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Policy Shaping Politics: Monetary Policy Deliberations in Congressional Hearings, 1976-2008

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I. INTRODUCTION

"I don't suppose that anyone would still argue that the central banking system should be independent of the Government of the country. The control which such a system exercises, over the volume and value of money is a right of Government and is exercised on behalf of Government, with powers delegated by the Government. But there is a distinction between independence from Government and independence from political influence in a narrower sense. The powers of the central banking system should not be a pawn of any group or faction or party, or even any particular administration, subject to political pressures and its own passing fiscal necessities." Allan Sproul, President of the New York Federal Reserve Bank letter to Robert R Bowie, September 1, 1948 (Meltzer 2004: 738)

"To me, public accountability is a moral corollary of central bank independence. In a democratic society, the central bank's freedom to act implies an obligation to explain itself to the public. Thus independence and accountability are symbiotic, not in conflict. . . . While central banks are not in the public relations business, public education ought to be part of their brief." Alan Blinder, Princeton University Professor and former Vice-Chairman, Federal Reserve Board (Blinder 1998: 69)

"'There are people who think the Fed should be above democracy. . . . We can debate the most fundamental questions in human existence, but God forbid anybody in elected office should talk about whether or not we need a 25 basis-point increase from the Fed.'" Representative Barney Frank, Incoming Democratic Chairman of the House Financial Services Committee (January 2007) (Guha and Kirchgaessner 2007)

Independence in respect of monetary policy and the accompanying obligations of transparency and accountability are typically regarded now as the cornerstones of "modern" central banks (Blinder 2004)—a view not widely held in the post-World War II era. The first two quotes above illustrate a shift in the priorities expressed by central bankers and academics from the mid- to the late twentieth century. For Sproul, intense conflict between the Treasury and the Fed in the 1950s led him to resent the intrusion of political control over the independence of the Fed (Hetzel and Leach 2001), whereas in the modern era, Blinder stresses that independence obliges central bankers to explain their policy decisions to the public, *ex post*.[1] The views of American politicians can be rather different, as they tend to stress the inherent limitation of independence, given the legal and political context in which central banks operate. In the turbulent 1950s, for instance, Representative Wright Patman (TX) challenged Fed Chairman Eccles, "Who is master, the Federal Reserve or the Treasury? You know, the Treasury came here first" (Hetzel and Leach 2001: 44). And with respect to the Fed's relationship to Congress, Congressman Frank's quote above reflects a frustration towards a perceived deference to the Federal Reserve by the outgoing Republican Congress, a deference which he believed was undermining the obligation of the Fed to account for its use of the powers delegated to it by Government.

The focus of this paper is on the relationship of the Federal Reserve vis-à-vis Congress, and in particular on the motivations of Members of Congress (MCs) as they oversee the policy making decisions of the Fed. We start in the mid-1970s, in the

period of sustained high inflation, and end in early 2008, thereby capturing the early days of the financial crisis. In terms of the scope of our question, while we acknowledge the important contributions from the literature on the politics of monetary policy,[2] our primary concern here is the extent to which the motivations of MCs who conduct monetary policy oversight hearings may have changed between the mid-1970s and 2008. Whereas in 1951, Rep. Patman perceived the Fed as clearly subservient to the Treasury, by 2007, Rep. Frank expressed frustration that perhaps the Fed had become *too* independent and autonomous. During that half century much had changed in American monetary policy, and yet, unusually, the academic literature is largely silent on how these changes may have shaped the perceptions and motivations of MCs vis-à-vis the Fed. We contend that (a) contemporary literature on the motivations of MCs with respect to monetary policy has produced mixed and ambiguous results, and (b) this literature has failed to capture an underlying dynamic in which policy outcomes have come to shape the motivations of MCs in overseeing the Fed.

Specifically, we examine the evolution of congressional oversight of the Fed in order to better understand the thinking of MCs. Our approach is unusual in that it measures statistically the deliberations of Members of Congress in the House and Senate banking committees during the oversight hearings on monetary policy for eight periods from 1976 to 2008. The reason for choosing this span of the history of US monetary policy is that it coincides with the Great Inflation of the 1970s, the radical action taken to cure that problem (initiated by the so-called Volcker Revolution of 1979), the subsequent period of stability and low inflation and ends with the early days of the current financial crisis. This was a period during which monetary policy also came to the forefront as the tool of macroeconomic stabilization. Hence, as low inflation became the norm, and as monetary policy became the primary tool to achieve and sustain macroeconomic stability, it is reasonable to think that the role of congressional oversight likewise changed to fit the times.

We largely stop short of seeking to analyse the impact of the current financial crisis on congressional oversight of the Fed. It is worth noting however that in a financial crisis of the current scale, only governments can ultimately solve the problem since only governments can spread the cost of resolving the crisis (a) across all taxpayers, and (b) over time—in the limit they can carry out inter-generational transfers, i.e., tax the next generation. The underlying rationale for such governmental activism in the face of bank failures is, of course, the "too big to fail problem, where the cost is a loss of financial stability, and thus is important to the wider economy. Invariably the fiscal implications of the current financial crisis will affect relations between Congress and the Fed. We intend to cover this most recent development in a future paper once there is a sufficient body of evidence from the records of congressional oversight.

We begin the paper with a short overview of how monetary policy emerged as the primary tool of macroeconomic stabilization, and speculate on the effect of this transformation on congressional oversight. Section III then describes the background of the period from the mid-1970s to 2008. Our analysis of congressional hearings intersects with two strands of literature in legislative studies—one that examines the motivations of legislators and another which explores their deliberations. Sections IV and V assess the merits of these two strands of literature as they pertain to monetary

policy oversight committee hearings. Section VI frames the key questions in our study and Section VII describes the data used and the methodology of full text analysis. Section VIII describes the results , while Section IX concludes.

II. ANTECEDENTS

The Federal Reserve was founded as a part private, part public institution, "a peculiar hybrid" (Meltzer 2004: 725). The private ownership of the regional Federal Reserve banks by local member commercial banks was designed to act as a bulwark against central government influence. But it attracted concerns from agricultural and commercial interests that the Federal Reserve would act for the benefit of large banks against the interests of the public. This concern was reflected in a long-run stream of opposition to the Fed from congressional Democrats with notably agricultural district interests. This history helps to explain a number of important themes of Fed-Congress relations.

First, even though after the Second World War, public attitudes changed towards the role of the public sector (defined here to include the central bank) in economic management, we might still expect to see a deep-seated source of strain in relations between Members of Congress (notably Democrats) and the Fed.

Second, the Fed's independence was never absolute, and was never intended to be so. It was qualified by a desire from certain sections of Congress (again, more likely to be Democrats) to rein in that independence further, for instance by increasing transparency and accountability in ways that typically did not find favour with Fed officials.

And third, congressional concerns about the interests of the Fed (i.e. that it would lean towards large banks) spilled over into attitudes in Congress towards defining the monetary policy objective of the Fed.

In the early years of the Fed, stable growth of the economy was not part of its formal mandate, and most of the Fed's leadership "would have denied any responsibility for economic activity or employment." (Meltzer 2004: 9) Nor for that matter, did price stability feature in the Fed's mandate. In the 1920s, the economist Irving Fisher worked to get Congress to mandate price stability as the goal of the Federal Reserve, an unsuccessful initiative that was opposed by the Fed itself. The Fed's original mandate was very much viewed as preventing financial crises and panics, and thereby smoothing the business cycle. In the language of modern central banking, the mandate placed the stability of the financial system at the forefront of the central bank's contribution to ensuring macroeconomic stability. It is of course noteworthy that the current financial crisis has caused a re-assertion of the role of the central bank to ensure financial stability.

There was nothing very original in this view of the role of the Fed. It is a surprisingly modern view that, while monetary policy does not have long-run effects on employment, expenditure and output in the economy, there is a short run transmission from monetary policy to economic activity (first attributed to the late eighteenth/early nineteenth century economist Henry Thornton, but largely ignored until well into the twentieth century) which makes monetary policy the most potent tool of short-run

economic stabilisation. A tradition which lacked a clear understanding of the transmission of monetary policy to economic activity and the price level (i.e. the effectiveness of monetary policy) would substantially compromise not only the clarity of the Fed's own objective and actions, but also the oversight of Congress. Understanding this tradition is likewise important in dispelling the notion that there was a clear foundation for the idea of a long or short-run trade-off between inflation and economic activity/unemployment.

Another important strand in the history of macroeconomic policy is the respective roles attributed to monetary and fiscal policy. The dominant post-war view was that, relative to fiscal policy, monetary policy was relatively unimportant for economic stabilisation. This was a view held not just in successive Administrations, but also in the Fed itself. This post World War II consensus had required a change of view on the role of fiscal policy, from where balanced budgets should be the peacetime norm, to one where government spending (and hence deficits) should substitute for cyclical weakness in private spending as the means to stabilise output. Within this framework, monetary policy should seek to control high inflation, but not in a way that meant high interest rates confounding the stabilisation goals of fiscal policy. Monetary policy was therefore at best shackled and subordinated. This was an approach that brought short-run stabilisation to the fore (via the operation of fiscal policy) but without any clear anchor (in terms of a policy objective such as a target for output growth or inflation) or set of rules. Thus the 1946 Employment Act emphasised employment and production as goals of the Fed, but without establishing a clear objective. In terms of relations between the Fed and Congress, the emphasis on the use of fiscal policy as a discretionary tool for economic stabilisation was important because Congress approved the budget. The Fed could thus find itself in conflict with Congress (and the Administration) where it was attempting to use the subordinate tool to counteract the inflationary effects of fiscal policy approved by Congress itself. The tendency in post-War policy-making was therefore for Fed chairmen to gravitate towards joining the formal co-ordination of economic policy through inter-agency co-ordination with the Administration. This arrangement lasted until the 1970s, when it broke under the weight of the pressure of inflation and a realisation that fiscal policy was too inflexible to perform the role of short-run stabilisation.

