AN ABSTRACT OF THE ESSAY OF

Michael T. Campbell for the degree of Master of Public Policy in Public Policy presented on May 28, 2010.

Title: Policy Shifting at the Federal Reserve Bank: A Punctuated-Equilibrium Perspective

A considerable amount of research and literature exists that attempt to explain the policymaking processes of central banks and, in particular, the Federal Reserve Bank (FRB). As with those studies, the purpose of this study is to explain FRB policymaking in order to understand FRB policy shifts during financial crises.

However, this study employs a different theoretical approach. Using the lens of the punctuated-equilibrium (PE) theory I explain policy shifts by the FRB with an emphasis on its preferred policy tool, the federal funds rate. I am unaware of previous research linking the PE theory to FRB policy shifting and as a result my review of relevant literature is focused on the PE theory’s link to closely related macro-level federal institutions.

Since the PE theory’s focus is on moments of punctuation – system shocks – I begin with an overview of the foundational components of the PE theory, asset price bubbles, financial crises, structure of the FRB, and the role of the FRB Chairman. I then drill down on policy shifts that have occurred around moments of punctuation during the Alan Greenspan Chairmanship at the FRB (August 1987 – January 2006).

My methods of analyses are both theoretical and empirical. The foundational components of the PE theory drive the theoretical analysis of FRB behavior and policy shifts. The theory is then statistically tested with empirical data using regression
analysis. The results validate not only the existence of punctuated moments, but also the explanatory power of the PE theory as it relates to FRB policy shifts throughout the Greenspan era.

I conclude with policy recommendations, which include following a policy regime that’s designed to monitor and deal directly with the unwarranted growth of asset price bubbles, undesirable financial market activities, corporate failures that can lead to macro-level financial instability, and other factors that can destroy the balance of the global financial system such as shadow industries that escape regulatory oversight, perverse incentives, and technological innovations.
Policy Shifting at the Federal Reserve Bank: 
A Punctuated-Equilibrium Perspective

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I understand that my essay will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my essay to any reader upon request.

__________________________
Michael T. Campbell, Author
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INTRODUCTION

The power of central banks to influence local and global economies has grown significantly since their inception (Blinder, 1998). And no central bank is more closely scrutinized than that of the U.S. Federal Reserve Bank (FRB). The policy decisions and tools of the FRB directly influence the availability of public and private sector credit, long- and short-term interest rates, rates of inflation and employment, and the stability of the financial system. Having so much at stake with the day-to-day decisions of the FRB it has become increasingly important to understand the phenomena that influence FRB policymaking.

The purpose of this study is to explain FRB policymaking and to elicit a greater understanding of FRB policy shifts that occurred around punctuated moments, which are characterized as asset price bubbles and financial crises. I intend to find evidence that policy shifts by the FRB, in particular, as measured by the federal funds rate, are influenced by exogenous variables such as political institutions, subsystems, policy monopolies and images, interest mobilizations, issue attentiveness, information processing mechanisms.

This study is guided by the punctuated-equilibrium (PE) theory as pioneered by Dr. Frank R. Baumgartner, professor of political science at the University of North Carolina at Chapel Hill, and Dr. Bryan D. Jones, professor of American politics at the University of Washington. During my search for relevant literature I did not discover applications of the PE theory to central bank policy shifts. Hence, my search reveals that
this theoretical approach to studying FRB policymaking will be largely unfamiliar to readers given the originality of this approach.

Despite this new approach, the PE theory has been internationally accepted and proven useful in the examination of both domestic and international policy shifts within a wide variety of institutional policy arenas, e.g. fiscal, regulatory, budgetary, environmental, energy, education, and transportation (Sabatier, 2007). This short list of PE theoretical applications is by no means all encompassing. Yet, it does reflect the diversity of approaches that scholarly research has taken to gain additional insights into how public policymaking has evolved. And, as previous research studies have historically done, this study too extends the application of the PE theory to a new policy arena.

Given the described direction of this study the research question that is under investigation is can the PE theory explain FRB policy shifts, in particular, shifts in the federal funds rate that have occurred around financial crises and asset price bubbles?

In addressing this question I focus exclusively on the 19-year period in which Alan Greenspan was Chairman of the FRB (1987 – 2006). This time period was chosen because it was marked by several financial crises and asset price bubbles: the stock market crash of 1987, the S&L crisis of 1989, the collapse of Long Term Capital Management (LTCM) in 1998, the Y2K “millennium bug”, and the tech-stock bubble of 2000. The housing bubble that began to form in the early 2000s and imploded in 2007 is ignored due to the ongoing unfolding of events at the time of this study. In addition, the earlier years of the FRB are excluded from this study because, “Prior to Greenspan’s arrival at the Fed, excluding the brief mania for commodities and precious metals from
late 1979 to early 1980, the country had been bubble-free for over 50 years” (Fleckenstein, 2008, p. 3). Finally, the inflationary period around 1995 is ignored since it is not a financial crises or asset price bubble.

I hypothesize that FRB federal funds rate policy shifts occurring around financial crises and asset price bubble implosions are driven by not only FRB traditional federal funds rate policy variables such as unemployment and inflation rates, but that additional variables enter the process and influence FRB policy shifting decisions, too. In general terms, these additional “exogenous” variables consist of political influences, heightened issue attention, institutional structures, and how information is processed.

I arrived at this hypothesis through my observations of FRB policymaking and relevant empirical data that suggest the existence of exogenous influences (examples cited above) upon FRB policymaking. First and, interestingly enough, the FRB was born out of the perceived need to stabilize markets (Federal Reserve Bank, 2010), which resulted in the passage of the Federal Reserve Act of 1913. Thus, from its very inception the FRB was already rooted in a history of financial and banking crises. Second, during the negotiations between political forces and private enterprise (banks) the structure of the FRB took shape through the interactions among a congressional committee, banking executives, Congress, and President Woodrow Wilson.

Third, each member of the FRB’s seven-person Board of Governors is appointed by the President and confirmed by the Senate. The chairman of the FRB must annually report to the Speaker of the House and twice annually to the banking committees of Congress. Furthermore, Congress at any time can pass new laws affecting the FRB.
Fourth, FRB policymakers certainly read what the media reports and, intuitively speaking, these media stories have, to one degree or another, a lasting impression. Thus, based on the facts and observations previously mentioned it’s clear that the FRB has some limitations by which it can shield itself from outside policy influences.

From a theoretical perspective, my suppositions sit comfortably within the PE theory’s notion that “...political conflict is expanded beyond the confines of expert-dominated policy subsystems to other policymaking venues where policymaking routinely occurs” (Sabatier, 2007, p. 176). In other words, as moments of punctuation arise – system shocks – and policy issue attentiveness increases, a policymaking process emerges that erodes at the FRB’s ability to make independent policy decisions that are free from exogenous influence. As a consequence, political institutions, special interest groups, the media, and public opinion force FRB policy shifts to merge into other policymaking venues, e.g. Congress, White House, banking committees.

To derive the answer(s) to my research question and test my hypothesis I statistically analyzed relevant issues that have surfaced on congressional agendas, the White House administrative agenda, media attention, public attention, and the enactment of new public laws. The intent is to demonstrate the existence of statistically significant relationships between the dependent variable – FRB federal funds rate policy – and the independent variables – inflation, unemployment, and other variables as described by the PE theory. The quantitative and qualitative data used in the analyses were gathered from government databases, credible websites dedicated to collecting and analyzing relevant data, and available literature topically centered on the FRB,
central banking, political economy, policy shifting, and the general concepts and
applications of the PE theory itself.

The next chapter provides the necessary background pieces for the reader to
further understand the foundational components of the PE theory, asset price bubbles,
financial crises, the FRB, and the role of the chairman as occupied by Alan Greenspan.
BACKGROUND

There are a variety of policy-shifting influences that are always in play. These influences on FRB policy become evident through the analytical lens of the PE theory, which has an overarching concern with the pattern of policy stability, followed by rapid or sudden policy shifts, and then once again, policy stability (Birkland, 2005, Sabatier, 2007, Baumgartner et al, 2009). However, prior to analyzing FRB policy shifts it will be helpful to first understand five key areas: the foundational components of the PE theory, asset price bubbles, financial crises, the FRB, and the role of the FRB’s chairman, particularly as occupied by Alan Greenspan.

First, Sabatier (2007) indicates the PE theory has been internationally accepted as a reliable theory with the explanatory power to describe wide-ranging public policy making processes. But, I’ve yet to encounter the application of this theoretical perspective to FRB policymaking processes. Since this appears to be a new theoretical extension, an understanding of the PE theory will be an appreciated prerequisite to later chapters.

Second, the PE theory places considerable focus on the moments of policy punctuations. Within the context of FRB policy shifting during the years of 1987 – 2006, punctuated moments were typically representative of asset price bubbles and financial crises. Therefore, the concepts behind asset price bubbles and financial crises are briefly explored.

Third, the FRB is a uniquely positioned government agency with a high level of autonomy, is politically disengaged, and is extremely powerful by most institutional
standards. The distinct nature of the FRB as well as its unique relationship with public and private sector institutions deserves some discussion.

And fourth, the PE theory does not concern itself with only specific isolated periods of time (Birkland, 2005, Sabatier, 2007). However, to keep this research paper manageable I’ve elected to limit my research to the Alan Greenspan era, which experienced several punctuated moments. Hence, an understanding of the chairman’s role, particularly while occupied by Alan Greenspan, will also prove beneficial.

The Punctuated-Equilibrium (PE) Theory

The PE theory has been found to be a general characteristic of U.S. policymaking and useful in the examination of a variety of regulatory policies, fiscal policies, environmental policies, energy policies, education policies, transportation policies, to name but a few (Birkland, 2005). But it was not until the 1980s that political science theorists began to view government system changes in terms of long periods of relative stability followed by profound and sudden shifts that are characterized as punctuated moments. According to Cooper and Cibulka (2008) the punctuated-equilibrium theory has become a dominant model of policy change within the political science field, which is a “...development attributed largely to the pioneering work of Baumgartner and Jones (1991, 1993)” (Cooper et al, 2008, p. 36).

Baumgartner and Jones borrowed the punctuated-equilibrium concept from the field of evolutionary biology to describe the policymaking process in the United States (Birkland, 2005). However, as we have just seen, the PE theory has been extended well beyond the reach of natural sciences. Birkland (2005) points out that Baumgartner and
Jones posit that policy shifts were not adequately explained by theories of incrementalism and constant fluctuation, but rather a policy cycle of stability, followed by profound and sudden shifts, and then stability, is a better explanation of policy shifts. To make this point visually clear the following graph presents a simple stylized comparison between the PE theory and an incremental model:

![Figure 2.1 PE Theory and Incremental Model Comparison](image)

In its broadest sense the PE theory focuses on policy punctuations – system shocks – and the resulting interaction between political institutions and the manner in which policy issues are resolved. Within this broad description and central to the PE theory exists a collection of foundational components – political institutions, policy monopolies, special interest group mobilizations, issue attentiveness, and information processing (Birkland, 2005, Sabatier, 2007). The dominant methodology of research is content analysis of archival data combined with statistical trend analysis (Cooper, et al, 2008).

