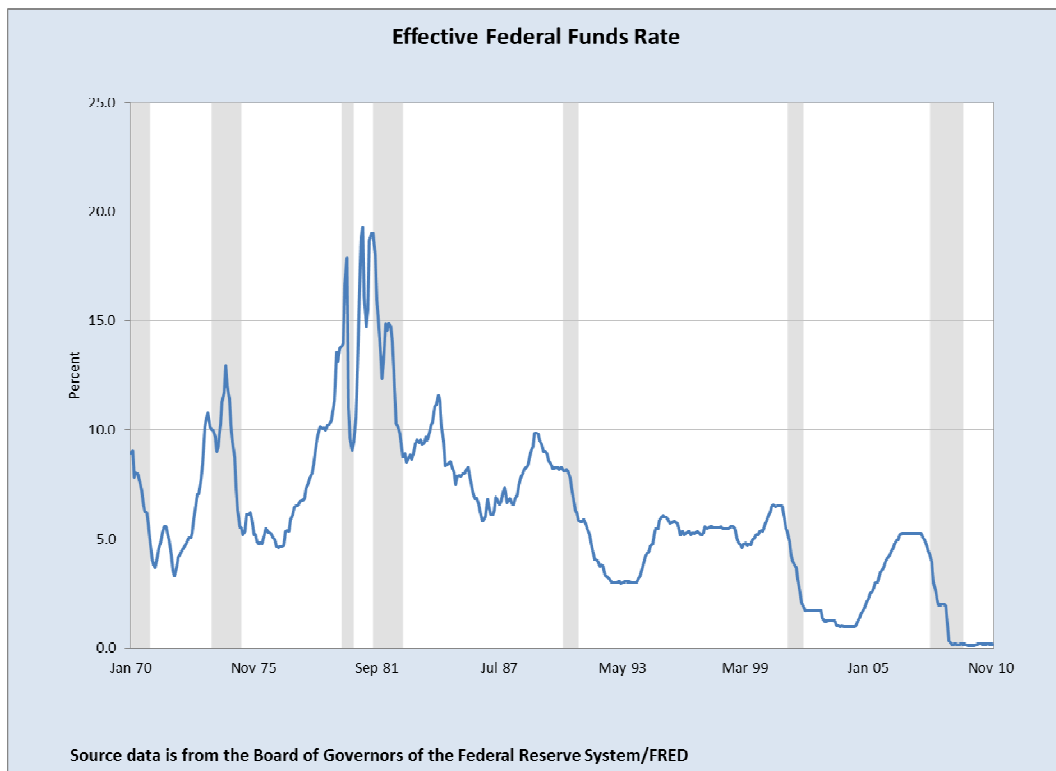


Figure 3

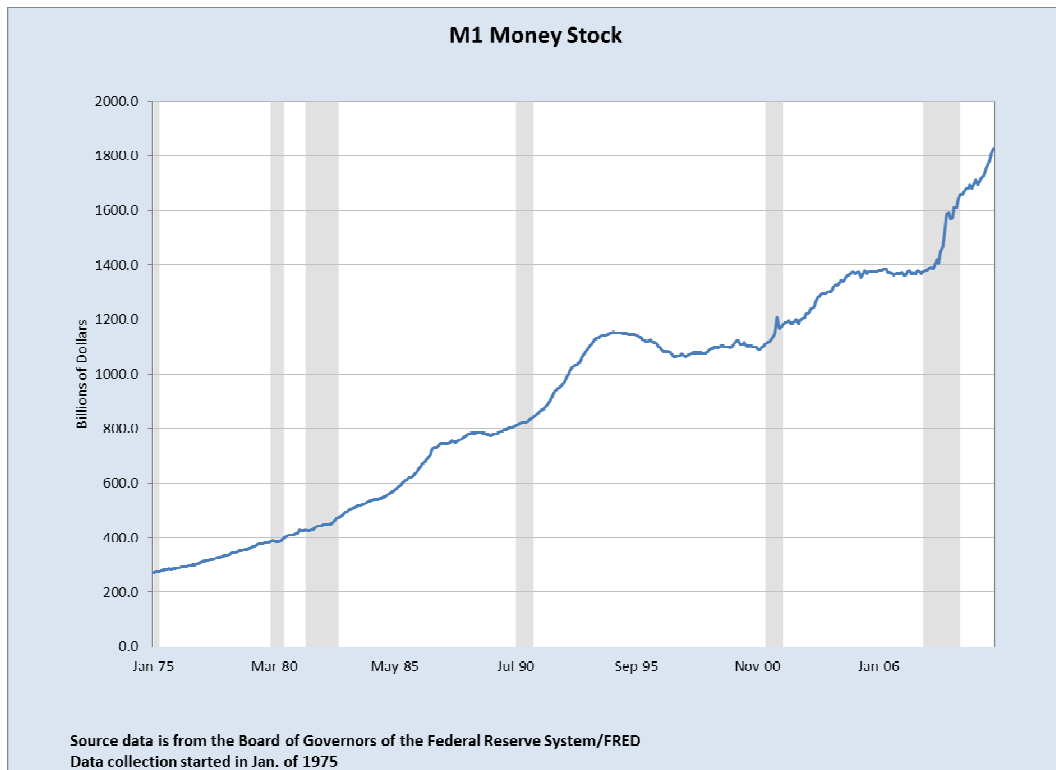


Figure 4

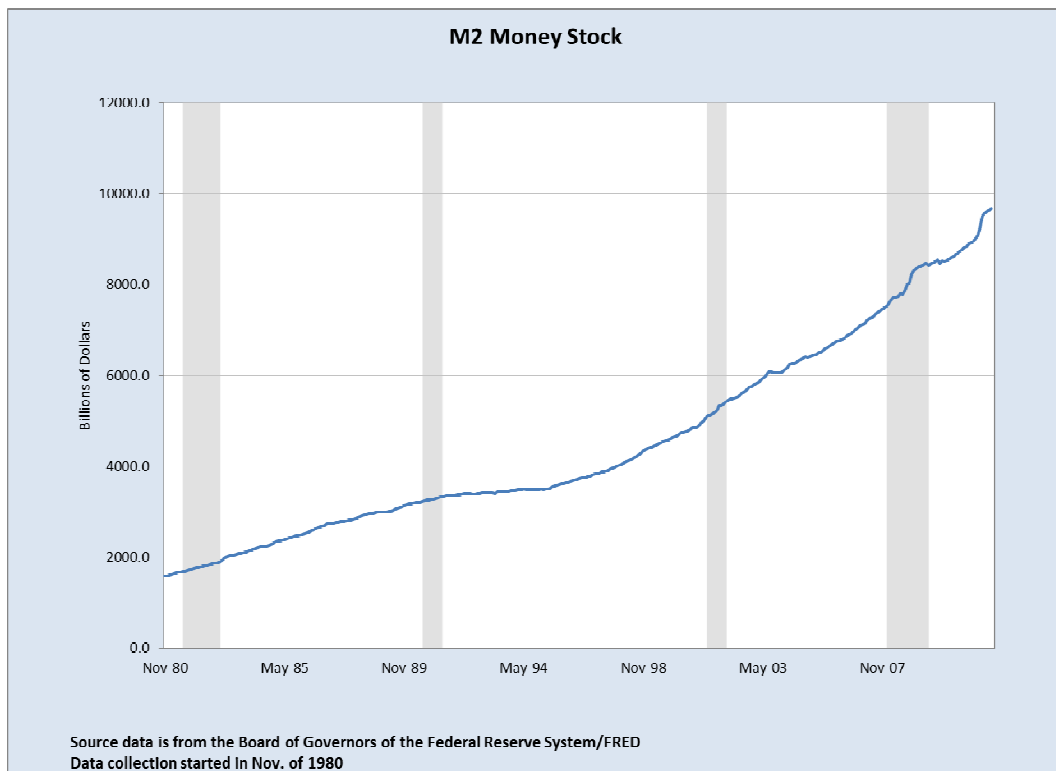