Our choice of period is therefore important because it begins (in the mid-1970s) at the point where the post-War consensus on economic policymaking is recognised to be seriously broken, and ends with the establishment of the primacy of monetary policy as the tool of economic stabilisation. This primacy of monetary policy is an important component of what some have described as the "new consensus in monetary policy,"[3] which also includes the commitment to central bank independence, a focus on the end goal of low inflation, and the importance of managing expectations. Agreement among policy experts on these principles has gained widespread and international acceptance during this same time period (Bean 2007; Goodfriend 2007).

With respect to our focus on relations between Congress and the Fed, two elements of this consensus are particularly relevant—namely, the primacy of monetary policy and the agreement on low inflation as the best means to deliver sustainable economic growth and thus low unemployment. Our chosen time period covers a shift from an approach in which Congress had a formal role in approving the primary policy tool (the budget), to one where it was overseeing the agency responsible for the primary

policy tool (the Fed), *and* policy experts came to focus on the end goal of low inflation. Hereafter, we refer to this as the low inflation consensus.

This short summary of the antecedents of the period we cover has also emphasised that the modern convention that monetary policy is the primary tool of short-term economic stabilisation, and is thus aimed at delivering low inflation as the means to deliver stable growth, does not have long-established underpinnings.[4]

III. FROM THE 1970s TO 2008

Figure 1 illustrates the familiar story of a period which began with the severe challenge of high inflation and weak economic growth (for which the term "stagflation" was coined) but progressed to a story of stable low inflation and stronger and more stable growth. It covers the tenure of five chairmen of the Fed, three of whom were undoubtedly "strong characters" – Burns, Volcker and Greenspan – while there was a brief (in 1978-9) period of weak leadership (Miller). In the last period covered, we add Bernanke, but we take the view that judgement on strength of character in the role can only be made ex post.

[Figure 1 – about here]

The nature of congressional oversight changed substantially in this period. The passage of the Humphrey-Hawkins Act in 1978 formalized biannual oversight hearings before the Senate and House banking committees.[5] The Act required Fed officials to explain how their monetary policy objectives would fit with the President's economic policy, in other words how monetary policy would fit with fiscal policy. This was a legacy of the post-War consensus on economic policy, and it fuelled a dispute between the Fed and (mainly) congressional Democrats, namely the push by the latter for greater transparency on the Fed's objectives, forecasts and operating procedures.

Two issues are particularly relevant to congressional oversight of the Fed during this period. First, since the history of monetary policy indicates that in the early period, the theoretical underpinnings were weak and the role of monetary policy either subjugated to fiscal policy and/or little understood, it is hard to envisage that Members of Congress had much vision of what they sought to achieve through oversight. This would most likely have included misunderstanding of the distributional consequences (for interest groups within the economy) of monetary policy, since to understand that would require a much clearer exposition of the transmission mechanism from monetary policy decisions to activity and the price level. To the extent that an appreciation of distributional consequences existed, it appears to have been rooted in the older tradition of populist antipathy to the association of the Fed with the private interests of large banks.

Second, during the period that we study, it seems plausible that a change in the nature of congressional oversight may have resulted from the Fed's success in achieving stable low inflation. We posit that the form of oversight itself was conditional on (a) the success of the central bank in achieving its objective of low inflation, and on (b) whether there was a common acceptance among Members of Congress that low inflation was the best way to achieve sustainable growth throughout the economy, and

thus stable low unemployment. *We argue that the politics of oversight was shaped both by the policy outcome itself (the Fed's success or failure) and by the degree of consensus surrounding the objective of policy, namely the benefits of low inflation.*

Within this mix of policy success and congressional oversight there lies a paradox. The rise of the emphasis on legislative accountability as part of the package of having an independent central bank has come at a time when low inflation has been established for a longer period than at any time since the nineteenth century. In short, legislators came to play a larger role at a time when, arguably, there was in substance less for them to do. Certainly, in an era of low inflation and stable growth of the sort seen since the mid 1980 to 2008s, there was less need for them to signal their displeasure with the central bank. In the U.S. (and elsewhere), the 1990s were the key period in which the new era of stable growth and low inflation began to be accepted as a more enduring part of the economic landscape, and yet very little scholarly attention has been given to how congressional oversight adapted in the face of this change.

We seek to assess in an empirical framework the goals of members of the two congressional banking committees in order to gauge the extent to which these may have adapted to the changed role and objective of monetary policy, and to the modern era of low inflation. We introduce a new approach to gauging the motivations of Members of Congress—automated content analysis—which enables us to evaluate statistically textual data from committee deliberations. Specifically, we compare the hearings from eight periods of House and Senate oversight: 1976-77 [Burns], 1979 [Miller], 1979-81 [early Volcker],1984-86 [mid to later Volcker] 1991-93 [early Greenspan], 1997-99 [mid- Greenspan], 2003-05 [late Greenspan] and 2006-08 [early Benanke].

IV. THE GOALS OF BANKING COMMITTEE MEMBERS

What do senators and representatives strive to achieve as committee members? Generally, members of Congress are assumed to seek key political goals through committee activity, and among these, three are most important: (1) reelection, (2) good public policy, and (3) influence within Congress (Fenno 1973). The first goal—re-election—has received the greatest attention among academics, no doubt augmented by Mayhew's classic work (Mayhew 1974). In pursuing the primary goal of reelection (from which all other goals might follow), Mayhew argued that legislators would likely engage in *advertising*, or creating a name for themselves among constituents; *claiming credit* for favourable government action; and *taking positions*, or making value judgements on issues of political importance (Mayhew 1974; Mayhew 2000). All these activities are intended to curry favour with a legislator's home constituency—indeed, in pursuing the electoral goal, legislators effectively act as *delegates* to their constituencies. In contrast, legislators might seek to represent the national or wider public interest, and thereby perceive themselves as *trustees* who follow their own judgement in deciding "good" public policy, along the lines inspired by the 18th century statesman and philosopher, Edmund Burke (Hill 1929; Eulau 1962; Burke 1996; Uslaner 1999). And thirdly, Members of Congress may be more narrowly focused on furthering their congressional career through, for example, the pursuit of influence as committee chair or higher office.

In the House and Senate banking committees, all three goals may be relevant, but gauging their relative importance has been constrained by the data; that is, the most extensive data produced by committees—namely textual data in the form of hearings, testimony and deliberations—remain largely untouched by empirical researchers.[6] Rather, studies that have sought to gauge committee members' preferences usually employ ideological measures from roll call data, using NOMINATE or ADA scores (Grier 1989; Grier 1991; Krehbiel 1991; Cox and McCubbins 1993; Londregan and Snyder 1994; Poole and Rosenthal 1997; Maltzman 1998; Young and Heitshusen 2003)), or measures of constituency characteristics (Shepsle 1978; Adler and Lapinski 1997; Adler 2000; Adler 2002). Positing that banking committees seek to influence Fed policy, some studies have observed a correlation between the liberal/conservative ranking of the chair of the Senate Banking Committee and the subsequent ease/tightening bias in monetary policy (Grier 1991; Chopin, Cole et al. 1996; Grier 1996)—which might reflect the veto power of the Senate over appointments to the Fed Board. However, other studies have disputed this correlation (Beck 1990).

More recently, Chang has attempted to gauge the preferences of senators from their statements at the seminannual monetary policy hearings from 1974-1995 (Chang 2003: 45). She argues that senators do influence monetary policy through their "advice and consent" privilege with respect to Board of Governor appointments, which constitute seven of the twelve members of the FOMC.[7] Unfortunately, her coding scheme (upon which she does not elaborate) relies upon her own manual reading and codification of the hearings, and is, moreover, limited to just the Senate hearings from 1974 to 1995.

More broadly, scholars of legislative committees often examine the extent to which legislators seek membership on committees with jurisdictions that provide district-specific benefits, and thus strive to distribute benefits to their constituents through committee activity. For some committees such as agriculture, these benefits are conspicuous and the distributional motivation is strong. For other committees like banking, district specific benefits are less self-evident—particularly given the weak theoretical underpinnings for the distributional consequences of monetary policy, as discussed in Section III.[8]

As an unusual area of legislative oversight with little scope for electoral benefit, some authors suggest that legislators may seek to "shift-the-responsibility" for implementing tight monetary policy to the Fed in order to escape the inevitable electoral harm from groups and industries that might suffer from such a policy (Kane 1980; Fiorina 1982; Beck 1990). Moreover, because policymakers and scholars alike have come to embrace the consensus that low inflation benefits all, Members of Congress cannot expect to enjoy constituency-specific electoral benefits from a low inflation outcome, or as Beck notes: "Those who gain from a decline in inflation are a more diffuse group and are not likely to be terribly thankful to their Members of Congress on election day. This is particularly true because no Member of Congress can claim credit for bringing down inflation" (Beck 1990: 135). Indeed, Beck concludes that Members of Congress remain largely inactive in monetary policy because they cannot claim credit for lowering interest rates. He further maintains that risk-averse legislators do not attempt to reform the Fed (e.g., by repealing the Fed's current control over its own budget[9] or by exerting pressure on the Fed to engage in credit allocation) because of the uncertain electoral payoff (Beck 1990: 143). In this

view, Congress gives the Fed a relatively free rein in making monetary policy. Whereas *in principle* Congress could reverse decisions of the Fed, remove Fed governors, or even dismantle the Fed, Members of Congress have never opted to do so.