The following lists the PE theory’s foundational components and subcomponents:
• **Political institutions** – By design US political institutions – Congress, the Treasury, the Federal Reserve Bank, Executive Branch, Judicial Branch, and the like – are unfavorable to change agents. Interest mobilizations therefore become the mechanism by which institutional resistance to change becomes possible (Sabatier, 2007).

• **Bounded rational decision making** – Policy makers are human and therefore hostage to their own cognitive limitations (Sabatier, 2007).

• **Issue definition** – Issues reach peaks and troughs on the public agenda and are defined and redefined in public discourse, which can lead to the solidification of or the challenging of existing policies. Policy shifts are minimal when existing policy has been solidified and are opportunistic when challenged (Sabatier, 2007).

• **Agenda setting** – In its broadest sense the term is used to describe the addition and subtraction of issues on the political agenda (Oxford, 2003).

• **Interest mobilizations** – The term is interchangeable with special interest groups, pressure groups, and trade associations whose tactical use of campaigning and lobbying are to influence policy outcomes (Oxford, 2003).

• **Subsystems** – Sometimes called iron triangles, issue niches, policy subsystems, and issue networks are comprised of a community of specialists that address issues out of the political spotlight. Most issues are addressed within these communities of specialists. A subsystem can be characterized as a policy monopoly when dominated by a single interest (Sabatier, 2007).

• **Serial and parallel information processing** – A companion to bounded rational decision making, serial processing refers to devoting attention to one issue at a time, while parallel processing refers to devoting attention to many issues simultaneously. High-profile issues are generally debated one at a time (Sabatier, 2007).

• **Positive and negative feedback loops** – When change occurs and intensifies future change positive feedback has occurred. The process is sometimes referred to as a “feeding frenzy” and “bandwagon effect.” Conversely, negative feedback has occurred when the system’s stability has been preserved, which is analogous to a thermostat’s ability to maintain a constant temperature (Sabatier, 2007).

• **Policy images** – This term represents the blend of empirical information and emotive appeals. Images can become the focal of arguments used to describe or make sense of a particular policy (Sabatier, 2007).

• **Policy monopoly** – A policy monopoly occurs when an issue is dominated by a single interest group usually a political institution that’s charged with policy making in a defined area and is further charged with the maintenance of an overarching image or ideology. These institutions typically resist change, prefer the status quo, and therefore process information via a negative feedback loop (Sabatier, 2007).
Summarizing the PE theory Sabatier (2007) states, “For the authors [Baumgartner and Jones]...the clearest explanation for both marginal and large-scale policy changes comes from the interaction of multilevel political institutions and behavioral decision making, a combination that creates patterns of stability and mobilization or punctuated equilibria” (Sabatier, 2007, p. 156). Similarly, Cooper et al (2008) explains, “Through a pattern of issue definition and redefinition, agenda formation, shifting images and venues, and the establishment and destruction of policy monopolies, the punctuated-equilibrium cycle provides a plausible and intriguing rationale for the rise and fall of policies over time” (Cooper et al, 2008, p. 38).

Asset Price Bubbles

The generic term, bubble, has come to be colorfully labeled by such popular language as a system-wide Ponzi scheme, irrational exuberance, speculative mania, economic/financial bubble, credit bubble, asset price bubble, self-fulfilling prophecy, systemic bubble, sunspot, business cycle, financial orgy, to name but a few. Even Alan Greenspan waffled back-and-forth with his wording choice. At times his rhetoric included the word “bubble”, other times he used “market froth”, and yet, at other times, he claimed bubbles were “unidentifiable” – or at least until one popped (Fleckenstein, 2008). My observation of reading central bank policy literature suggests that asset price bubble is the predominant term being used and, as such, will be used throughout this paper. But regardless of the language one embraces the terms all point to the common theme of unsustainable patterns.
Despite the colorful and creative labeling, Youssefmir, Huberman and Hogg (1998) state it is not a foregone conclusion that bubbles exist. According to Garber (2001), bubbles are a fuzzy concept, which has led to endless debating about their existence. While some economists deny that bubbles occur, the cause of bubbles remains a challenge to those who are convinced that asset prices often deviate from intrinsic values. And though many explanations have been suggested, it has also been shown that bubbles appear even without uncertainty, speculation, or bounded rationality (Flood, 1997). Most recently, it has been suggested that processes of price coordination or emerging social norms might ultimately cause bubbles. Because it is often difficult to observe intrinsic values in real-life markets, bubbles are often conclusively identified only in retrospect, when a sudden drop in prices appears. Such a drop is known as a crash or a bubble burst. Both the boom and bust phases of a bubble are examples of positive feedback mechanisms, in contrast to negative feedback mechanisms that determine the equilibrium price within a normally functioning market (Kindleberger, 2005).

Ironically, those who support the concept of bubbles differ regarding the definition of bubble or bubble-like activity. Some definitions are: (1) they’re nothing more than a societal-level Ponzi scheme, (2) they’re a result of the greater fool theory, (3) in behavioral economics the occurrence is due to the herding mentality theory, and (4) the most widely circulated definition of a bubble is when an asset is bought and sold (traded) at prices in excess of that asset’s true value (Kindleberger, 2005, Akerlof, 2009, Cooper et al, 2008).
Economists who believe in the bubble concept generally define a bubble as any deviation in an asset, security, and/or commodity’s price that cannot be explained with fundamentals (Fleckenstein, 2008). This deviation in price beyond what fundamentals support is where the bubble lives. Within this price deviation is where short-sellers thrive as they seek out overpriced assets and buy on the assumption that its price will fall and thus eventually realign with market fundamentals.

From a free-market and rational expectations perspective, an overly priced asset will ultimately self-correct through naturally occurring market mechanisms and will finally rest at a point of equilibrium. Chairman Jeremy Grantham of the global investment firm GMO believes, “...bubbles are definable events where the price action is two standard deviations from a long-term trend” (Fleckenstein, 2008, p. 189).

But, by no means are overly priced assets ignored by the FRB. To the contrary, asset prices are observable and keenly watched by central bankers. The behavior of monetary policies used to address asset prices are most commonly modeled by using a vector auto-regression framework (VAR) and/or structural macro-econometric models (Walsh, 2003). Yet, it should not go unnoted that a dizzying number of models exist purporting to explain the behavior of asset prices.

Regardless of the methodologies used to model and observe asset price inflation, the questions of how an asset price bubble forms and when it becomes clear that an asset price bubble has emerged are difficult questions to answer. When attempting to answer these questions, whether from an economic, social, or political perspective the answers can vary widely. Therefore, answers are typically labeled with
verbiage such as herding, irrational behavior, over-leveraging, feedback loops, intrinsic value variations, speculation, changing social norms, and bounded rationality. In addition, answers often require a detailed understanding of the mechanics of the asset under observation, the market dynamics for that asset, investor and institutional behavior, and the public policies that liberate or restrict the asset.

The bubble of particular interest in this study is the tech-stock or dot-com bubble. From roughly 1995 – March 2000 the stock prices of Internet-based companies increased exponentially. It is widely believed that market confidence, speculation, and readily available venture capital funds all created an environment whereby investors were willing to ignore such market fundamentals as P/E ratios. In the end, the NASDAQ technology heavy index, fell from an approximate peak of 5,050 on March 10th to 4,580 on March 15th, a nearly 9 percent fall (NASDAQ, 2010).

Having said all this, the important concept here is that asset price bubbles are harmful. They are welfare reducing events and unless you are a speculator who “shorts the market”, bubbles can lead to individual and institutional financial ruin. This is the case whether one believes or doesn’t believe in asset price bubbles.

Financial Crises

Like asset price bubbles, financial crises often change public policy in a dramatic fashion. Financial crises generally require expedited decisions by policymakers (Baumgartner, 2002). This is due to the sudden nature of financial crises and the contagion that can occur in interconnected domestic and international markets.
The most current example of a crisis is the financial crisis of 2008 whereby the FRB and Treasury Department asked Congress for an immediate $700 billion lifeline for the financial markets. Other, examples germane to this study are the stock market crash of 1987, the S&L crisis of the late 1980s and early 1990s, the collapse of Long Term Capital Management (LTCM) in 1998, and Y2K “millennium bug”.

The stock market crash of 1987 resulted in the Dow Jones Industrial Average (DJIA) falling by a record 22.61 percent. Originating in Hong Kong, stock markets around the world declined sharply and today there is still no general consensus as to its cause. Program trading received most of the blame; however, a macroeconomic explanation lays some of the blame on central banks for not properly coordinating foreign exchange rates and interest rates.

The S&L crisis was born out of the increasing squeeze on S&L profit margins that resulted from high interest rates and inflation. It was feared that many S&Ls would ultimately fail. Congress responded by passing new laws aimed at deregulating the entire industry. This opened the doors for S&Ls to lend heavily within the real estate markets. When the real estate markets crashed the S&Ls crashed, too.

The LTCM hedge fund was highly leveraged with a debt-to-equity ratio of about 25 to 1 (borrowings of $25 for every $1 in assets) and had numerous trading relationships on Wall Street. When several international crises occurred (Russian government bond default & East Asian crisis) the hedge fund took enormous losses which forced the FRB to coordinate a bailout by its major creditors thus preventing contagion and a financial market collapse.
And the Y2K “millennium bug” was a crisis based on fear that computers would not properly recognize that date change from 1999 to 2000. The U.S. placed significant importance on fixing the “problem” while some other countries dismissed the “problem” entirely and did nothing. In the U.S., organizations budgeted large sums of money to fix their computer systems while a large number of people withdrew large sums of cash in the event that ATMs and banks became inoperable. To help alleviate public fears the FRB bolstered bank reserves and coordinated other efforts with central banks around the world.

As is the case with asset price bubbles, financial crises are welfare reducing events that can result in individual and institutional financial ruin. Furthermore, crises can be systemic thus negatively affecting other institutions within the same industry as well as being contagious and thus affecting a web of interconnected industries.

**The Federal Reserve Bank (FRB)**

Unlike the FRB’s interventions into financial crises, it does not intervene in deflating the growth of asset bubbles. However, the FRB does intervene when the consumer price index (CPI), i.e. inflation, rises above its target and conversely when disinflation is a threat. Furthermore, when the FRB is faced with an asset price bubble in such areas as real estate, stocks, or commodities the policy of choice is generally to let the market seek its own equilibrium, i.e. “the market knows best.”