Figure 5

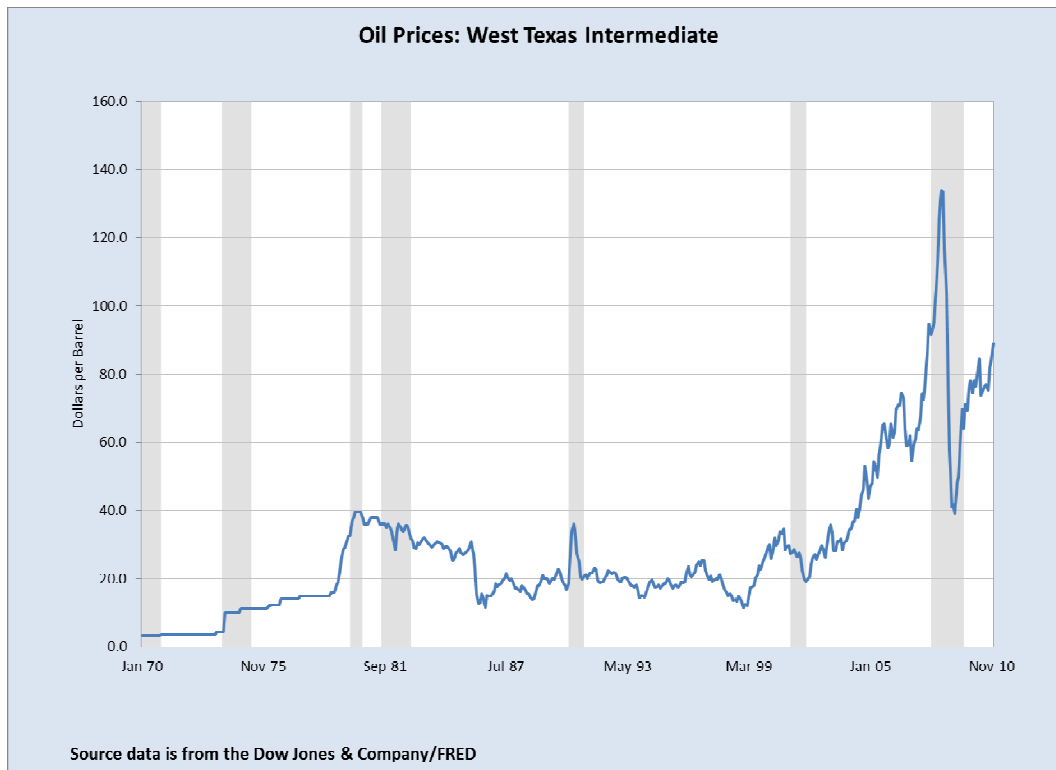


Figure 6

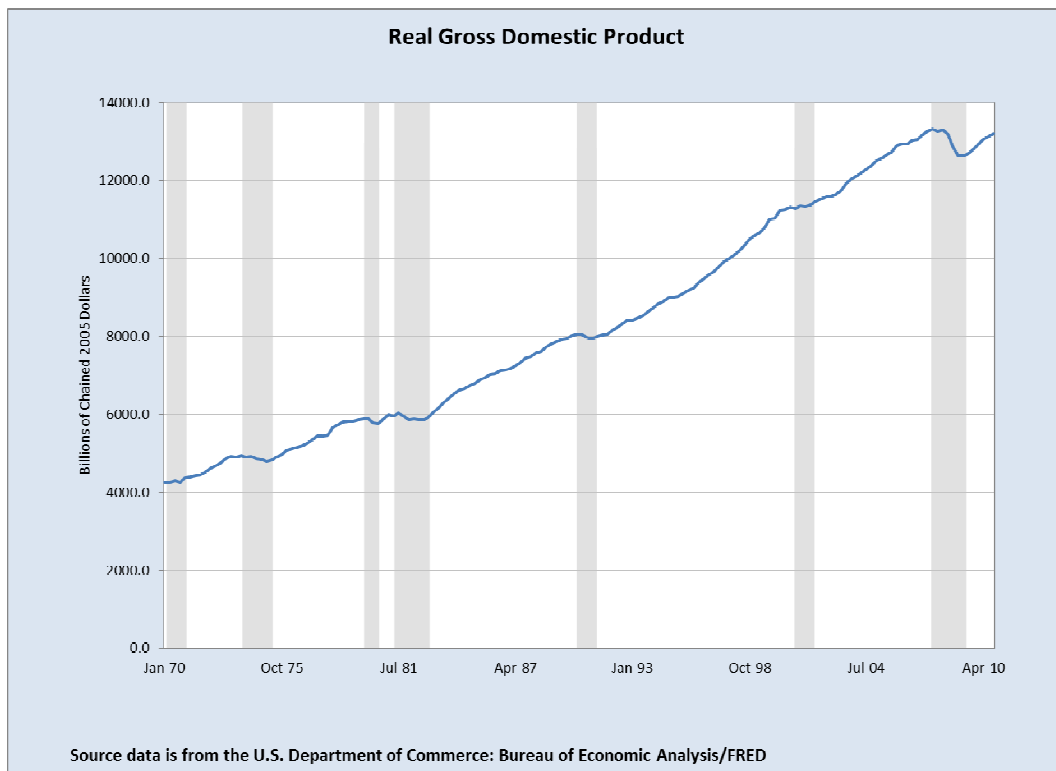


Figure 7

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Research Paper Title:

A BRIEF REVIEW OF THE MONETARY POLICIES IN THE UNITED STATES:
1970-2010

Major Professor: Subhash C. Sharma