We are thus left in a quandary as to the motivations of legislators who conduct oversight hearings on monetary policy. If they can glean no direct electoral benefit from bringing down inflation, are there other aspects to the hearings that might yield electoral gain? If Mayhew's credit claiming activity bears little fruit in the context of these high profile hearings, might committee members seek some other electoral benefit, such as name recognition or taking a position? Alternatively, is there evidence to suggest that their deliberations reflect the desire to enact good public policy—even one as simple as forcing the Fed to, as Blinder argues in the opening quote, "explain itself to the public"? Or perhaps members may wish to exhibit their commitment to addressing an important national policy, such as the levels of inflation and employment. And finally, is there any evidence to suggest a role for our third motivation—seeking influence in Congress? Might, for example, committee members (either as regular members or chair) give any indication that their membership on the banking committee might confer on them special influence within the House or Senate? In short, research provides mixed findings for the motivations of Members of Congress in the House and Senate banking committees. Active participation might reflect electoral, good public policy, or influence in the chamber objectives; or, a more passive stance might simply indicate an electoral motivation that is risk-averse and thus satisfied with shifting the responsibility for implementing unpopular policy to the Fed. Given the uncertainty surrounding these findings we seek a different means for gauging these motivations—the arguments and deliberations of members themselves in committee.

V. DELIBERATIONS IN COMMITTEES

Given the mixed results of previous studies in measuring the motivations of banking committee members, we contend that a richer understanding might be had by examining more closely the ways in which members of Congress process information. That is, what sorts of arguments and rhetoric did they employ to challenge (or defend) the decisions of the Fed on monetary policy? And, to what extent did they come to accept the low inflation consensus—i.e., that low inflation is the best means to deliver sustainable economic growth and thus low unemployment? In short, how did members process information on monetary policy within the banking committee setting and if we are able to capture this process systematically, how might it inform our understanding of the goals of legislators' oversight of the Federal Reserve?

While our *systematic* approach to studying the verbatim transcripts of the committee hearings is new, Havrilesky (Havrilesky 1993) has attempted a form of content analysis on the congressional hearings records. His approach is quite simple, using a raw word count of references to the words "unemployment", "employment", "interest", "interest rates", "inflation", and "inflationary", measured separately between members of Congress and the Fed chairman of the day, from 1975 to 1992. Havrilesky assumes that mentioning inflation indicates a desire for tighter monetary

policy, while mentioning unemployment or interest rates indicates a desire for easier monetary policy. He ignores references to other terms such as credit conditions, capital formation, and the budget deficit, on the grounds that they are not synonyms for the essential variables of monetary policy, and that they have appeared inconsistently throughout the period. While Havrilesky's findings are informative about the possible correlation between hearings and Fed policy, his approach reveals little about the deliberations of Members of Congress in these hearings.[10]

In contrast, we use automated content analysis to capture the thematic structure of the committee deliberations as well as the tendencies of particular members to speak to specific themes (and possibly to avoid others). We assume that committee members seek to process information and arrive at judgements based on argued reasoning, and in this sense, we concur with Quirk's definition of deliberation as "the intellectual process of identifying alternatives, gathering and evaluating information, weighing considerations, and making judgments about the merits of public policies" (Quirk 2005: 316). We maintain that the deliberations of politicians should reflect their distinct sets of aims and objectives; consequently, what MCs say should provide an indirect measure for their motivations as members of the House and Senate banking committees.

A key goal in our analysis is to understand better the deliberative process that underpins legislators' thinking about monetary policy, and at the same time link these considerations to their underlying goals as elected officials. Within the rapidly growing literature on deliberation (Page 1996; Elster 1998; Fishkin and Laslett 2003; Pettit 2003; Barabas 2004; Austen-Smith and Feddersen 2006; Crowley, Watson et al. 2008) is a subset of works that seek to measure empirically the deliberations of legislators. Quirk and Mucciaroni (Quirk 2005; Mucciaroni and Quirk 2006) examine the deliberations of Members of Congress in floor debates (and, to a lesser extent, in committee) while Schonhardt-Bailey (Schonhardt-Bailey 2008) gauges the dimensionality of voting and debating in the U.S. Senate.

In perhaps the most extensive recent study of deliberation by legislators, Steiner and co-authors propose a number of testable hypotheses for assessing if and when "political talk" influences political outcomes (Steiner, Bächtiger et al. 2004). Building on the model of deliberation developed by Jürgen Habermas, they focus on five key empirical components of deliberation[11] to assess legislative debates and committee hearings in four countries (U.K, U.S., Germany and Switzerland). Three of the hypotheses for which they find support are of particular relevance to our study of banking committee members. First, they hypothesize that the quality of deliberation in the second chamber (Senate) is higher than in first chambers (House) (Steiner, Bächtiger et al. 2004: 87, 127-128)—a finding for which Quirk and Mucciaroni also find support, and for much the same reasons: second chambers are generally designed to give more thorough examination to policy proposals, their members typically have more extensive prior political experience and are elected for longer terms (which reduces the electoral incentive). The number of members in second chambers is smaller, which lessens constraints on speaking time, enhances closer working relationships and promotes stronger "civility" norms. Other reasons for higher quality deliberation by senators include lower party cohesion in the Senate relative to the House, which allows more scope for cross-party coalitions, and larger constituencies for senators, which creates cross-cutting pressures that appear to favour more open

debate. With respect to monetary policy specifically, senators might be expected to deliberate more carefully since they—unlike their House colleagues—oversee Fed appointments to the Board of Governors. *Adapted for this study, we should expect the reasoning skills and judgments of senatorial banking committee members to outweigh those of their House colleagues.*

Second, Steiner et al characterize legislative committees as non-public arenas and chamber debates as public, with the former expected to exhibit a higher quality of deliberation than the latter. They contend that in committee settings, legislators are less exposed to external influences (thereby less pressured to adhere to the demands of constituents); smaller "face-to-face" arenas also enable legislators to better reflect on issues and possibly change their opinions, to show respect for the views of colleagues, and to create working friendships. All these factors enhance mutual trust and thereby "lubricate the deliberative process" (Steiner, Bächtiger et al. 2004: 88). Their findings suggest clear differences in deliberation between public and non-public arenas: legislators tend to employ discourse in public in order to "score points" with citizens, and in so doing, they tend to appeal to the common good with well-crafted arguments. In non-public settings, legislators craft their statements more towards their colleagues who, as policy experts, do not require elaborate explanatory arguments. (Steiner, Bächtiger et al. 2004: 131)

While on the whole, committees are no doubt less public than floor debates, the formal legality of monetary policy hearings in Congress (as prescribed by the 1978 legislation), alongside the frequent televised coverage of these hearings, makes them more public than other mundane congressional hearings. One need only reflect on the media coverage of Alan Greenspan to accept that these committees are known to the American public and as such, allow scope for MCs to "take stands" and at the extreme, even grandstand, as in the case of Rep. Bernie Sanders. Sanders, an Independent Socialist, subsequently became Senator for Vermont in 2006, no doubt aided by his populist stance.[12] (His famous exchange with Alan Greenspan in the July 2003 House committee hearing receives five stars on YouTube and by April 2009, had been viewed about 51,000 times.)

Our study does not provide us with a direct comparison between the deliberations of MCs on monetary policy in banking committees and equivalent deliberations in floor debates; however, *we suspect that committee hearings on monetary policy may exhibit a mixture of both public discourse and non-public discourse—that is, we expect to find both point-scoring on popular and high-profile issues, along with exchanges among experts on the details of monetary policy.*

A third hypothesis concerns political polarization and deliberation. While some authors have argued that deliberation may itself produce polarization, with members of the deliberative group moving to more extreme positions (Sunstein 2003), we do not explore this possibility. Like Steiner and his colleagues, we consider polarization as exogenous to the discourse in monetary policy committee hearings. Steiner et al posit that non-polarized issues exhibit better quality discourse among legislators than polarized issues (Steiner, Bächtiger et al. 2004: 89). Polarization is defined in terms of the ideational, or ideological dimension (Poole and Rosenthal 1997; Fiorina, Abrams et al. 2005; McCarty, Poole et al. 2006), but with a large degree of variance among issues. Non-polarized issues are those for which elites agree on key values, while on

polarized issues, elites display sharp disagreements (Steiner, Bächtiger et al. 2004: 89). As one might expect, legislators interact more cooperatively on non-polarized issues, where they agree on core values.

Applied to monetary policy, the effect of polarization on deliberations in committee hearings is ambiguous. On the one hand, strong evidence suggests that across the ideological spectrum, Congress has become far more polarized in the past 30 years (Poole and Rosenthal 1997; McCarty, Poole et al. 2006), and so we might expect more disagreement among committee members. On the other hand, the consensus among policy experts on the primacy of monetary policy for economic stabilization and the focus on the end goal of low inflation gained widespread and international acceptance during this same time period (Bean 2007; Goodfriend 2007), and so we might expect to find more agreement among MCs on the underlying objectives of monetary policy. *On balance, we anticipate a greater influence for the new consensus surrounding monetary policy, and expect to find some evidence for the progression toward this consensus among MCs over time.*

VI.   QUESTIONS

The empirical evidence on the role of congressional oversight vis-à-vis the Federal Reserve is thin, consistent with the lack of convenient source material for conventional econometric analysis provided by oversight hearings. There are no votes in the oversight hearings that could enable us to measure the positions and motivations of Members of Congress. Moreover, much of the literature in the field of Congress/Federal Reserve relations pre-dates the more recent period of sustained low inflation, and hence, successful monetary policy, and thereby does not provide a full picture. In this literature the authors tend to envisage congressional oversight of monetary policy as more static than dynamic—that is, fundamental shifts in the state of the economy and the success of monetary policy are not generally understood to shape the nature of congressional oversight itself. Inasmuch as a lengthy period of low inflation changed the expectations of economic actors, it is likely that the Fed's success in delivering on this outcome also shaped how Members of Congress perceived the Fed. We thus argue that the nature of congressional oversight is likely to be dependent on the state of the economy, and in particular, on the Fed's success in achieving its objectives of low inflation and stable growth (high employment). We maintain that with the emergence of the era of low inflation and the success of the Fed's conduct of the monetary policy regime, the oversight behaviour of the banking committees has changed.