In defense of such a policy position the FRB generally uses some version of the following rhetoric: 1) it’s not a function of the central bank, 2) detecting a bubble is hard or impossible and only after popping do we know of its existence, 3) prematurely
deflating a bubble (assuming its existence is identifiable) could have negative effects on
the larger economy, 4) the effect may be an unnecessary drag on GDP growth, and 5)
market participants might incorrectly interrupt these actions as a need to redirect their
capital investments. Mishkin (2007) defends this policy position too by arguing
“...targeting asset prices is likely to erode support for central banks’ independence
because controlling these asset prices is beyond central bank capabilities” (Mishkin,
2007, p. 33).

Historically speaking, the Federal Reserve Act of 1913 established the Federal
Reserve System and for 97 years the FRB has been the central bank of the U.S., with the
primary duty of conducting monetary policy. According to the FRB website it has a
responsibility to the public for 1) conducting the nation’s monetary policy by influencing
money and credit conditions in the economy in pursuit of full employment and stable
prices, 2) supervising and regulating banking institutions to ensure the safety and
soundness of the nation’s banking and financial system and protecting the credit rights
of consumers, and 3) maintaining the stability of the financial system and containing
systemic risk that may arise in the financial markets (Federal Reserve Bank, 2010). For
the last several decades, the primary tools for conducting monetary policy have been
the federal funds rate and open market operations with which interest rates and the
money supply are affected.

As an institution, the FRB is an independent government organization that is not
really owned by anyone, though each regional FRB is owned by the private member
banks within its district. Each of the regional FRBs has its own Board of Governors and
issues stock to its member banks. However, owning stock in this case does not grant authority or control. In addition, the FRB Board of Governors in Washington D.C. is responsible for regulatory functions.

Despite its unusually high level of independence, boundaries do exist. For example, each of the seven Governors is appointed for a 14-year term by the President of the United States and confirmed by the Senate. Of the governors, the President of the New York FRB is the most important given his close proximity to Wall Street and close relationship with the Chairman. Furthermore, the FRB must report to the Speaker of the House and the banking committees of Congress. And, of course, Congress can pass new laws affecting the FRB at any time. Therefore, the FRB is not completely insulated from political institutions (Hasset, 2007, Greider, 1987).

The Board of Governors is continuously interacting with other governmental policymakers. For example, they testify routinely before congressional committees on issues affecting the economy, financial markets, monetary policy, regulation, and consumer protection. In addition, the Governors have on-going contact with the President’s Council of Economic Advisers and other key economic officials. The Chairman also meets regularly with the President and the Secretary of the Treasury (Federal Reserve Bank, 2010). And it should be noted that the FRB is the banker for the U.S. Treasury Department.

The FRB chairman serves many functions one of which is to moderate Federal Open Market Committee (FOMC) discussions and build consensus amongst the committee members. Arguably, the Chairman can exert a tremendous amount of
influence over committee members, thereby reflecting his ideology in FRB policy (Gerlach-Kristen, 2008). Blinder (1998) argues that the FRB Chairman is “more equal” than the other FOMC members and Gerlach-Kristen (2008) states that her research reflects that Greenspan spoke longer than other FOMC members, resulting in a disproportionate influence over policy decisions. Furthermore, the Chairman is the “face” of the FRB and therefore must carefully communicate to both the financial markets and general public in a confident and credible tone.

To add visual clarity, Figure 2.2 characterizes the Federal Reserve System:

![Figure 2.2 The Federal Reserve Banking System](source: Federal Reserve Bank)
Role of FRB Chairman and Alan Greenspan

As far as central banks across the globe are concerned the FRB enjoys a uniquely high level of independence. However, it does share a common characteristic found in central banks – political appointments (Chang, 2003). The desired FRB Chairman is nominated for appointment by the President and the Senate votes to confirm or reject the nominee. Chang (2003) states the Senate has never rejected a nominee. Once the new Chairman is confirmed he attends to the many roles and responsibilities of the position. But how these roles and responsibilities are carried out becomes a factor of the Chairman’s character.

Twice annually, in February and July, the FRB Chairman testifies before the Senate Committee on Banking, Housing, and Urban Affairs and before the House Committee on Financial Services. The Chairman’s testimony details the policy activities and plans of the FRB Governors and the FOMC as well as economic developments and forecasts. Internationally, the Chairman performs a variety of roles. For instance, he is an alternate U.S. member for the International Monetary Fund (IMF), a board member of the Bank for International Settlements (BIS), and a member of the National Advisory Council on International Monetary and Financial Policies. Additionally, he is a U.S. delegate to a host of international meetings, most notably those involving the seven largest industrial countries – the G-7 (Federal Reserve Bank, 2010). Like no FRB Chairman before or since have these roles and responsibilities been carried out with the character and flair that would eventually define Chairman Alan Greenspan.
Alan Greenspan, FRB Chairman from August 1987 – January 2006, was celebrated as one of, if not the most popular and successful central banker in U.S. history. “The Oracle” and “Maestro”, as he was affectionately called, presided over the FRB for most of the years of the Great Moderation (1985 – 2007) – an extended period during which inflation was subdued and recessions were relatively mild. Greenspan (2008) describes himself as a free-market libertarian (freshwater/neoclassical economics) – one who believes in the market system with limited government intervention. He surmised that participants in the financial markets would act responsibly if, for no other reason, because the markets are built on trust. In regards to asset bubble growth, Greenspan has argued that it’s better to deal with the aftermath of a bubble bursting than to attempt to prematurely deflate it (Fleckenstein, 2008).

In what might be seen as “Greenspan idolizing”, Wall Street gave Alan Greenspan a variety of nicknames, one of which was called “The Greenspan Put.” A put, in simple terms, is an option that entitles an asset owner the right to sell an asset to another investor at a predetermined price. The nickname became popular as one crisis after another – stock market crash of 1987, S&P 500 and stock market plunge in 1998, Asian currency crisis, LTCM bailout, S&L crisis, Russian debt default – were averted by repeatedly cutting interest rates. An effect, however, was the creation of a Wall Street expectation that Greenspan would insulate the markets from exogenous shocks of which then became embedded in asset prices (Fleckenstein, 2008). As Morris (2008) pointed out when things go wrong on Wall Street, the FRB will come to the rescue with cheap money to buy your troubles away.
Despite the several financial crises and asset price bubbles that have occurred on Alan Greenspan’s watch he is still regarded as the most successful central banker in the FRB’s history. Yet, approximately three years after his chairmanship ended, Greenspan admitted that he’d put too much faith in the self-correcting power of free markets and had failed to anticipate the destructiveness of the gratuitous mortgage lending practices that led up to the S&L crisis and the financial crisis of 2008.
LITERATURE REVIEW

This Literature Review chapter is organized topically by the foundational components of the PE theory. As explained earlier, these foundational components broadly consist of the interactions between political institutions and the manner in which issues get resolved. Also, as mentioned in the Introduction chapter, my search for literature aimed at explaining central bank policy shifts from the PE theory perspective produced no results. Therefore, this literature review was assembled from literature that explains policy shifting in other federal macro-environments. That is, literature was reviewed when it was found to address central banking practices, theories, and policies as well as the general application of the PE theory. The primary sources of literature were peer-reviewed research and reports in relevant journals, academically produced research reports, and graduate level textbooks. A secondary gray-source of literature has come from popular press books written by reputable experts or university professors.

Political Institutions

During the Congressional debates that led to the FRB’s creation in 1913 there was heated disagreement about the level of political involvement and independence that should govern the FRB. Alesina and Summers (1993) recall that traditional arguments for politically responsive monetary policies were likely to be attentive to increasing output versus independent monetary policies that were likely to be attentive to reducing unemployment and real interest rates. The implications associated with these two opposing arguments led to a comprising decision by Congress that monetary
policymakers would consist of politically appointed governors in Washington D.C., the 12 presidents of the regional banks, and their boards being appointed, in part, by private bankers.

Because money can affect the health of the economy through the economic variables it influences gives politicians and policy makers reason to be concerned with how monetary policy is conducted (Mishkin, 2010). Mixon and Upadhyaya (2004) note that a significant amount of literature exists indicating that despite the FRB’s independence, public and private pressures continue to have considerable influence on monetary policy and cite as evidence the research results of Froyen, Havrilesky, & Waud (1997) and Havrilesky (1988, 1990, 1995). Summarizing his research Havrilesky states, “...in order to protect its prerogatives the Federal Reserve [as an agent]...must respond to pressures [from its principals]. Since one of these prerogatives is ...autonomy, it follows that the central bank periodically might tactically surrender some autonomy in the near term...to protect it...in the longer term” (Havrilesky, 1995, p. 187).

It is clear that Congress [FRB’s primary principal] has a tremendous amount of influence upon FRB policy. Mishkin (2010) explains that the FRB is subject to Congressional influence, if for no other reason because the FRB’s structure was designed by Congressional legislation and is subject to change by further Congressional legislation. Furthermore, “When legislatures are upset with the Fed’s conduct of monetary policy, they frequently threaten to take control of the Fed’s finances and force it to submit a budget request like other government agencies” (Mishkin, 2010, p.332). And Blinder (1998) reminds his readers that delegated authority should be
retrievable and although it’s never been used Congress has the authority to reverse FRB policy decisions and remove FRB governors for just cause.

Just behind the influential power of Congress are officials from the White House and the Treasury Department. In particular, the president can influence the FRB through his influence on Congress. In addition, the president can exert his influence through the appointments of Board of Governors and the Chairman of the Board of Governors. Mixon and Gibson (2003) highlighted that President Reagan made four FRB appointments that supported his monetarist/supply-side ideology and Clinton made four FRB appointments that supported his Keynesian/neo-Keynesian ideology. If President Obama gets his recent nominees approved by the Senate then he will have appointed five of the seven members to the Federal Reserve Board.

Regarding the Treasury Department and FRB’s historical relationship, Mishkin (2010) opines that it is generally considered unwise to put the FRB under the control of the Treasury Department for fear that it may be used to finance large deficits by purchasing treasury bonds. But interestingly enough, the FRB doesn’t need to be under the control of the Treasury for this to occur. One needs only to look at the FRB’s balance sheet to verify the enormous existence of treasury bonds.