Our use of textual analysis of congressional oversight hearings has therefore been directed at three basic questions:

1. What were Members of Congress seeking to achieve in oversight hearings between 1976 and 2008?
2. Did their objective change over time--in line with the changed role and importance of monetary policy, and the success of the Fed in tackling the Great Inflation of the 1970s?
3. Was there a change in the coverage of fiscal policy in the oversight hearings, again to reflect the changed role and importance of monetary policy and the Fed's success against inflation?

Given the direct relevance of our study to the literature on deliberation in legislatures, we also gauge the extent to which our findings mesh with those of Steiner et al, and so we posit that:

1. The reasoning skills and judgments of senatorial banking committee members should be superior to those of their House colleagues.
2. Committee hearings on monetary policy will likely exhibit a mixture of both public discourse and non-public discourse—that is, we expect to find both point-scoring on popular and high-profile issues, along with more technical exchanges on the details of monetary policy.
3. Discourse in committee hearings on monetary policy should reflect an emerging consensus among MCs on the goal of low inflation as the best means to deliver sustainable economic growth and thus low unemployment and on the primacy of monetary policy as a tool of economic stabilization.

VII. DATA AND METHODOLOGY

a. Data

The data consist of transcripts from hearings in House and Senate committees on the Fed's Monetary Policy report from the mid 1976 to 2008. There are 31 House hearings[13] and 30 Senate hearings[14] grouped into sixteen text files (one file for each chamber in each of the eight time periods).

Within the text files, each speech, question or interjection by a committee member or the Fed Chairman constitutes a "case"[15]. Each case is identified (or "tagged") with identifying characteristics, including the date of the meeting, and for Members of Congress (not Fed Chairmen) the speaker's name, party and whether the speaker is the committee chair or a member.[16]

b. Methodology: Computer-Assisted Content Analysis

Automated content analysis of political texts has captured the attention and imagination of political scientists, with researchers seeking to measure empirically the policy positions from political party manifestos and legislative speeches (Gabel and Huber 2000; Laver and Garry 2000; Laver and Benoit 2002; Laver, Benoit et al. 2002; Albright 2007; Benoit and Mikhailov 2007; Slapin and Proksch 2007), the dynamics of political agenda-setting in Congress (Quinn, Monroe et al. 2006), political culture (Garson 2002), and to classify or extract meaning from political texts more generally (Godbout, Diermeier et al. 2007; Hillard, Purpura et al. 2007; Hopkins and King 2007; Monroe, Colaresi et al. 2008)

A variety of packages are on offer for automated content analysis, each providing its own array of analytical tools and insights into textual data.[17] Some packages appear well-suited to analyze very large corpora encompassing multiple topics, but usually these require a pre-coded or pre-scaled reference document from which "fixed parameters" (Lowe 2007) may be derived and employed on other documents (or the larger population of documents) to scale, code and/or classify these documents

(Laver, Benoit et al. 2002; Hopkins and King 2007). Other approaches employ machine-learning in order to mitigate the costs of human labelling, although they recognize that human intervention to monitor and guide the analysis cannot be avoided (Hillard, Purpura et al. 2007). Alceste, the approach used here and elsewhere in the social sciences,[18] does not require any pre-coding but is more limited in that it cannot analyze very large corpora[19] or corpora containing multiple discrete topics. Its chief advantage for political speeches is that it allows the researcher to analyze statistically and spatially the intersection of characteristics of the speakers with the tendency of those speakers to develop and focus on particular lines of argument. A more detailed description of the Alceste method is given in Appendix 1.

VIII.   RESULTS OF ANALYSIS OF HEARINGS

a. Identifying the Themes

Tables 1 and 2 provide summaries of the basic statistics from Alceste for the sixteen data files. The total word count for each set of hearings is given in row one. The second row indicates the number of unique words that were analyzed by the program.[20] The passive variables[21] (also referred to as tagged indicators) define characteristics of each speech or "case", and these include the speaker's name, party affiliation, and so on (as described above).

[Tables 1 & 2 – About here]

The "Initial Context Unit", or ICU, is essentially the sampling unit—i.e., a pre-existing division of the text and is specified by the user. For simplicity, we refer to ICUs as cases, or the speeches of members. This is given in row four of Tables 1 and 2.

The "Elementary Context Unit", or ECU, is a sentence or group of sentences, which the program automatically constructs based upon word length and punctuation in the text.[22] Using the presence or absence of words in each ECU, the program calculates matrices on which to build the classification process. The program conducts two preliminary analyses, each using slightly different lengths for the contextual unit.[23] It then opts for the length that allows the greater proportion of ECUs to be successfully classified, relative to the total available. Tables 1 and 2 show that percentage classified for the hearings ranges from 56% to 88%, with an average classification across all hearings of 73%.

The final two rows indicate the number of classes identified in each text file and the size of each class (as measured by the percentage of the total ECUs classified within each). The labels for each class (e.g., *Fiscal Policy, Labor Market,* and so on) are not, however, automatically given by the program.

The output provides the researcher with a number of different tools for conceptualizing the content of classes. Of the many tools, two are particularly useful—characteristic words and characteristic ECUs.[24] The most characteristic function words for each class, along with their χ^2 statistical significance (with the minimum chi-squared value for selection automatically set by the program, with one degree of freedom[25]), provide an indication of the theme or frame of argument that

unifies a class. The most characteristic words for each class are those with the highest χ^2 values. Similarly, the most characteristic phrases are given for each class, again ranked by χ^2 value. For reasons of space, we do not present these characteristic words or phrases in this paper.

b. Party and Fed Tags

Labelling the themes within the hearings is only the first step in our analysis. Tables 3 through 10 identify the level of statistical significance for each of the tags, by thematic class.

[Tables 3 – 13, about here]

In Tables 11 through 13, we summarise the findings from the previous tables into ten thematic groups across the 32 year period. To do this, we assign each of the classes from Tables 3 through 10 to one of our thematic groups. The brackets after each class label in Tables 3-10 indicate the thematic group to which the class was assigned. From Tables 1 and 2, we obtain the percentage weight of discourse classified into each of the classes (row 7). The shares are then summed (if needed) and presented in Table 12, where each column sums to 100.

Combining themes from each period under inevitably runs the risk of joining themes that have the same subject matter (e.g. fiscal policy) but very different slants on the issue. Nonetheless, these thematic groups allow us to trace broad patterns over time within the discourse of oversight hearings. Table 11 provides for each thematic heading a timeline of the party and Fed Chairman tags that are significant at the 1% level or greater (using the indicators D, R and I for political party and F for the Fed chairman). Table 11 also identifies those thematic headings where more than one party attracts a significant tag (e.g., D/R)—in these cases we conclude either that the theme attracts bipartisan support or that the parties disagree but in doing so each party tag acquires statistical significance.

Table 12 provides a summary of the distribution of the sizes of each thematic group, according to share of retained ECUs for each group. Specifically, the distribution is calculated as the percentage share of ECUs (representative sentences) retained by the textual analysis that is classified into each thematic heading. (Note that Table 12 includes themes even when none of the party or Fed tags were significant at 1%, and so is a complete portrayal of the overall distribution across the thematic groups.) . Finally, Table 13 extracts key observations from the previous two tables and presents them more clearly—namely, that (1) the Fed chairman appears to have dominated the monetary policy themes (in red), excluding that of labor markets; (2) the Democrats appear to have dominated discussion of labor markets (thematic class 3); and (3) the fiscal policy theme appears to reflect growing party polarization. We include in Table 13 the party of the president and the majority party in Congress for each time period, so as to draw initial conclusions about the political context in which the hearings take place.

c. Findings

We observe five main findings from the textual analysis.

i. Monetary Policy

In Tables 11 and 12, we indicate in red the four thematic groups that represent the "guts" of monetary policy—(1) inflation, (2) U.S. economy and output, (3) labor markets, and (4) money growth and the supply of credit. In gauging the goal and intentions of MCs, our first question is, to what extent did MCs discuss the core framework of monetary policy in the oversight hearings? The extent to which they spoke to these core themes should help us to understand their goals and intentions in these oversight hearings. Of the 38 significant tags for these themes, 21 (or 55%) are associated with the Fed chairman. However, the Fed chairman is never statistically significant for the labor markets theme; for this theme, the Democrats clearly dominate. Table 13 sheds further light on these findings in rows 1 and 2. Row 1 represents the share of the monetary policy themes (excluding labor markets) for which the Fed chairman *alone* dominates the discussion. Interestingly, the averages for each chairman (albeit only in samples) seem to underpin conventional assessments of the "strong" characters of Volcker and Greenspan (each averaging about 32% of the discussion) relative to other chairmen (with Burns averaging 28%, Miller 24% and Bernanke 26%). Row 2 shows the five periods in which the Democrats *alone* dominated discussion of the labor market theme. (In contrast, from Table 11 we can see only one period in which the Republicans alone dominated discussion of labor markets).

We can also see from Table 11 that Republicans only recently joined Democrats (and occasionally also Bernie Sanders, the Independent) in devoting statistically significant attention to labor markets and unemployment. Before 2003, the Republican tag was significant only once for this theme—in the House in 1976-77. Even from 2003 onwards, the Republicans are significant for this theme only in the House, whereas Democrats are significant both for the House and Senate. In short, to the extent that MCs were engaged in discussions regarding the framework of monetary policy, their focus was almost exclusively on concerns about unemployment and labor markets, and it was Democrats more than Republicans who tended to express these concerns.