Serving as further examples of political institution influences upon FRB policymaking and, falling far short of being exhaustive, is the following:

- During the 1980s and again in the mid-1990s Congress pursued an agenda that, in part, encompassed financial deregulation and although some federal agencies supported this trend the FRB was less sanguine, e.g. Competitive Equality Banking Act (CEBA) of 1987, Financial Institutions Regulatory and Interest Rate Control Act (FIRIRCA) of 1989 (FDIC, 1997).
• Despite the deregulatory trends in the 1980s and mid-1990s the FDIC (1997) reported that there were significant legislative bills passed addressing the policies of entry, capital adequacy, regulatory forbearance, brokered deposits, and expanded powers and even though the FRB made many of its own proposals some were never adopted by Congress.

• “The most common constraint imposed upon the conduct of monetary policy is the extent to which the central bank is required to finance the government deficit” (Alesina, 1993, p. 153). Though not the case today, the FRB had its policies dictated by the Treasury Department as a result of the Banking Acts of 1933 and 1935. Furthermore, the FRB is a significant holder (purchaser) of treasury notes in addition to the fact that it transfers its net profits to the Treasury Department annually ($49B in 2009).

• In 2010 we’re witnessing, which is reminiscent of the mid-1990s, a number of Congressional bills being proposed to consolidate all bank related supervisory responsibilities under a single regulator. The bills aimed at revoking supervisory responsibilities from the FRB will allow the FRB to focus exclusively on monetary policy, proponents argue (Peek, 1999).

A clear picture has emerged all of which points to occurrences of political institutions wielding their influence upon the FRB. Furthermore, and not previously mentioned, are the House of Representatives’ Financial Services Committee and the Senate’s Senate Banking Committee which regularly discuss financial issues that have a direct bearing on the FRB. Despite the volume of FRB policy shifts that have occurred during its life time U.S. political institutions, by design, are unfavorable to change (Sabatier, 2007). Yet, when the environment is ripe for policy shifts the FRB can and does exercise considerable power over the direction of change thanks to its unique subsystem and policy monopoly.

**Subsystems**

According to Sabatier (2007) policy subsystems are comprised of community specialists that address issues out of the public spotlight and are characterized as a policy monopoly when dominated by a single interest. Typically, these specialists spend
most of their time communicating with each other and since they know their issues better than most others they’re able to simplify in favorable terms these issues to non-specialists (Baumgartner, 2009).

In the case of the FRB there are several examples of subsystems that all play into the policymaking process. First, decision making at FOMC meetings occur by committee. Yet the FOMC has almost total freedom to conduct monetary policy as it sees fit, without interference from other government branches and with minimal fear of being told to reverse a policy decision (Blinder, 1998). By and large FOMC meetings are comprised of specialists – Board of Governors, President of the New York FRB, Presidents from 4 other FRB districts – who discuss the economic variables that can potentially impact the FRB’s ability to pursue its legal mandates.

Second, the 12 regional FRBs, along with the Chairman, comprise another subsystem of specialists. Independent of one other, the 12 regional FRBs operate in a manner that seeks to provide policy recommendations based on the regional characteristics of private business sectors and consumers alike. The individual directors of these regional FRBs are elected to their positions based on their expertise and knowledge of the respective region’s characteristics. In regards to the FRB Chairman, Gerlach-Kristen’s (2008) research concludes that the Chairman can exert a tremendous amount of influence over FOMC committee members thereby allowing his ideology to shape FRB policy. This was certainly the case with Alan Greenspan who spoke longer than other FOMC members resulting in a disproportionate influence over policy
decisions. Blinder (1998) agrees that the FRB Chairman is “more equal” than the other FOMC members.

And third, there are a number of “external” committees that serve to advise the FRB and its principal, Congress. For example, a consumer advisory board briefs the FRB on its views and concerns as they relate to FRB actions and the overall impacts upon the average consumer (Bailey, 2008). Additionally, there are standing committees reporting to the Senate and the House of Representatives which are the Senate Committee of Banking, Housing, and Urban Affairs as well as the House Committee on Financial Services also known as the House Banking Committee. Both of these Congressional committees involve themselves, in part, with monetary policy and provide oversight of the work produced by the FRB.

**Policy Monopoly**

Baumgartner et al (2009) explains that policy monopolies can be found in every political system and that the so-called “experts” spend significant time trying to convince others that “outsiders” are not qualified to participate in certain decision making processes. This explanation from Baumgartner rings true for the FRB. It is obvious that the FRB has a policy monopoly over monetary policy decisions and most, if not all, of these decisions are made with orthodox not heterodox thinkers. However, Friedman (1999) explains that there is a trend underway that can weaken the relevance of a central bank’s policy monopoly over monetary policy decision making. These trends include a decrease in the domestic and international demand for paper money and
credit that is becoming widely available through alternative sources, e.g. shadow banking.

Baumgartner et al (2009) further explains that there are two important characteristics of policy monopolies. The first characteristic is an identifiable institutional structure which limits access to its policymaking responsibilities. The second characteristic is the existence of an image or idea that powerfully communicates such things as economic growth, social stability, or patriotism. An institution that demonstrates its alignment with these national goals can then argue for the creation or continued existence of a policy monopoly. The FRB was established, in part, on the idea that this institution would further the government’s objectives of economic growth and social stability and yet, interestingly enough, arguments against restructuring the FRB also rest on these same national ideas. Nevertheless, pro- and anti-restructuring arguments seek to form and preserve a positive policy image (Baumgartner et al, 2009).

Policy Image

The primary policy image of concern for the FRB is that of its reputation (Blinder, 1998). Prevailing policy images are often one-dimensional, e.g. reputation, despite their multidimensional nature (Baumgartner et al, 2004) and they often frame how a policy is understood and discussed (Baumgartner, 2009). Hence, the FRB is careful about its policymaking decisions and possibly more careful in how these decisions are communicated because of the risk of tarnishing its reputation. Baumgartner states, “The degree to which problems are tightly linked to images is related to the degree to which a single arena of policymaking exerts have monopolistic control over a policy”
(Baumgartner, 2009, p. 38). For example, and as discussed earlier, we know that the FRB has a policy monopoly. Periodically through history when the FRB’s policy image was at risk of eroding other political institutions, primarily Congress and the President, stepped in to assert their authority.

During the Greenspan era the FRB’s policy image was positively associated with economic prosperity and wealth building via the financial markets. However, upon Greenspan’s departure a housing bubble emerged and later imploded thereby spawning a major financial crisis. Consequently, the FRB’s positive policy image has been called into question and may in fact be leaping against a negative wind. As evidence, one needs to look no further than the political rhetoric of Senator Ron Paul and others who have proposed that the FRB should be dramatically reshaped or even abolished.

**Interest Mobilizations**

The term interest mobilization is synonymous with special interest groups, pressure groups, and trade associations whose tactical use of campaigning and lobbying are to influence policy outcomes (Oxford, 2003). For visual clarity, Figure 3.1 represents an iron triangle incorporating the FRB into this process:
Special Interest Groups

Tullberg states, “A common opinion is that power has shifted from states to companies” (Tullberg, 2004, p. 325). Using qualitative and quantitative data, Tullberg argues that corporate influence on economic matters is well overstated and that governments have the ultimate power thereby putting companies in a subordinate role. Making an opposing argument, Blinder (1998) explains that central banks cannot separate themselves from the financial markets. “Central bankers are often tempted to ‘follow the markets,’ that is, to deliver the interest rate paths that the markets have embedded in asset prices. Central bankers are only human; they want to earn high marks from whomever is handing out the grades...the markets provide the biofeedback...that monitors and evaluates the central bank’s performance...” (Blinder, 1998, p. 60). The implication here is that the FRB is married to the financial markets and therefore may error, if errors were to occur, in favor of the financial markets. Just as
important is the exponential growth of corporate lobbying efforts that are conducted solely for the purpose of influencing public policy outcomes.

Baumgartner (2009) cites a number of studies that all point to the explosive growth of special interest groups that have descended on Washington to lobby for their particular special interests, e.g. consumer protection groups, financial trade association. Citing the works of Havrilesky and Gildea (1992), Mixon et al (2003) argues that the influence of the financial services sector over FRB policy is correlated with its political clout and contributions to the national economy.

Fast-forwarding to the present reveals a sharp increase in the number of legislative proposals aimed at addressing issues of the 2008 financial crisis. At the same time the number of lobbyist representing the financial services industry have sharply increased their lobbying activities in an effort to stymie the potential impacts these bills may impose upon their industry. We should acknowledge that large financial institutions invest in building and exercising political clout to protect their ability to privatize gains and socialize losses.

Another example of special interest groups that aggressively lobbies political institutions is consumer advocacy groups. A March 2009 Gallup Poll revealed that 76 percent of the public supports government intervention to stem the likelihood of a similar financial crisis. Therefore, one might expect that a consumer advocacy group would argue for a particular policy shift that sharply differs from the desires of the financial services industry (Corely, 2009).


**Issue Attentiveness**

The amount of attention a particular issue(s) receives can be gauged through an assessment of media coverage, public opinion polls, and Congressional activity, to name a few. As issues become news, the number of media outlets reporting on these issues increases and conversely, when issues get resolved the number of media reports diminish. An increase in media attention can be the result of and/or promote growth in the publics’ concern. All of the crises in this study received an enormous amount of media, public and financial market attention. When issues emerge under conditions of crisis or under criticisms of existing policies an environment is created that’s ripe for subsystem changes, institutional structure changes, and/or overall policy shifts (Baumgartner et al, 2009).

The database maintained by the Policy Agendas Project’s (PAP) (Jones et al. 2010) details the significant amount of attention that was given to banking, finance, domestic commerce, government operations, and macroeconomic issues during the Greenspan era, all of which are considered of interest to the FRB. For example:

- 11,162 Congressional hearings
- 1,680 Congressional Quarterly articles
- 132 responses in the Gallup’s Most-Important-Issue Opinion Poll
- 6,731 occurrences of Presidential State of the Union speeches using similar language
- 250 public laws passed
- 5,751 New York Times articles
- 323 executive orders.

It is clear from these impressive numbers that banking, finance, domestic commerce, government operations, and macroeconomic did in fact receive significant
attention. As we will see this appears to be true within the political, media, and general public levels, too. In addition, it can be reasonably argued that if media and public attention to an issue(s) reaches a sufficient level that political leaders will take notice thus altering how the issue(s) gets defined and how the national agenda gets set.

**Issue Definition**

Issues on the public agenda are defined and redefined by way of public discourse. Thus, the opinions of the media and general public often shape the activities of policy decision makers (Tullberg, 2004). Baumgartner et al (2009) argue that once an issue begins to be redefined, a window of opportunity emerges with the potential to mobilize previously disinterested groups. However, Jones (2007) postulates that even a united public desirous of a policy shift may not be met with the type of government action they seek. Nevertheless, Jones does conclude that this type of outcome is situational and that his research, which blends qualitative research methods and regression analysis, suggest that government attention when confronted with growing public concerns will likely lead to policy shifts in the areas of the environment, health and economy.