Our first conclusion is that Members of Congress demonstrated very limited interest in debating the more technical detail of monetary policy with successive Fed Chairmen. The evidence indicates that this interest declined over time (i.e., for the Greenspan and Bernanke periods, no party was significant for a monetary policy thematic group aside from labor markets). Thus, at least with respect to the details of monetary policy, MCs appear more passive than active (that is, more willing to listen than to speak). Apart from where monetary policy might affect jobs, MCs appear uninterested in the details of monetary policymaking to the Fed.

ii. Challenges to Fed

Our second finding concerns the two areas in which Members of Congress were more likely to challenge the Fed chairman. First, they tended to challenge the chairman on the structure and governance of the arrangements for monetary policymaking, and in particular the transparency of the Fed and thus the quality of accountability to

Congress. Themes seven and eight, which appear in blue in Tables 11 and 12 ("Independence of the Fed – Relations between the Fed and Congress/the Administration" and "Appraising the Fed") are relevant to this issue. The pattern of significant tags (Table 11) and classes (Table 12) indicates a trend from (1) direct questioning of Fed independence in the Burns and Miller periods, moving to (2) more moderate questioning of the Fed's actions during the Volcker and early Greenspan years, to (3) outright praise for Greenspan and the Fed in the middle and later Greenspan years, to (4) finally, a reversion to moderate challenges to Fed operations in the initial Bernanke period. Tables 11 and 12 illustrate these four distinct phases.

From this evidence, we glean some support for our contention that the intensity of challenge from Congress is conditional on the success of the Fed in pursuing its objective with respect to monetary policy. Table 11 also indicates that in the early period the Democrats were more likely to challenge the Fed than the Republicans, again consistent with the tradition of populist criticism of the Fed. The emergence of a bipartisan consensus towards praising the Fed chairman (at least in the Senate) could of course be consistent with Barney Frank's criticism that Congress had gone soft on the Fed.

Our second conclusion is that the degree of challenge from Congress to the Fed appears to be negatively related to the success of the Fed in pursuing low inflation and stable economic growth. In a period in which poor economic performance was current or within recent memory (marked by a higher rate of inflation, weaker growth and a higher level of unemployment), there appears to have been more contention between Members of Congress and the Fed chairman, but this was more focused on the governance of the Fed, in terms of its transparency and accountability to Congress. This challenge came more from Democrats than Republicans (consistent with the tradition of populist criticism of the Fed). Later, as the Fed's success became more apparent, commentary by Members of Congress on the Fed's performance became more positive and bipartisan.

Our first two findings help us to understand better the motivations of members of Congress in oversight hearings. With respect to the details of monetary policy, they appear content to adopt a passive stance—except where issues of jobs and unemployment may be at stake, and here, Democrats have been more vocal than Republicans. But, with respect to the governance, accountability and transparency of the Fed, MCs take a far more active stance in their questioning of the Fed chairman.

From these results, all three of motivations of MCs may apply. First, where monetary policy affects jobs, MCs (particularly Democrats) are sensitive to the concerns of voters. In a future extension of this research project, we intend to use quantitative measures of constituency preferences with respect to monetary policy (unemployment rates, presence of banking interests, etc.) to predict—using standard regression analysis—the chi squared values for each committee member for each theme, as derived from our textual analysis. At this point in our project, we can at least conclude that the electoral incentive appears to be linked more to broader partisan motives— namely, that Democratic MCs are more sensitive to issues of employment than are their Republican colleagues.

Second, while it is difficult to assess the motivation of "good public policy" without examining the ECUs more carefully in depth, we can note that Democrats appear to be more concerned with public policy that relates to jobs and employment, although Republicans have begun to share this concern in the recent two periods. Ironically, however, good public policy in the form of stable low inflation (row 1) does not appear to feature highly in the discussions of MCs during oversight hearings. This perhaps points to a more fundamental feature of congressional oversight—namely that talking about successful policies is not to the liking of MCs where they can claim little to no role in this success.

Third, the evidence for career motivation will require more detailed investigation of the representative sentences, but anecdotal evidence thus far suggests that grandstanding in oversight hearings may improve one's career prospects in Congress. As noted earlier, Rep. Bernie Sanders exploited the hearings to highlight his populist, anti-Fed sentiments and achieved advancement to the Senate. While on the surface, this case may provide very limited support, we have come to consider it more seriously when, as an experiment, we collapsed twelve of the hearings from the House into a single text file for analysis. To our surprise, one of the eight identified classes for the entire 1976-2005 period is identified solely as belonging to Rep. Bernie Sanders. (Our investigations here continue.)

iii. Inflation

Thus far, our findings have supported the view that the Fed's success in achieving low inflation shaped the nature of oversight. However, we should also expect to see the debate on monetary policy evolve to match the evolution of thinking on the role and content of monetary policy. Specifically, we should expect to see a sharpening of the focus on inflation as the objective of monetary policy. Table 11 indicates that from around the time of the Volcker Revolution in 1979 to the early 1990s, the chairman of the Fed attracts a significant tag for the inflation theme. This disappears for the mid- and late Greenspan periods but resumes in 2006-08 with Bernanke. Table 12 shows the same pattern, though including the Miller period as well.[26] In the Burns hearings, we observe no class on inflation per se, which illustrates a lack of clear focus on inflation as a monetary policy objective. This is also the case for the later Greenspan periods, which similarly receive no significant tags. This begs the question, if not inflation, what *did* concern Greenspan? With respect to monetary policy in the two later Greenspan periods, we can see that the Fed chairman shifted attention to discussions on the U.S. economy and output (row 2). From our work on deliberations in the FOMC (Bailey and Schonhardt-Bailey 2006), we know that a key area of focus for Greenspan during this period was explaining the "new economy"—that is, the persistence of low inflation during an era of relatively strong growth. Though a more careful examination of the ECUs for classes in this group is required, we surmise that Greenspan's focus on the new economy is the primary substance of this thematic group. It would seem that, with the success of the Fed in tackling inflation, inflation itself was relegated to almost a non-issue—at least until the most recent Bernanke period. This last observation—namely the reappearance of inflation as an identified thematic class cannot be related to the re-emergence of inflation, but may reflect Bernanke's greater disposition to targeting inflation as the explicit target of monetary policy.

Overall, the pattern of significance for the inflation classes indicates a period in the 1970s when inflation was clearly a problem in the U.S., but it was given little attention in the congressional oversight hearings in terms of identifying solutions. The classic period of attention to inflation as a problem was during the 1980s and onwards, and this was a time when inflation did feature in the congressional discourse—but dominated by the Fed chairman. With the waning of the threat to monetary stability from high inflation, the discourse on monetary policy, and in particular on inflation, was much reduced until its recent re-emergence in the Bernanke period (possibly for the reason given above).

Tables 11 and 12 both indicate a decline over time in the presence of a significant tag for the money growth/money aggregates theme (row 4). This further supports the view that the debate on monetary policy became focused on the final objective of achieving and maintaining low inflation rather than the intermediate objective of money growth. This may not seem like a very radical conclusion, but it indicates that congressional hearings developed in line with the consensus of thinking on monetary policy. Our next stage in this project will entail a careful scrutiny of the representative sentences (ECUs) by MCs for the inflation classes in order to discern the extent to which they began to accept the low inflation consensus.

iv. Fiscal Policy and Monetary Policy

Our fourth finding concerns the coverage of fiscal policy in the oversight hearings. Of the fourteen significant tags for this thematic class, seven belong to Democrats, six to Republicans and just one to the Fed chairman. Clearly MCs were more attentive to fiscal policy concerns in oversight hearings than were Fed chairmen. Table 13 (rows 3, 4 and 5) show that during the Volcker and early Greenspan periods, both parties tended to discuss fiscal policy concerns in the oversight hearings, regardless of the party of the president. During the mid and later Greenspan periods, the party in opposition to the president's party tended to dominate the fiscal policy discussions (particularly during 2003-05, when the Democrats were also the minority party in Congress). Our assessment thus far suggests that these discussions during the later period constituted swipes at the president's polices, employing the credibility of Greenspan and the Fed to gain leverage (e.g., "Don't you think, Mr Greenspan, that the budgetary implications of this spending plan…"). During a period of increased ideological polarization (Poole and Rosenthal 1997; Fiorina, Abrams et al. 2005) one might expect oversight hearings to offer an opportunity for MCs to gain political traction in areas of fiscal policy where credit-claiming (and blaming) is easier to link to policy outcomes than with monetary policy. With continuing ideological polarization during the 2006-8 period (McCarty, Poole et al. 2006), the absence of party tags for fiscal policy seems puzzling. However, this may be in part the product of a new focus on the world economy[27] by Democrats (row 9), but more strikingly, the emergence of new issues that concerned both Democrats and Republicans (row 10)—particularly education, raising skills in the workforce (thereby lessening wage inequality) and energy. Indeed, Table 12 shows a broader growth in the importance of these new issues in both the later Greenspan and early Bernanke periods, as they captured a little over a quarter of the oversight discussions in the House and about ten percent in the Senate.

The results therefore indicate that fiscal policy was always an issue on which Members of Congress wanted to engage the Fed Chairman. There may be more than one possible explanation for this interest. First, the post-World War II consensus on economic policy gave a larger position to fiscal policy over monetary policy as the tool of stabilisation, but this eroded with the inflation problem of the 1970s and a realisation that the room for manoeuvre in adjusting fiscal policy settings was too limited. A second possible explanation for the interest in fiscal policy is that this is an area where by *taking positions,* Members of Congress can attract more direct electoral benefit from their constituents (in contrast, monetary policy does not have such visible distributional benefits and hence electoral advantage).

These two explanations would suggest more debate (and greater tension) around the mix between monetary and fiscal policy in the early part of the period than later. Our results indicate that up to the 1990s, the discourse in congressional hearings was more focused around the combination of fiscal and monetary measures—the policy mix.[28] We might further expect a change in the role of fiscal policy in the minds of members of Congress in the wake of a sustained period of successful monetary policy, with members recognizing the political benefits from attaching to the credibility and reputation of the Fed chairman to support their personal/party position on fiscal policy. In the later period, with stable low inflation more embedded, and monetary policy more accepted as the primary tool for short-term macroeconomic stabilisation, the discourse on fiscal policy shifted from a focus on the policy mix to an emphasis on more "micro" fiscal policy issues. This could take two forms: first, MCs seeking to enlist the Fed Chairman (and thus his credibility derived from success in monetary policy) to support or attack the fiscal policy of the Administration of the day;[29] and second, debating individual fiscal measures, and particularly large ones like social security, enhancing the skills of the labor force, education, and energy.