**Agenda Setting**

Agenda setting, which occurs in all areas of politics, involves shaping choices to influence outcomes (Wilkerson et al, 1999). Studies of public policy processes have given significant attention to understanding why some issues and not others make it onto government agendas. Some issues such as public infrastructure, education, and social programs are regular government agenda items. These regular agenda
appearances can be due to related laws set to expire, e.g. tax laws, or other mandates that require regular program reviews, e.g. social security. Alder (2009) states that agenda setting can take the form of a committee or political leader exercising negative, positive, proposal, or issue agenda control.

In this study I am interested in how external issues and processes influence policy shifts at the FRB. In other words, how does an issue, external to the FRB, such as an asset price bubble or financial crisis, influence FFR policy direction. For example, the stock market crash of 1987 spawned the development of explanatory theories from economists to academics and political rhetoric from both international and domestic leaders. In the public’s eye, the majority of the blame for the 1987 crash was placed at the doorstep of Wall Street traders engaged in program trading – strategies involving arbitrage derivatives (Albert, 2007).

Much of the attention given to this particular market crash by economists, academics, business leaders, and politicians either preceded or occurred simultaneously with the FRB pumping liquidity into the markets. Given that the FRB’s role is not to intercede in stock market gyrations one might infer that the FRB injected liquidity into the financial markets to ease the growth of fear and panic – market psychology – that was being vocalized by investors, politicians, business leaders, and the general public.

**Information Processing**

Most public policy issues by nature are complex and multidimensional. When complex issues demand quick policy decisions it’s inevitable that only a few elements of that issue will receive attention. It can be extremely difficult, if not impossible, to focus
on all the underlying elements at once. Therefore, as a matter of practicality, policymakers devote their attention to the most visible and contentious elements of an issue and particularly if the issue and its associated elements have risen on the political agenda as a result of a crisis. This is the case with most, if not all, public institutions and the FRB is no exception. When faced with a financial crises or an asset price bubble the FRB must make policy-shifting decisions under the constraints of bounded rationality, serial information processing, and positive feedback loops.

**Bounded Rational Decision Making**

Decision making for all humans is confined within the concept of bounded rationality. We are all limited in our cognitive abilities and our attention spans. The staff at the FRB and the institution itself is no exception. “Institutional systems, like people, can focus intensely on only a limited number of public policies, which is one major reason that policymaking is invariably assigned to policy subsystems, in the U.S. and across the world” (Baumgartner et al, 2009, p. xxiii). Therefore, since policymaking organizations are staffed with humans the results of internal decision making processes are bounded by cognitive and attention span limitations. Interestingly enough, bounded rational decision making is found in both punctuated and equilibrium moments – punctuations because “events” can create an urgency to act and act now and equilibrium because of prior “events” that have created a current understanding of how things work. Working in tangent with bounded rationality is the manner by which information gets processed.
Serial and Parallel Information Processing

A companion to bounded rational decision making is serial and parallel information processing. *Serial processing* refers to the act of devoting attention to one issue at a time, while *parallel processing* refers to the act of devoting attention to many issues simultaneously. Sabatier (2007) explains that high-profile issues are debated one at a time. Policy shifts at the FRB without doubt qualify as high profile issues. “Too often decisions on monetary policy – and, indeed, on other policies – are taken ‘one at a time’ without any clear notion of what the next several steps are likely to be. In central banking circles, it is often claimed that such one-step-at-a-time decision making is wise because it maintains ‘flexibility’ and guards against ‘locked in’ decisions that the central bank will later regret. Sentiments like this were often expressed at FOMC meetings and at international meetings...” (Blinder, 1998, pp. 14-15).

Positive and Negative Feedback Loops

The U.S. political system experiences both positive and negative feedback loops, although not in a simultaneous manner. Baumgartner (2009) describes the difference between the two as a struggle between order and disorder. During the positive feedback process public policy shifts can be described as sudden and dramatic. Conversely, during the negative feedback process public policymaking can be described as incremental and favoring stability. “Positive and negative feedback processes lead to the creation, the destruction, and the evolution of the institutions of public policy. As new issues rise to and recede from the political agenda, as old issues come to be
understood in new ways, and as the institutions of government compete with each other for control over important areas of policy, institutional structures are continuously revamped, modified, and altered” (Baumgartner, 2002, p.2).

Policymaking at the FRB during the Greenspan era fits within Baumgartner’s description of the positive and negative feedback processes. Positive feedback loops were in play during the two primary “episodes” of the Greenspan era. The first episode being the punctuated moments marked by the stock market crash of 1987 and the S&L crisis that peaked in 1989 while the second episode was marked by the collapse of LTCM in 1998, the Y2K “millennium bug”, and the tech-stock bubble in 2000. During the Greenspan era negative feedback loops were also in play during the equilibrium years – approximately 1992 –1997 and 2002 – 2006. By comparison to the punctuated episodes mentioned above the years of negative feedback loops were stable and policy shifts were made incrementally.

The positive feedback loop that was in play can be described as a self-reinforcing herding-like process. The more people that were entering the stock markets and buying particular stocks encouraged others to follow suit. When it came time to exit the markets by selling stock the same was true, but just in the opposite fashion.

Baumgartner (2002) refers to this type of behavior as mimicking and he offers other examples – (1) crossing a street when a red light is present, (2) an audience’s applause during a public performance, (3) the act of patiently standing in a line, and (4) the purchase of residential real estate. If people are crossing the street despite a red light, applauding an actor’s performance despite the on-going performance, exhibiting
patience despite standing in a long line, or purchasing residential real estate despite exponential price increases then it is likely that others will follow suit. The main point being made here is that human behavior is heavily influenced by the behavior of other humans and that this collective behavior can lead to market failures that then must be responded to in the form of FRB policy shifts.

In conclusion, this literature review demonstrates the FRB’s susceptibility to political influence by particular government institutions, e.g. Congress, banking committees, Treasury, White House administration. Congress has the authority to change the institutional structure of the FRB, banking committees of both the Senate and House regularly deliberate on policy that falls under the FRB’s policy umbrella, the Treasury Department sells U.S. debt instruments to the FRB, and the White House (President) makes political appointments.

The literature also reflects the existence of an active FRB subsystem, FRB policy monopoly (monetary policy), and a policy image that is rigorously protected by the FRB. Additionally, the literature reveals that interest mobilizations can influence and/or infiltrate the subsystem, policy choices, and images. This is often the result of heightened attention to problems and issues, e.g. financial crises, proposed policy changes, and can be traced through the rising and falling of these items on the political and public agendas.
METHODS and DATA

Shifts in policy have been studied by public policy scholars for many years (Baumgartner and Jones, 1993; Birkland, 2005), but the legislative aspects of policy shifts have largely been absent until the more recent development of legislative data sets (Alder and Wilkerson, 2009). These new studies have made significant contributions to our overall understanding of how public policies have shifted. Important indicators can be found which range from institutional relationships, the rise and fall of agenda issues, the processing of information, and how policy images and monopolies evolve. The methods and data of these studies have been incorporated into this study.

Design

To test my hypothesis and answer my research question I have theoretically and statistically analyzed a variety of data and relevant issues. Theoretically speaking I have analyzed issues that have surfaced on political agendas, gained media and public attention, and reflected an institution-to-institution relationship with the FRB. Statistically speaking I have analyzed these same areas along with shifts in the federal funds rate, inflation and unemployment. My intent has been to investigate whether the PE theory could adequately explain shifts in policy by the FRB and to test the significance of variable relationships during moments of punctuations and moments of normality. The data for this study originated from government databases, credible websites dedicated to the collecting and analysis of relevant data, and existing academic and professional literature.
The baseline years under investigation were 1987 – 2006 which coincide with the Alan Greenspan era at the FRB. During this time frame my analysis was focused on these punctuated moments: stock market crash of 1987, S&L crisis of 1989, collapse of LTCM in 1998, Y2K “millennium bug” panic, and the tech-stock bubble of 2000.

My methods of analysis were guided by the foundational components of the PE theory – political institutions, subsystems, policy monopolies, agenda setting, interest mobilizations, issue definition, policy images, bounded rational decision making, serial and parallel information processing, and positive and negative feedback loops. Existing academic and professional literature provided the source material for this aspect of my research.

Complementing and adding depth to my analysis was the statistical testing of the PE theory with empirical data. The researchers at the Policy Agendas Project have devoted considerable effort to collecting, organizing and coding of policy related data from a variety of archived sources. The data I have collected enabled me to utilize the dominant methodology of research in public policy studies: content analysis of archival data coupled with a statistical component (Cooper, et al., 2008). The statistical analyses were conducted with the statistical software SPSS 16.0. Specifically, I used the output from a series of regression analyses to derive my statistical inferences.

Data Sources

The bibliography of this paper contains all the sources of reference material that I used to conduct the theoretical analyses. These sources consisted of peer-reviewed academic research articles, academic and professional journal articles, academic
graduate-level textbooks, and mainstream media books authored by a variety of university professors and professionals in relevant fields of work. The majority of literature was weighted toward literature of an academic nature.

The data sources for statistical analyses were:

- Policy Agendas Project (www.policyagendas.org)
- Federal Reserve Bank (FRB) (www.federalreserve.gov)

The Policy Agendas Project provided the historical data which consisted of congressional hearings, congressional quarterly articles, enacted public laws, presidential executive orders, New York Times articles, and Gallup’s Poll of the most important issues. The FRB provided the historical data on the effective federal funds rate and the BLS provided the historical data on inflation (CPI-U/NSA) and unemployment (NSA).