The common feature throughout the period under review is that fiscal policy issues were always present in some form or other. But we conclude that there was a change in the focus of the debate on fiscal policy. Up to the later 1990s, there was more debate around the policy mix (i.e. the combination of monetary and fiscal policy measures), and thereby more discussion by both parties on this issue. By the late 1990s, with low inflation and stable economic growth more established, and with monetary policy accepted as the tool for short term stabilisation, there was a change in the focus on fiscal policy. Members of Congress were more inclined to seek to use the Fed's reputation for success in monetary policy to support or attack the Administration's fiscal policy.

> *v.* *Banking Regulation and Financial Stability*

We now turn our attention to discussions devoted to financial stability and the banking system (row 5, Tables 11 and 12). While Table 12 shows that a reasonably consistent portion of the discussions was devoted to financial stability, Table 11 indicates that it was the Fed chairman who appeared to dominate these discussions. The overall picture here is more complicated and must be unpacked by returning to Tables 3 through 10. In the 1970s and early 1980s, only the House hearings featured financial stability as a thematic class. In the 1976-77 period, Burns dominated the discussions (Table 3) whereas during early Volcker (Table 5), a mixture of Democrats and Republicans, *individually*, obtained statistical significance for this class (neither

party tag obtained significance, thereby indicating more variance within the parties). During the mid-1980s (Table 6) we again observe the Fed chairman (Volcker) dominating the discussion in the Senate, but a mixture of representatives—again, individually rather than as than as party groups—gain significance in the House hearings.

In light of the current financial crisis, the three Greenspan periods are particularly intriguing with respect to discussions on financial stability in oversight hearings. In the early Greenspan period (Table 7), Greenspan alone dominated discussion of financial stability in the Senate by speaking to the overall health of the banking system, but no equivalent theme appears for the House. In the mid-Greenspan period (Table 8), we again see no theme of this nature in the House hearings, but in the Senate 15% of the discussion was devoted to the banking system and regulation (Table 2), with Greenspan obtaining only weak statistical significance and Senators Reed and D'Amato (the latter committee chairman) obtaining slightly more significance as individuals. In the late Greenspan period (Table 9), only the House hearings reveal a class on financial stability—namely, the concern for bank regulation and attempts to punish foreign banks for misdemeanours. For this class, the Republican tag obtains significance—in large part the result of discussions led by Representative Kelly (committee chairman).

What might we glean from these findings with respect to the attention given by MCs to the banking system and financial stability in the lead-up to the crisis? The simple—albeit cautious—response is that neither party sought to challenge the Fed on financial stability and banking regulation during the 1990s. In the early 1990s, with Democrats as the majority party in Congress, members appeared content to defer these issues to Greenspan and in the late 1990s, with Republicans as the majority party, the engagement with Greenspan was less than robust. By the late Greenspan period (Table 10), the Republicans took the lead in discussing bank regulation, but only in the House; no equivalent theme emerges in the Senate. Of course by 2006-08 (Table 10), as we enter the early stages of the financial crisis, more attention is given to banking issues by Bernanke and individual MCs (mostly Democrats). In sum, our conclusion here is that MCs *of both parties* failed to devote much attention to financial stability in the years leading up to the crisis, and that Greenspan, too, failed to spend much time on these issues except in the early 1990s.

vi.   *Hypotheses on Deliberation*

Building from Steiner et al, we suggested three hypotheses on deliberations in oversight hearings. First we expected the quality of deliberation by senators to be better than that of representatives. Of course, "better" is open to interpretation and as such, will require clarification and illustration as our project develops. From our analysis thus far (Table 12) we see no real evidence to suggest systematic differences between the Senate and the House with respect to areas of thematic focus. As our project develops, we intend to explore these subtle differences in focus between the House and Senate to gauge the extent to which different deliberative styles and norms may have shaped these differences. This will require a detailed look at the representative phrases for each thematic class, for both the Senate and the House.

Second, we expected MCs to engage in scoring points with their questions and statements, perhaps with the intention of, in Mayhew's words, *taking stands*. Such discourse would characterize the hearings more as public arenas—somewhat akin to debates on the chamber floor. Aside from the aforementioned case of Bernie Sanders, other examples of high profiles of individual members can be found in Tables 3 through 10, where one or a few members dominate a particular thematic class. For example, in Table 3, we observe a very high (over 100) chi square value for Chairman Reuss in House discussions of monetary aggregates, which indicates that he tended to dominate the discussion. Across the 85 classes listed for all the time periods (Tables 3-10), we find ten cases in which an individual member receives a very high (over 100) chi square value, with four of these belonging to the committee chairman. Beyond the very high chi square values, many members received statistical significance of at least 1%. In sum, we can conclude that a tendency exists for committee members to speak to particular themes, and by so doing, perhaps *take stands* on these issues for the folks back home.

We also expected, as part of hypothesis two, that MCs would engage in discourse with colleagues and the Fed chairman on the details of monetary policy. MCs *do not* appear to be interested in engaging in the details of monetary policy, except where monetary policy intersects with job creation or preservation. For the most part, the tendency is for them to focus on areas of greater familiarity and greater potential for electoral gain—namely fiscal policy and populist antipathy towards the Fed. Based on these findings, we conclude that for MCs, oversight hearings on monetary policy provide a more public arena for taking stands for electoral gain.

Finally, because our approach in this paper is a broad brush one, our results thus far do not allow us firm conclusions for our final hypothesis—namely, that discourse in committee hearings on monetary policy should reflect an emerging consensus among MCs on the goal of low inflation as the best means to deliver sustainable economic growth and thus low unemployment and on the primacy of monetary policy as a tool of economic stabilization. We can, however, surmise that as inflation fell away as a significant topic of committee discussions from the early 1990s onwards, this may indicate a decline in contention. Its reemergence with Bernanke is unlikely to indicate a disintegration of the consensus but rather Bernanke's own preference for inflation targeting. A more detailed examination of the representative sentences and phrases by MCs on inflation per se should allow us to better gauge support for this hypothesis.

IX. CONCLUSION

The empirical evidence on the role of congressional oversight vis-à-vis the Federal Reserve is thin. Much of the literature is dated, and this gap is made more important by the changes seen in the two decades both with respect to the understanding of the role of the Federal Reserve in monetary policy (the recognition that delivering low inflation is the best way to secure sustainable economic growth and low unemployment), and the success of the Fed in achieving this objective.

We assert that a change in the nature of congressional oversight is likely to have resulted from the Fed's success in achieving stable low inflation. Thus, the form of oversight itself is conditional on (a) the success of the central bank in achieving its

objective of low inflation, and on (b) whether there is a common acceptance among Members of Congress that low inflation is the best way to achieve sustainable growth throughout the economy, and thus stable low unemployment. We argue that the politics of oversight may be shaped both by the policy outcome itself (the Fed's success or failure) and by the degree of consensus surrounding the objective of policy, namely the benefits of low inflation.

The literature on congressional oversight provides mixed findings for the motivations of Members of Congress in the House and Senate banking committees. Active participation might reflect electoral, good public policy, or influence in the chamber objectives; or, a more passive stance might simply indicate an electoral motivation that is risk-averse and thus satisfied with shifting the responsibility for implementing unpopular policy to the Fed. Given the uncertainty surrounding these findings we seek a different means for gauging these motivations—the arguments and deliberations of members themselves in committee.

We examine the evolution of congressional oversight of the Fed since the mid-1970s, in order to understand how the Fed has treated Congress and vice versa. The reason for choosing this span of the history of US monetary policy is that it coincides with the Great Inflation of the 1970s, the radical action taken to cure that problem (initiated by the so-called Volcker Revolution of 1979), and the subsequent period of stability and low inflation. Our choice of period is important because it begins (in the mid-1970s) at the point where the post-World War II consensus on economic policymaking is recognised to be seriously broken, and ends in the early years of the new century with the establishment of the primacy of monetary policy as the tool of economic stabilisation. From the point of view of relations between the Fed and Congress it covers a shift from an approach in which Congress had a formal role in approving the primary policy tool (the budget), to one where it was overseeing the agency responsible for the primary policy tool (the Fed).

We pose three basic questions:

1   What are Members of Congress seeking to achieve in oversight hearings?
2   Has their objective changed over time--in line with the changed role and importance of monetary policy, and the success of the Fed in tackling the Great Inflation of the 1970s?
3   Has there been a change in the coverage of fiscal policy in the oversight hearings, again to reflect the changed role and importance of monetary policy and the Fed's success against inflation?

Our methodological approach is unusual in that by using textual analysis of the transcripts of oversight hearings we are able to apply an empirical tool to assess the arguments and deliberations of Members of Congress and successive chairmen of the Fed.

We find that:

1.   Members of Congress generally showed little interest in the detail of monetary policy making, seemingly willing to leave these details to the Fed.

2. MCs were actively engaged in challenging the Fed in the areas of governance, accountability and transparency.

3. The degree of challenge from Congress to the Fed appears to be negatively related to the success of the Fed in pursuing low inflation and stable economic growth. As the Fed became more successful in this regard, the contribution from Members of Congress became more positive towards the Fed and more bipartisan. In the earlier part of the period we cover, in which poor economic performance was current or within recent memory (marked by a higher rate of inflation, weaker growth and a higher level of unemployment), there was more contention between Members of Congress and the Fed Chairman, but this was more focused on the governance of the Fed, in terms of its transparency and accountability to Congress. This challenge came more from Democrats than Republicans (consistent with the tradition of populist criticism of the Fed). As the threat to monetary stability from inflation waned in the early years of the 21st century, the discourse on monetary policy, and in particular on inflation, is much reduced—indeed, almost relegating monetary policy to a non-issue, at least until Bernanke. This reflects the timeline of thinking on the role and objective of monetary policy.