At the request of the principal researchers at the Policy Agendas Project the following statement is being provided: "The data used here were originally collected by Frank R. Baumgartner and Bryan D. Jones, with the support of National Science Foundation grant number SBR 9320922, and were distributed through the Department of Government at the University of Texas at Austin and/or the Department of Political Science at Penn State University. Neither NSF nor the original collectors of the data bear any responsibility for the analysis reported here" (Jones, et al, 2010).
Data Groups

Literature

For the purpose of conducting my theoretical analyses I gathered relevant literature and categorically grouped it based on the foundational components of the PE theory. This group of literature is largely represented in the Literature Review chapter, listed in the bibliography, and theoretically it tells the story of policy shifts at the FRB. This categorical grouping is presented below:

- Political Institutions
- Bounded Rational Decision Making
- Issue Definition
- Agenda Setting
- Interest Mobilizations
- Subsystems
- Serial and Parallel Information Processing
- Positive and Negative Feedback Loops
- Policy Images
- Policy Monopoly

Policy Agendas Project

The Policy Agendas Project contains quantitative data on the variables of interest and for visual clarity Figure 4.1 summarizes these “top level” data groups:
Within these top level data groups, filters were generally available for the purpose of drilling down on specific issues. Of the data filters available I’ve indicated below which filters were applicable to this study and which ones were not:

- **Congressional Hearings**:
  - Legislative matters (included)
  - Budget appropriations (excluded)
  - Agency creation (included)
  - Program creation (included)
  - Issue proposed by the President (included)

- **New York Times Index**:
  - Stories on government action/public policy (included)
  - Stories related to national events (included)
  - Related to NY and NY region (excluded)
  - Stories of a domestic scope and international scope when involved with domestic issues (included) and international only (excluded)
• Stories involving these actors and groups – federal agencies (included), President/administration (included), Congress/congressmen (included), courts/judges (excluded), state and local government actors (excluded), candidates/campaigns mentioned (excluded), and interest groups (included)

• Public Laws:
  • Commemorative laws (excluded)
  • Vetoed laws – vetoed and not vetoed – (Included both)
  • Introduced by a Democrat – only introduced by a Democrat and exclude introduced by a Democrat – (included both)
  • Discussed in the Congressional Quarterly – discussed and not discussed – (included both)

The remaining top level groups not included in the above list – Congressional Quarterly articles, executive orders, state of the union speeches, Gallup’s Poll of most important issues – had the following filters applied to them:

• Banking, Finance, and Domestic Commerce:
  • Bankruptcy
  • Consumer Finance, Mortgages and Credit Cards
  • Consumer Safety and Consumer Fraud
  • Copyrights and Patents
  • Corporate Mergers, Antitrust Regulation, and Corporate Management Issues
  • Domestic Disaster Relief
  • General Banking, Finance and Domestic Commerce
  • Insurance Regulation
  • Other (Banking, Finance and Domestic Commerce)
  • Research and Development (Banking)
  • Securities and Commodities Regulation
  • Small Business Issues and Small Business Administration
  • US Banking System and Financial Institution Regulation

• Government Operations:
  • Currency, Commemorative Coins, Medals, US Mint
  • Federal Government Branch Relations and Administrative Issues
  • Government Efficiency and Bureaucratic Oversight
  • Intergovernmental Relations

• Macroeconomics
  • General Domestic Macroeconomic Issues
  • Industrial Policy
Inflation, Prices and Interest Rates
Monetary Supply, Federal Reserve Board, and the Treasury
National Budget and Debt
Other Economic
Price Control and Stabilization
Taxation, Tax Policy, and Tax Reform
Unemployment Rate

Figure 4.2 is a schematic intended to clarify the hierarchy of data choices made from the Policy Agendas Project database:

Figure 4.2 Hierarchy Schematic of Policy Agendas Project Data Groupings
Note on the Policy Agendas Project: Further details on each of these categorical levels, the mechanics of using the website’s analysis tools, and detailed descriptions on data collecting, sorting and coding can be found on the Project’s website [www.policyagendas.org](http://www.policyagendas.org).

Federal Reserve Bank (FRB)

The FRB data that I collected served both qualitative and quantitative purposes. The qualitative data served to help “tell the story” about the FRB’s history, its operational structure, and the policy influences as perceived by the FRB. The
quantitative data – federal funds rate, inflation, unemployment – served as dependent and independent variables for statistical analyses.

**Validity and Reliability**

Prior to undertaking this study I searched for relevant literature to discover that similar theoretical approaches to understanding FRB policy shifts had not been undertaken. Failure to find rich research gave rise to concerns that the application of the PE theory to FRB policy shifts was a potentially flawed approach. I therefore engaged in conversations with members of my graduate committee, professors with theoretically based research histories, and Professor Frank Baumgartner. These conversations convinced me that the study of FRB policy shifts using the PE theory perspective was indeed a good fit.

Despite this good fit there still remains the issue that no literature addresses similar studies. One way that I have combated this literature deficiency was to draw on existing literature whereby the PE theory has been applied to other macro-level policy arenas. For example, there is an extensive body of literature where the PE theory has been successfully applied to fiscal policies, budgeting policies, education policies, energy policies, to name a few. I therefore relied upon these studies to guide my overall analysis processes and to help shape my inferences. To supplement this body of literature I also turned to academic and professional journal articles, textbooks, and mainstream publications to understand the intricate workings of the FRB.

In regards to the quantitative data I’ve collected the Policy Agendas Project has been and continues to be funded by the Political Science Division of the National Science
Foundation, which has lent to its overall credibility and reliability. The principle researchers at the Policy Agendas Project state that the data sets are meticulously coded and reliability standards are imposed thus leading to policy change measures that have the same fundamental meaning across time (Baumgartner and Jones, 2002). Likewise, the FRB is a valid and reliable source for the federal funds rate, inflation and unemployment.

A concern with my data sample size may also exist. For regression analysis purposes my sample size ($N$) consists of 84 observations. This is a fairly small sample, which can skew the results of my regressions. However, there is a general rule that states if a data set has 50 or fewer observations then the researcher should seriously question any statistical results and inferences made from such results (George, Mallery, 2007). Since my data sets contain 34 additional observations beyond this minimum threshold I feel confident that the results will be reasonably robust.

Finally, there are a variety of techniques for conducting regression analyses. I chose to conduct a multiple regression analysis. However, it can be argued that non-linear relationships may exist in my data and thus a curvilinear regression analyses (quadratic) would have been more appropriate. However, after conducting a variety of statistical tests checking for data normality, data stability, and data correlations I was satisfied with moving forward with a multiple regression analysis.
RESULTS

Using SPSS Software 16.0 I performed a variety of regression analyses and related statistical tests with results that were close to what I had expected. The results suggest that the FRB sets policy via the federal funds rate differently during moments of punctuation versus moments of normality. Presented below in three sections – Descriptive Evidence, Inferential Evidence, Hypothesis Evidence – I discuss the econometric models and the associated statistical outputs along with some supporting figures.

Descriptive Evidence

Descriptive statistics are designed to provide information about the distribution of data. My first task was to determine whether the data revealed the existence of punctuated moments during the time period under review. In this study, a punctuated moment is identified as a “significant departure” or “abrupt change” from long periods of stability. What exactly is a “significant departure” or “abrupt change” is situational and driven by the researcher’s interpretation of the data. As suspected, Figures 5.1 – 5.9 reveal that punctuations have occurred for each of the variables and episodes of interest. Not part of this study, but nevertheless interesting, is the appearance of a punctuated moment around the year 1995. Around 1995 inflation was increasing, the DJIA and S&P500 were at historically high levels, and the FRB was easing monetary policy (lowering the federal funds rate).
The two episodes of interest are composed of several punctuations which are listed in the above text box and are highlighted on each of the graphs with a broken circle (episode 1: first circle and time frame of 1987 – 1993; episode 2: second circle and time frame 1998 – 2001). The gray horizontal line through each graph represents the mean or central tendency of the data. The majority of these two punctuated episodes occurred above the mean. In both episodes there are clearly upward trending data spikes or punctuations being captured by the graphs.

In the following four regression analyses I capture a variety of statistical data and to test the applicability of the PE theory to my study. The following Figure 5.11 presents the means, standard deviations, and N from the regression’s statistical output:
The mean for each variable is useful in making visual sense of the relationship between all the data points and its central tendency on the line graphs. For measuring the variability around the mean the standard deviation is used. Most of the variables do not have a lot of variation around the mean; however, some exceptions exist – Inflation, Inflation-Punc’d, and Unemployment-Punc’d.

The stability or sampling error of the data is captured by the standard error (S.E.) of the mean (not shown). Small values of the S.E. of the mean indicate greater data stability, but what’s considered small is open for debate. In relationship to the mean of each variable the S.E. figures are relatively small.

To check the data for normal distributions I produced histograms with a superimposed normal curve for each variable (not shown). The results of the graphs are mixed and further testing needed to be conducted. I therefore produced kurtosis and skewness values to test each variable for normal distribution deviations (not shown). The vast majority of these values fell within the acceptable range of +/- 2.
To check for bivariate correlation amongst the variables I used a Spearman correlation test. This is the preferred test when normal distributions might be of concern. The results (figure 5.13) indicate no strong correlated relationships between the variables given most values were approximately closer to zero than +/- 1. Furthermore, the variables – inflation_punc’d, unemp_punc’d, CQ, CH, PL – were statistically significant at $p = .05$ (2-tailed).

And finally, to check the possibility of curvilinear relationships between the dependent variable and each of the independent variables I created scatter plots with superimposed linear and curvilinear trend lines (not shown). To a larger or lesser degree each graph depicted the existence of a curvilinear trend line. In some instances, it appears that data outliers may partially be contributing to this occurrence. In three cases – CQ, NYT, Gallups – including a quadratic term raised the R-square value and moderately changed the constant and parameter estimates.

**Inferential Evidence**

The following inferential evidence is a further analysis of the statistical output of econometric models #1 - #4. I begin with econometric model #1 which takes the following form:

$$r_t = b_0 + b_1 \pi_t + b_2 \mu_t + b_3 \delta_t + \epsilon_t$$

where, $r_t$ = federal funds rate; $\pi_t$ = inflation; $\mu_t$ = unemployment; $\delta_t$ = CQ, CH, EO, NYT, SofU, Gallup
The output is summarized in Figures 5.12 – 5.14:

### Figure 5.12 Model #1 Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.782a</td>
<td>.612</td>
<td>.564</td>
<td>1.43691</td>
</tr>
</tbody>
</table>

### Figure 5.13 Model #1 Statistics

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>95% Confidence Interval for B</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>7.597</td>
<td>2.653</td>
<td>2.863</td>
<td>.005</td>
<td>2.310</td>
<td>12.884</td>
</tr>
<tr>
<td>Inflation</td>
<td>.555</td>
<td>.574</td>
<td>.073</td>
<td>.967</td>
<td>.337</td>
<td>-.589</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-1.343</td>
<td>.216</td>
<td>-.611</td>
<td>-.223</td>
<td>.000</td>
<td>-1.773</td>
</tr>
<tr>
<td>CQ</td>
<td>.466</td>
<td>.068</td>
<td>.711</td>
<td>6.879</td>
<td>.000</td>
<td>.817</td>
</tr>
<tr>
<td>CH</td>
<td>.070</td>
<td>.029</td>
<td>.289</td>
<td>2.410</td>
<td>.018</td>
<td>.127</td>
</tr>
<tr>
<td>EO</td>
<td>-.826</td>
<td>.334</td>
<td>-.197</td>
<td>-.247</td>
<td>.016</td>
<td>-1.491</td>
</tr>
<tr>
<td>NYT</td>
<td>.066</td>
<td>.058</td>
<td>.117</td>
<td>1.143</td>
<td>.257</td>
<td>.182</td>
</tr>
<tr>
<td>PL</td>
<td>-1.172</td>
<td>.509</td>
<td>-.171</td>
<td>-2.300</td>
<td>.024</td>
<td>-.157</td>
</tr>
<tr>
<td>SofU</td>
<td>-.023</td>
<td>.024</td>
<td>-.084</td>
<td>-.960</td>
<td>.340</td>
<td>-.071</td>
</tr>
<tr>
<td>Gallup</td>
<td>-.173</td>
<td>.567</td>
<td>-.023</td>
<td>-.306</td>
<td>.761</td>
<td>-.130</td>
</tr>
</tbody>
</table>

### Figure 5.14 Model #1 ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>240.586</td>
<td>9</td>
<td>26.732</td>
<td>12.947</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>152.789</td>
<td>74</td>
<td>2.065</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>393.375</td>
<td>83</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Figure 5.12 the R-value of .782 represents a strong correlation between the dependent variable (federal funds rate) and the nine independent variables listed in Figure 5.13. The adjusted R-square value of .564 indicates that 56.40 percent of the federal funds rate is explained by this set of independent variables. In Figure 5.13 the t-
stat and significance values reflect five of the nine coefficients – unemployment, CQ, CH, EO, PL – being significantly different than zero thus indicating that these variables make significant contributions to the model \((t_c = +/- 1.96)\).

As seen in Figure 5.13, the unstandardized coefficient \(\beta\) are the regression coefficients and the constant for the regression equation. The \(\beta\) is the weighted constant that describes the magnitude of influence a particular independent variable has on the dependent variable. The sign for each \(\beta\) value reflects the direction of this change (negative sign reduces the dependent variable value and vice versa for a positive sign). For example, the independent variable, unemployment, generates a dependent variable change of -1.343. The negative sign reduces the value of the dependent variable.

The standardized coefficient Beta is the unique contribution of each independent variable upon the dependent variable when the other independent variables have been partialed out. Therefore, the independent variable, unemployment, generates a reduction of -.611 in the dependent variable’s value when the remaining independent variable influences have been partialed out.

And Figure 5.14 reflects a low residual sum of squares value of 152.789 indicating that econometric model #1 has good explanatory power. An \(f\)-test implies that the variation explained by the model is not due to chance \((f_c = 2.10 < 12.947)\) \((\text{Sig.} = .000 < p = .05)\).
The next econometric model #2 takes the following form:

\[ r_t = b_0 + b_1 \pi_t + b_2 \mu_t + b_3 X_t + \epsilon_t \]

where, \( r_t \) = federal funds rate; \( \pi_t \) = inflation; \( \mu_t \) = unemployment; \( X_t \) = punctuation dummy

The output is summarized in Figures 5.15 – 5.17:

**Figure 5.15 Model #2 Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.540*</td>
<td>.292</td>
<td>.266</td>
<td>1.86572</td>
</tr>
</tbody>
</table>

**Figure 5.16 Model #2 Statistics**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>95% Confidence Interval for B</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Lower Bound</td>
<td>Upper Bound</td>
</tr>
<tr>
<td>(Constant)</td>
<td>4.454</td>
<td>1.248</td>
<td>.357</td>
<td>.001</td>
<td>1.971</td>
<td>6.937</td>
</tr>
<tr>
<td>Inflation</td>
<td>1.239</td>
<td>.720</td>
<td>.162</td>
<td>1.72</td>
<td>.089</td>
<td>2.672</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-.168</td>
<td>.209</td>
<td>-.076</td>
<td>-.80</td>
<td>.425</td>
<td>-.585</td>
</tr>
<tr>
<td>Punctuation Dummy</td>
<td>2.121</td>
<td>.414</td>
<td>.489</td>
<td>5.12</td>
<td>.000</td>
<td>1.298</td>
</tr>
</tbody>
</table>

**Figure 5.17 Model #2 ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>114.901</td>
<td>3</td>
<td>38.300</td>
<td>11.003</td>
<td>.000*</td>
</tr>
<tr>
<td>Residual</td>
<td>278.474</td>
<td>80</td>
<td>3.481</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>393.375</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Figure 5.15 the R-value of .540 represents a moderately-strong correlation between the dependent variable, federal funds rate, and the three independent variables listed in Figure 5.16. The adjusted R-square value of .266 indicates that 26.60 percent of the federal funds rate is explained by this set of independent variables.
Also, as seen in Figure 5.16 the \( t\)-stat and significance values reflect one of the three coefficients, Punctuation Dummy, being significantly different than zero thus indicating that this variable makes a significant contribution to the model \((t_c = +/- 1.96 < 5.128)\) (sig. .000 < \( p \) = .05). Furthermore, the unstandardized coefficient \( \beta \) for the Punctuation Dummy variable produced a value of 2.121. The influence of this \( \beta \) value upon the dependent variable is of far greater magnitude than the other independent variables. Coupled with the statistical significance of the Punctuation Dummy variable leads to the inference that punctuated moments create a policy environment whereby the federal funds rate is shifted with greater magnitude.

And Figure 5.17 reflects a high residual value of 393.375 indicating that the three variables lack some explanatory power. However, an \( f\)-test implies that the variation explained by the model is not due to chance \((f_c = 3.15 < 11.003)\) (Sig. = .000 < \( p \) = .05).

The next econometric model #3 takes the following form:

\[
    r_t = b_0 + b_1 \pi \cdot \text{puncd}_t + b_2 \pi_t + b_3 \mu_t + \varepsilon_t
\]

where, \( r_t \) = federal funds rate; \( \pi \cdot \text{puncd}_t \) = inflation*punctuation dummy; \( \pi_t \) = inflation; \( \mu_t \) = unemployment

The output is summarized in Figures 5.18 – 5.20:

<table>
<thead>
<tr>
<th>Figure 5.18 Model #3 Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model Summary</strong></td>
</tr>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>
In Figure 5.18 the R-value of .491 represents a moderately-strong correlation between the dependent variable, federal funds rate, and the three independent variables listed in Figure 5.19. The adjusted R-square value of .213 indicates that 21.30 percent of the federal funds rate is explained by this set of independent variables. In Figure 5.19 the t-stat and significance values reflect one of the three coefficients – Inflation_Punc’d – being significantly different than zero thus indicating that this variable makes a significant contribution to the model ($t_c = +/- 1.96$).

As seen in Figure 5.19, the unstandardized coefficient $\beta$ are the regression coefficients and the constant for the regression equation. A comparison of the $\beta$ values for the independent variables, Inflation_Punc’d and Inflation, reveals that inflation during punctuated moments influences the federal funds rate with greater magnitude (4.852) then it would normally (-.853). Couple this observation with the statistical
significance of the Inflation_Punc’d variable leads to the inference that punctuated moments create a policy environment whereby the federal funds rate is shifted with greater magnitude.

And Figure 5.20 reflects a high residual value of 298.376 indicating that the three variables lack some explanatory power. However, an 

\[
f_{c} = 3.15 < 8.490 \quad (\text{Sig.} = .000 < p = .05)\]

The next econometric model #4 takes the following form:

\[
r_t = b_0 + b_1 \pi_t + b_2 \mu_{-puncd} + b_3 \mu_t + \varepsilon_t
\]

where, \(r_t = \text{federal funds rate; } \pi_t = \text{inflation; } \mu_{-puncd} = \text{unemployment*dummy; } \mu_t = \text{unemployment}\)

The output is summarized in Figures 5.21 – 5.23:
In Figure 5.21 the R-value of .562 represents a moderately-strong correlation between the dependent variable, federal funds rate, and the three independent variables listed in Figure 5.22. The adjusted R-square value of .290 indicates that 29.00 percent of the federal funds rate is explained by this set of independent variables. In Figure 5.22 the t-stat and significance values reflect one of the three coefficients – Unemployment_Punc’d – being significantly different than zero thus indicating that this variable makes a significant contribution to the model ($t_c = +/- 1.96$). However, the inflation and unemployment variables just miss the cutoff point for being statistically significant in this model.

As seen in Figure 5.22, the unstandardized coefficient $\beta$ are the regression coefficients and the constant for the regression equation. A comparison of the $\beta$ values for the independent variables, Unemployment_Punc’d and Unemployment, reveals that unemployment during punctuated moments influences the federal funds rate with greater magnitude (.391) then it would normally (-.379). Couple this observation with the statistical significance of the Unemployment_Punc’d variable leads to the inference that punctuated moments create a policy environment whereby the federal funds rate is shifted with greater magnitude.

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>124.248</td>
<td>3</td>
<td>41.416</td>
<td>12.311</td>
<td>.000a</td>
</tr>
<tr>
<td>Residual</td>
<td>269.127</td>
<td>80</td>
<td>3.364</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>393.375</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Figure 5.23 Model #4 ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>124.248</td>
<td>3</td>
<td>41.416</td>
<td>12.311</td>
<td>.000a</td>
</tr>
<tr>
<td>Residual</td>
<td>269.127</td>
<td>80</td>
<td>3.364</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>393.375</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The independent variable, inflation, generates a dependent variable change of 1.326. The positive sign increases the value of the dependent variable.

And Figure 5.23 reflects a high residual value of 269.127 indicating that these three variables lack some explanatory power. However, an *f*-test implies that the variation explained by the model is not due to chance ($f_c = 3.15 < 12.311$) (Sig. = .000 $< p = .05$).

**Hypothesis Evidence**

The first set of evidence is captured by Figures 5.1 – 5.10. The financial crises and bubbles of interest have been grouped into two separate episodes. Episode #1 contains both the stock market crash of 1987 and the S&L crisis while episode #2 contains the collapse of LTCM, Y2K “millennium bug”, and the tech-stock bubble. It is these episodes that are highlighted on the line graphs and within the broken orange circles. These graphs confirm the presence of punctuated moments, albeit some more pronounced than others, during the Greenspan era at the FRB (1987 – 2006).

A total of four regression analyses were conducted to test the null hypothesis, the statistical significance of the data during moments of punctuation versus moments of normality, and the overall applicability of the PE theory to my study.

Econometric model #1 serves primarily as a test of the null hypothesis ($H_0: b = 0$). Five of the four independent variables produced *t-stats* that are significantly different from zero. This is an overall indication that the null hypothesis should not be accepted. An *f*-test also confirms that the null hypothesis should not be accepted.
Econometric model #2 like the previous model serves primarily as a test of the null hypothesis. The Punctuation_Dummy variable produced a $t$-stat that is statistically different from zero. This indicates that the null hypothesis should not be accepted. An $f$-test also confirms that the null hypothesis should not be accepted. Furthermore, the $\beta$ value of the Punctuation_Dummy variable (2.121) has a much higher magnitude of influence upon the federal funds rate than does the other independent variables, Inflation (1.239) and Unemployment (-.168). The statistical significance of the Punctuation_Dummy variable and the much higher $\beta$ value indicates that policy is set differently during moments of punctuation versus moments of normality.