4. We also conclude that there was some change in the focus of the debate on fiscal policy. Up to the later 1990s, there was more debate around the policy mix (i.e. the combination of monetary and fiscal policy measures). By the late 1990s, with low inflation and stable economic growth more established, and with monetary policy accepted as the tool for short term stabilisation, there was a change in the focus on fiscal policy. The discourse on fiscal policy shifted from a focus on the policy mix to an emphasis on more "micro" fiscal policy issues, which in turn has prompted Members of Congress to seek to use the Fed's reputation for success in monetary policy to support or attack the Administration's fiscal policy.

5. We find that MCs of both parties failed to devote much attention to financial stability and bank regulation in the 1990s and early 21st century, and that Greenspan, too, failed to spend much time on these issues except in the early 1990s.

6. We find some support for our three hypotheses on deliberation, but we note that more detailed analysis of the representative words and phrases, along with a closer examination of other aspects of the automated content analysis software is required.

In sum, we observe a paradox that as the principles of central bank behaviour have come to place more emphasis on accountability to the public via the legislature (as part of the constitution of an independent central bank), so the success of central banks like the Fed has meant that there is less for legislators to criticise (and wish to change). This does not invalidate the need for oversight as part of ensuring that the focus remains on the objective of low inflation and stable economic growth, and to provide a means to allow the central bank to explain its actions. It does however mean that the criticism levelled by Barney Frank needs to distinguish between the charge the Congress has gone soft in its basic role of ensuring that the Fed is accountable to the public through Congress, and the (invalid) view that Congress should return to the ways of doing things of thirty years ago.

APPENDIX 1: DETAILS OF ALCESTE METHODOLOGY

Alceste is textual analysis software that identifies a speaker's association of ideas and main arguments—ideas and arguments which can then be correlated with characteristics of the speaker's (e.g., party affiliation, constituency characteristics and so on). The package relies upon co-occurrence analysis, which is the statistical analysis of frequent word pairs in a text corpus. Alceste was developed by Max Reinert (Reinert 1983; Reinert 1998; Reinert 2003) and has been applied in sociology, psychology, and political science (Noel-Jorand, Reinert et al. 1995; Lahlou 1996; Noel-Jorand, Reinert et al. 1997; Brugidou 1998; Guerin-Pace 1998; Bauer 2000; Brugidou 2003; Noel-Jorand, Reinert et al. 2004; Schonhardt-Bailey 2005; Schonhardt-Bailey 2006; Brugidou and Escoffier 2008; Schonhardt-Bailey 2008). It has been described as a "methodology" insofar as it "integrates a multitude of highly sophisticated statistical methods," (Kronberger and Wagner 2000: 306) and, "(t)aken together, the program realizes a complex *descending hierarchical classification* combining elements of different statistical methods like segmentation (Bertier and Bouroche 1975), hierarchical classification and dichotomization based on reciprocal averaging or correspondence analysis (Hayashi 1950; Benzecri 1981; Greenacre 1993) and the theory of dynamic clouds (Diday, Lemaire et al. 1982)" (Kronberger and Wagner 2000: 306). More simply, it may be described as a marriage of textual and statistical analysis (Popping 2004).

There are two preconditions for good results with Alceste: (1) the textual data must be consistent within the whole (e.g., themes and conditions of production are both consistent); and (2) the text must be large enough for the statistical output to be relevant (with a minimum of 10,000 words). The software is particularly adept at analyzing naturally occurring (or non-reactive) textual data. Congressional hearings on monetary policy fit these preconditions precisely: the thematic content and basic structure are consistent, the total word count for each hearing is well over the minimum (see Tables 1 and 2), and the textual data are non-reactive.

Alceste determines word distribution patterns within a text, with the objective being to obtain a primary statistical classification of simple statements (or "contextual units")[30] in order to reveal the most characteristic words, which in turn can be distinguished as word classes that represent different forms of discourse concerning the topic of the text. Through its dictionary, Alceste prepares the text by reducing different forms of the same word (in the form of plurals, suffixes, etc.) to the root form and transforms irregular verbs to the indicative, thereby producing a matrix of reduced forms. It also subdivides the corpus into "function words" (articles, prepositions, conjunctions, pronouns, and auxiliary verbs) and "content words" (nouns, verbs, adjectives, and adverbs). The content words are understood to carry the meaning of the discourse and the final analysis is based on these. (Content words are sometimes referred to as the "meaningful words".) The program creates a data matrix (an "indicator matrix") which allows an analysis of statistical similarities and dissimilarities of words in order to identify repetitive language patterns. This matrix relates relevant words in columns and contextual units in rows, so that if a given word is present, a *1* is entered in the cell; otherwise, the entry is *0*. Then, using descending hierarchical classification analysis, the program identifies word classes. (The term "class" is used for descending hierarchical classification analysis while the term "cluster" is used for the more traditional ascending cluster analysis (Kronberger and

Wagner 2000: 308).) The first class comprises the total set of contextual units in the initial indicator matrix. The program then attempts to partition that class into two further classes that contain different vocabulary and ideally do not contain any overlapping words. The methods used for this are optimal scaling and the adoption of a maximum chi-squared criterion for cutting the ordered set of words. Alceste compares the distribution of words in each of the two new classes with the average distribution of words. Different forms of discourse that use different vocabulary will result in an observed word distribution that deviates systematically from one where the words are independent of each other. The procedure searches for maximally separate patterns of co-occurrence between the word classes. The chi-squared criterion is thus used as a measure of the relationship that exists between words, rather than as a test.

Following an iterative process, the descending hierarchical classification method decomposes the classes until a predetermined number of iterations fails to result in further divisions. With each step, the descending hierarchical classification uses the first factor of the factorial analysis of correspondences; its top-down design thus allows it to eliminate class "artefacts" (Reinert 2006). The result is a hierarchy of classes, which may be schematized as a tree diagram.

The classification follows a specified procedure using chi-squared, and may be illustrated using Kronberger and Wagner's example of the decomposition of an original matrix into two classes (Kronberger and Wagner 2000: 309).

	Specific vocabulary of class 2		Overlapping vocabulary		Specific vocabulary of class 3		
	food	*fruit*	*say*	*word j*	*Cure*	*cancer*	
Class 2	45	12	20	k_{2j}	0	0	K_2
Class 3	0	0	21	k_{3j}	33	20	K_3
	45	12	41	k_j	33	20	K

Classes 2 and 3 are optimally separate in that they have as little overlap in words as possible. "The numbers in the table (k_{2j}, k_{3j}) indicate the frequency of contextual units for each class containing a specific word *j*. In our example, class 2 consists of statements containing words like 'food' and 'fruit', while words like 'cancer' and 'cure' are typical for class 3. Of course, it will rarely be possible to separate statements such that words occurring in one class do not appear in the other. There will always be some overlapping vocabulary, like the word 'say' in the example" (Kronberger and Wagner 2000: 309).

The chi-squared procedure then establishes "out of all possible procedures" two classes that maximize the following criterion:

$$\chi^2 = k_2 k_3 \sum_{j \in J} \left[\left(\frac{k_{2j}}{k_2} - \frac{k_{3j}}{k_3} \right)^2 \div k_j \right], \text{where}$$

$$k_{2j} = \sum_{i \in I_2} k_{ij}; k_2 = \sum_{i \in I_1} k_{2j}; k_j = k_{2j} + k_{3j}$$

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[1] Blinder does, however, acknowledge that central bank communications may include providing forward-looking information about monetary policy to condition market expectations (Blinder 2004)

[2] Research on the politics of monetary policy has, not surprisingly, sought to understand better the influence of politicians on monetary policy making (e.g., (Alt 1991; Woolley 1994; Morris 2000; Chang 2003)). With the growth of public choice theory in the 1970s, researchers began to investigate the extent to which elected officials—namely, the president and Congress—might influence Fed officials, and thus seek to align monetary policy with their own political objectives. The politics of monetary policy making may be divided into four distinct literatures: (a) political business cycle; (b) central bank independence; (c) pressure group policy; and (d) principal-agent theory.

a. Political Business Cycle

Thirty years ago, Nordhaus identified the political business cycle (PBC), in which incumbent politicians seek high growth and employment, and low inflation in the lead-up to elections (Nordhaus 1975)[2]. As an extension to the PBC, it has been argued that partisanship further shapes macroeconomic policy, with Republican presidential administrations exhibiting tighter monetary policies than Democratic ones (Hibbs 1977; Chappell and Keech 1986; Hibbs 1986; Alesina and Sachs 1988; Chappell and Keech 1988; Williams 1990). But these conclusions have been called into question by Woolley (Woolley 1994). He argues that Democrats in the White House are on average not substantially more likely than Republicans to pressure the Fed for easier policy (it is more likely that all presidents favour more expansionary monetary policy than the Fed); Republican presidents are at least as likely to resort to signalling their wishes in public; the magnitude of the effect of presidential signalling is not large; across the literature there is little empirical support for a partisan electoral cycle in post-war US monetary policy (Beck 1987; Nordhaus 1989; Beck 1990; Allen and McCrickard 1991); it is not clear why there should be a partisan cycle in monetary policy if there is an independent central bank; and there is little evidence to support a consistent impact of Congress on monetary policy (Woolley and LeLoup 1989). In brief, the legacy of the PBC literature is one of more questions than answers.

b. Central Bank Independence

The literature on independent central banks has been particularly prolific in the past twenty years (Cukierman 1992) (Bernhard 1998; Blinder 1998). Its premise is that some of the mistakes in economic policy in the past resulted from a belief that it was possible to raise the level of output and employment permanently by accepting a higher rate of inflation—i.e., there was an assumed long-run trade-off

between unemployment and inflation. Researchers focusing on the *politics* of monetary policy have noted that as politicians attempted to exploit this trade-off for electoral advantage (e.g., by boosting demand through higher government spending or seeking lower interest rates) higher inflation generally resulted. Hence, the presumed trade-off did not appear to exist, at least not in the long-run. Politicians seeking re-election nevertheless remain tempted to exploit any presumed short-run trade-off between unemployment and inflation, and thus are found to prefer more inflationary monetary policies—which Kydland and Prescott termed the problem of "time inconsistency" (Kydland and Prescott 1977).