Econometric model #3 primarily serves as a test of whether inflation is statistically significant during moments of punctuation. The Inflation_Punc’d variable produced a $t$-stat that is statistically different from zero and the $f$-test indicates that the variation explained by the model did not occur by chance. Furthermore, the $\beta$ value of the Inflation_Punc’d variable (4.852) has a much higher magnitude of influence upon the federal funds rate than does the other independent variables, Inflation (-.853) and Unemployment (-.141). The statistical significance of the Inflation_Punc’d variable and the much higher $\beta$ value indicates that policy is set differently during moments of punctuation versus moments of normality.

Econometric model #4 like the previous model serves as a test of whether unemployment is statistically significant during moments of punctuation. The Unemployment_Punc’d variable produced a $t$-stat that is statistically different from zero and the $f$-test indicates that the variation explained by the model did not occur by
chance. Furthermore, the β value of the Unemployment_Punc’d variable (.391) has a higher magnitude of influence upon the federal funds rate than does the independent variable, Unemployment (-.379). The statistical significance of the Unemployment_Punc’d variable and the higher β value indicates that policy is set differently during moments of punctuation versus moments of normality.

In summary, the line graph results depict punctuations occurring around the episodes of interest. With minimal exceptions, each variable’s standard deviation reflects relatively small variation around each variable’s mean thus indicating stability within the data. The coefficient signs also approximated what I had predicted with signs indicating the proper direction of each variable’s relationship with the dependent variable. In addition, standardized residual histograms and other descriptive statistics generally reflect a relatively normal distribution of data, albeit some skewness does exist. And finally, all four econometric models provided enough evidence to infer that the FRB federal funds rate policy is set differently during moments of punctuations as reflected by the model’s indication to *not accept* the null hypothesis and the statistical significance of the punctuation_dummy, inflation_punc’d, and employ_punc’d variables.
DISCUSSION

Gould and Eldridge (1993) state that the majority of evolutionary biologists have accepted the punctuated-equilibrium model almost 30 years after it was first introduced. Obviously, my study is not about the evolution of species. Nevertheless, the foundational components of the PE theory help explain, just as with living organisms, that the human constructs of public policy don’t necessarily evolve in a neat linear and incremental fashion. Instead, the experience is one of periods of stability which are peppered with unexpected, rapid, and sharp jolts of change. This is what has historically occurred for new species to evolve and what has occurred for American policies to evolve. As Goertz explains, “Traditional evolutionary theory, like traditional incremental organization theory, say small, regular change is the dominant pattern. However, the punctuated-equilibrium model suggests that the modal pattern varies between massive change and relative statis” (Goertz, 2003, p. 132).

These explanations of the PE theory align with the results of my study. I have presented evidence that (1) moments of punctuation did exist during the Greenspan era, (2) the foundational components of the PE theory are relevant to describing FRB policy shifts, and (3) the results of my statistical analyses indicates that federal funds rate policy is set differently during moments of punctuation versus moments of normality.

First, I have identified five separate crises and asset price bubble events – stock market crash of 1987, S&L crisis of the late 1980s and early 1990s, collapse of LTCM in 1998, Y2K “millennium bug”, tech-stock bubble of 2000 – and then grouped them into
two separate episodes. I have then highlighted their existence on line graphs (Figures 5.1 – 5.10). As seen on the graphs these two distinct episodes demonstrate that pronounced shifts have occurred in the federal funds rate, inflation, unemployment, and the other independent variables. Furthermore, the graphs reflect that these shifts primarily occurred above the mean or, in other words, above the central tendency of where policy was being set.

Second, I explored the foundational components of the PE theory within the general context of the FRB. To accomplish this and, despite the existence of a knowledge gap in the literature, I was able to identify literature that examined the operations of the FRB, its policymaking practices, and comparable applications of the PE theory to macro-level policymaking. This literature review and the interweaving of FRB examples into the review demonstrate that the PE theory perspective is a relevant theoretical model for explaining the process of FRB policymaking. For example, the U.S. Constitution gave broad powers to and established the principal-agent relationship that Congress has with various government institutions (FRB falls under this general umbrella), Thus, Congress has the ability to mandate policy shifting directions to the FRB at any time. Additionally, I have explored and demonstrated that the President can influence FRB policy through the (Congressional approval required) Chairman and Governor appointment process, thus allowing political ideologies to enter FRB policymaking decisions, too.

In addition to political institution influence upon FRB policymaking my literature review and the PE theory also reflect that FRB policymaking evolves through a
subsystem of experts. This subsystem discourages the participation of outside “non-experts”, embraces and reinforces positive policy images such as FRB independence, economic growth, and financial stability. As a result the FRB enjoys a policy monopoly.

Special interest group mobilizations also operate to influence shifts in FRB policymaking. Figure 3.1 demonstrates the iron triangle concept by which the FRB, Congress and special interest groups interact with one another. At times these mobilizations work hand-in-hand with the FRB via the financial industry’s representation on regional FRB Boards and at other times this influence has been shown to exist via lobbying efforts to Congress or the President.

These FRB relationships reflect the constraints and limitations of humans and institutions known as serial processing, bounded rationality, and information feedback loops. My study has shown that the significant decisions being made by the FRB are confined to one or very few decisions being made simultaneously, i.e. serial information processing. I’ve also shown that positive feedback loops explain the “disorder” that occurs during moments of punctuation and that negative feedback loops explain “order” during moments of normality. And finally, FRB staffers are human and therefore bounded by their cognitive abilities and attention spans. This concept is not limited to staffers, but also applies to the institution itself. Once again, Baumgartner (2009) explains that institutional systems and people can focus on only a limited number of public policy issues at one time.

The bottom line and inescapably this study provides strong evidence that the FRB is subject to political influence, institutional agenda setting, interest group
mobilization influence, and the constraints that limit human and institutional information processing capabilities. As Siklos points out, “There is plenty of evidence that central banks are not immune to political and institutional...pressures” ((Siklos, 2002, p. 305).

Third, the statistical output from my regression analyses tested my null hypothesis which has led to the validation of the PE theory’s applicability to my study and that policy is set differently during moments of punctuation. These regressions, as explained in the Results chapter, provided evidence that the null hypothesis ($H_0: b = 0$) should not be accepted and that the alternative hypothesis ($H_1: b \neq 0$) should be accepted. Additionally, the punctuated-dummy variable incorporated into model #2 produced a coefficient $\beta$ value of important magnitude and which was also significantly different from zero. This thus infers that the federal funds rate policy is set differently during punctuations.

In summary, the PE theory suggest that any random study of a policy’s life spanning over a sufficient number of years will likely reveal a pattern of stasis and punctuations. Goertz (2003) tends to agree that incremental change most frequently describes policy change, but large and important shifts do occur thus commanding our attention. Also, Jones et al (2007) concluded that the incrementalist story is not necessarily wrong, but rather it is a partial truth of the more comprehensive story needing to be told and that story being incremental policy shifts are marked with periods of dramatic policy punctuations.
CONCLUSION

Recognizing that the results of this study do not enable me to draw irrefutable conclusions I will make some generalized comments that, in turn, can point me toward recommendations. Although not the focus of this study, other research aimed at financial crises and asset price bubbles often conclude that these events have deep and long lasting negative consequences for employment, price stability, output, asset prices, government debt levels, and national as well as individual wealth (welfare reducing). These events force policymakers to question ideological frameworks, regulatory regimes, and the actual steps needed to starve off the root causes of these societal ills.

My study helps shed light on a particular piece of the larger puzzle. Specifically, this study reveals that financial crises and asset price bubbles – system shocks or punctuations – create an environment by which the FRB is pushed in a policy shifting direction. The policy direction may reinforce the existing institutional structure of the FRB and therefore garner its support or it may alter and erode this structure and thereby be met with FRB resistance. Since government officials prefer an environment that maintains the status quo, this shift in policy direction that is created from crisis is not a favorable environment through which to be operating. And although I have provided a brief look at how FRB policy shifts occur as a result of heightened attention to crises by political institutions, special interest groups, and the general public I’ve focused the majority of my attention on policy shifts that occur via the federal funds rate instrument.
Since political institutions prefer the status quo my policy recommendation flows from this preferred construct of government operations. Furthermore, my policy recommendation is supported by the strong theoretical and empirical evidence that I've presented earlier in this paper.

Given the long history of asset price bubble implosions, financial crises, and the resulting unfavorable outcomes I believe it wise that the FRB and/or other federal institutions be charged with the responsibility to develop and follow a policy regime that is designed to monitor and deal directly with the unwarranted growth of asset price bubbles, undesirable financial market activities, corporate failures that can lead to financial instability, and other factors that can destroy the balance of the global financial system, e.g. shadow industries that escape federal oversight, perverse incentives, technological innovations.

I do not pretend that this type of ambitious policy recommendation will be easy to craft or implement. Politicians will posture themselves as if they were in an election year, public and private institutions will lobby for changes that protect their special interests, and consumers will demand measures to protect them against fraud and unscrupulous business practices. With all these interests competing with each other, traversing the road that leads to any recommendation will be fraught with disagreement.

Nevertheless, I suggest some avenues by which to carry out such an ambitious policy recommendation. First, FRB, FDIC, OCC, and SEC regulators must be given the authority, tools and capabilities to oversee and mitigate risks. This has become an
increasingly difficult challenge, but can be accomplished through the continuous education of front-line regulators and by granting them legal authority to take immediate and decisive action in the face of elevated risk levels.

Second, the less-regulated entities that operate in the shadows or enjoy less stringent oversight must be officially incorporated into the broader regulatory umbrella, e.g. credit rating agencies, mortgage brokers, hedge fund entities, over-the-counter derivative traders, off-balance sheet entities.

Third, complex and financially innovative products should be thoroughly understood as to their long-term consequences as well as creating transparent disclosures that assist regulators and investors with decision making processes. And fourth, knowing that financial markets are globally interconnected and that the U.S. regulatory structure is fragmented should necessitate that the FRB reevaluate its policy position on intervening into markets when asset price bubbles appear to be developing.

In sum, the crises that I have focused on and the results of this study indicate that policies aimed at curbing the impact of such crises will add stability to the financial system thereby emphasizing “equilibrium” as part of an overall policy strategy, and also provide the FRB with some additional assurances that exogenous influences will not erode at its independence or effectiveness.
BIBLIOGRAPHY