One solution to this problem is that politicians can cede control of monetary policy to an independent body—namely, an independent central bank. With independence from political manipulation, central bankers are assumed to be free to pursue their primary objective—price stability. There are two difficulties with this interpretation. First, as the economics literature has demonstrated, independence alone is not enough to isolate a central bank from the time inconsistency problem, because the problem has its roots in the inability to write a binding contract that commits the central bank to a predictable course of action for all states of the future. Second, the history of the Fed demonstrates that being independent does not ensure that the central bank follows a consistent policy. This may be due to fluctuating political influence—bearing in mind that the degree of political influence can vary within an unchanged institutional/legal framework (as was the case for the Fed) if that institution perceives a threat of political pressure to change. Or, it may be due to changes in the influence of different economic ideas which cause variation in the strength of commitment to low inflation (Romer and Romer 2003).

c. Pressure Group Policy

Whereas the central bank independence literature focuses on the nature of the relationship between the central bank and its political environment—and thus can be said to be more "institutional" in its focus—the pressure group policy perspective examines how the preferences of elected officials affect Fed policy making (Morris 2000: 23) (Romer and Romer 2003: 9,14) (Woolley 1984; Kettl 1986) (Chang 2003). Havrilesky, perhaps the most noted proponent of this perspective, explains its underlying logic:

> Politicians who find it difficult to make their redistributive programs palatable may subsequently attempt to mask the adverse consequences by influencing monetary policy. Variations in government expenditures and taxation invariably affect interest and exchange rates. Disincentives for productive effort that arise from government tax and transfer programs may also have adverse effects on growth and unemployment rates. When interest groups affected by these adverse consequences of redistributive policy generate sufficient flak, there is pressure on the Federal Reserve to "do something." Pressure can flow either directly, from interest groups, or indirectly, from interest groups through politicians. (Havrilesky 1993: 13-14)

d. Principal Agent Theory

A fourth perspective on the politics of monetary policy is that of principal-agent theory (PA) (Beck 1990; Alt 1991; Toma 1991). As with other principal-agent theories (Bendor 1988), the key insight is the existence of asymmetrical information between the principal and agent. Agents (in this case, the Fed) will attempt to pursue their own goals, which are, in turn, distinct from those of their principals (in this case, Congress and the president). In so doing, they will attempt to exploit their informational advantage over their principal(s). Questions have, however, been raised about how well the scenario of multiple principals (the president and Congress, but also, the Senate and the House within Congress) can be encapsulated within the PA perspective (Morris 2000).

[3] This is sometimes known as the New Neoclassical Synthesis, or the New Keynesian model.

[4] As an (important) example, Meltzer notes that he found no mention of the distinction between nominal and real interest rates in Federal Reserve minutes until late into the inflation period of the 1960s and 1970s. In contrast the Fed used an absolute standard of nominal rates to judge whether monetary policy was tight or loose.

[5] This was enacted by the Full Employment and Balanced Growth Act of 1978 (P.L. 95-523).

[6] Researchers are, however, increasingly employing automated content analysis software to analyze floor debates (Monroe, Colaresi et al. 2008; Monroe and Schrodt 2008; Schonhardt-Bailey 2008). Moreover, the Congressional Hearings Data Set (http://www.policyagendas.org/) provides tabulated and coded information on hearings from 1947-2004, but it does not include verbatim transcripts, which are essential for textual analysis.

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[7] The remaining members, as presidents of the regional reserve banks, are appointed by the board of directors of each reserve bank, with the consent of the Fed's Board of Governors.

[8] Indeed, to the extent that scholars have noted district-specific motivations from banking committee members, these appeared to derive from non-monetary policy issues (e.g., housing, urban affairs) for which banking committees may hold jurisdiction. (Adler and Lapinski 1997; Adler 2002).

[9] Some scholars of monetary policy have repeatedly puzzled over the motivations for legislators who conduct oversight hearings on monetary policy (Woolley 1984; Beck 1990). Notably, monetary policy constitutes an unusual area of legislative oversight in that the standard means of legislative control of bureaucrats—the distribution of budgetary appropriations to fund the agency—is absent, as the Fed controls its own budget and thus many of the standard models (e.g., agency theory) are inappropriate.

[10] Havrilesky's results suggest that Fed chairmen do not telegraph Fed policy intentions in their dialogue with Congress. But he does achieve statistical significance for a model whereby the concerns of senators help to explain the change in the Fed funds rate in the month after the hearing. A second finding from this work is that there has been little correlation between Senate and House state-of-the-economy concerns over time. Havrilesky suggests that this difference—whereby senators but not representatives are found to have a significant impact on the Fed funds rate one month ahead—reflects the veto power of the Senate over appointments to the Fed Board. This is consistent with Grier's finding that the liberal/conservative bias of the chairman of the House Banking Committee has no influence on the ease/tightness bias of monetary policy, in contrast to the chairman of the Senate Banking Committee.

[11] These are: "broad participation, justification of arguments, references to the common good, respect for the arguments of others, and willingness to change one's preferences" (Steiner, Bächtiger et al. 2004: 5)

[12] Sanders founded the House Progressive Caucus, which seeks "to protect the interests of the ordinary citizens of this country who cannot afford to contribute large sums of money to buy political influence" (Sanders 2008).

[13] The House hearings covered were in: February 1976, July 1976, February 1977, July 1977, February 1979, July 1979, November 1979, February 1980, July 1980, February 1981, July 1981, July 1984, February 1985, July 1985, February 1986, July 1991, February 1992, July 1992, February 1993, July 1997, February 1998, July 1998, February 1999, July 2003, February 2004, July 2004, February 2005, July 2006, February 2007, July 2007, and February 2008. Unusually, the House held a third hearing on monetary policy in November 1979, immediately following the Volcker Revolution in October 1979.

[14] The Senate hearings covered were in: May 1976, November 1976, May 1977, November 1977, February 1979, July 1979, February 1980, July 1980, February1981, July 1981, July 1984, February 1985, July 1985, February 1986, February 1991, February 1992, July 1992, February 1993, July 1997, February 1998, July 1998, February 1999, July 2003, February 2004, July 2004, February 2005, July 2006, February 2007, July 2007, and February 2008. No Senate hearing was held in July 1991, so the February 1991 hearing was used instead.

[15] At the time of the July 1979 Senate hearing there was no Chairman of the Federal Reserve – Miller had resigned and Volcker had not been appointed. Governor Henry Wallich, the Vice Chairman of the Federal Reserve Board appeared. The July 1979 House hearing occurred before Miller's departure from the Fed.

[16] We do not use ideology scores since our methodology is not well-suited for interval data. Instead, we use party affiliation.

[17] See, for example, the papers posted for the Computer Assisted Qualitative Data Analysis Conference 2007, Royal Holloway, University of London (http://caqdas.soc.surrey.ac.uk/conference/conference07.htm)

[18] Examples of its application in the social sciences include: (Noel-Jorand, Reinert et al. 1995; Lahlou 1996; Noel-Jorand, Reinert et al. 1997; Allum 1998; Brugidou 1998; Brugidou 2003; Noel-Jorand, Reinert et al. 2004; Schonhardt-Bailey 2005; Schonhardt-Bailey 2006; Brugidou and Escoffier 2008; Schonhardt-Bailey 2008)

[19] Although subsequent versions may allow a larger corpus, Alceste 4.7 requires that the corpus not exceed 15 mb.

[20] Plurals and conjugation endings are reduced to a single form and nonce words are eliminated from the analysis. This leaves a smaller word count which is analyzed by the program.

[21] These are deemed "passive" as they do not contribute to either the calculation of the word classes or the factors in the correspondence analysis.

[22] Popping notes that the ECU is akin to the "recording unit" used in other programs, where it is usually defined by the researcher (Popping 2004).

[23] A contextual unit is equivalent to one or more successive ECU(s). The two calculations are done with two different parameters for the selected number of words per contextual unit in order to check the reliability of the classes and the stability of the results.(Reinert 1998: 14)

[24] The standard report lists the top 20 ECUs for each class, ranked by chi square association. However, a separate file is produced that lists all the ECUs for each class, where the default cut-off for selection is zero.

[25] This minimum value for word selection within Alceste varies from 2.13 to 20, with smaller text files tending toward the lower threshold and larger ones toward the high threshold. (A small text file is around 10,000 to 20,000 words, while a large one is several hundred thousand words.) The basic rule of thumb with Alceste is (as with any statistical analysis)—the more data, the easier it is to attain statistical significance (hence larger text files have to attain a higher threshold to be statistically significant). For the congressional hearings files, the minimum value for word selection is 4.68 and the maximum is 20, with an average of 8.35.

[26]It should be noted that Miller only made one appearance in the Senate in 1979 while the other was made by Henry Wallich, Vice Chairman of the Board of Governors of the Federal Reserve.

[27] World economy is distinguished from the monetary policy group of classes because the U.S. does not make monetary policy for the rest of the world. We do, however, recognize that the world economy constitutes an input to U.S. monetary policy.

[28] These findings are found in the ECUs, which we do not present here.

[29] Indeed, the approval of the Fed Chairman is becoming almost a necessity, as the *New York Times* recently remarked: "The Fed's willingness to give a nod to fiscal stimulus is important. Many lawmakers will not support action without the chairman's blessing . . ." (Andrews and Herszenhorn 2008)

[30] For Alceste, "statements" are defined as "contextual units." The program automatically determines contextual units with reference to punctuation and the length of the statement up to a maximum of 250 characters.

Figure 1: US Consumer Price Inflation (% Change YOY Dec/Dec)
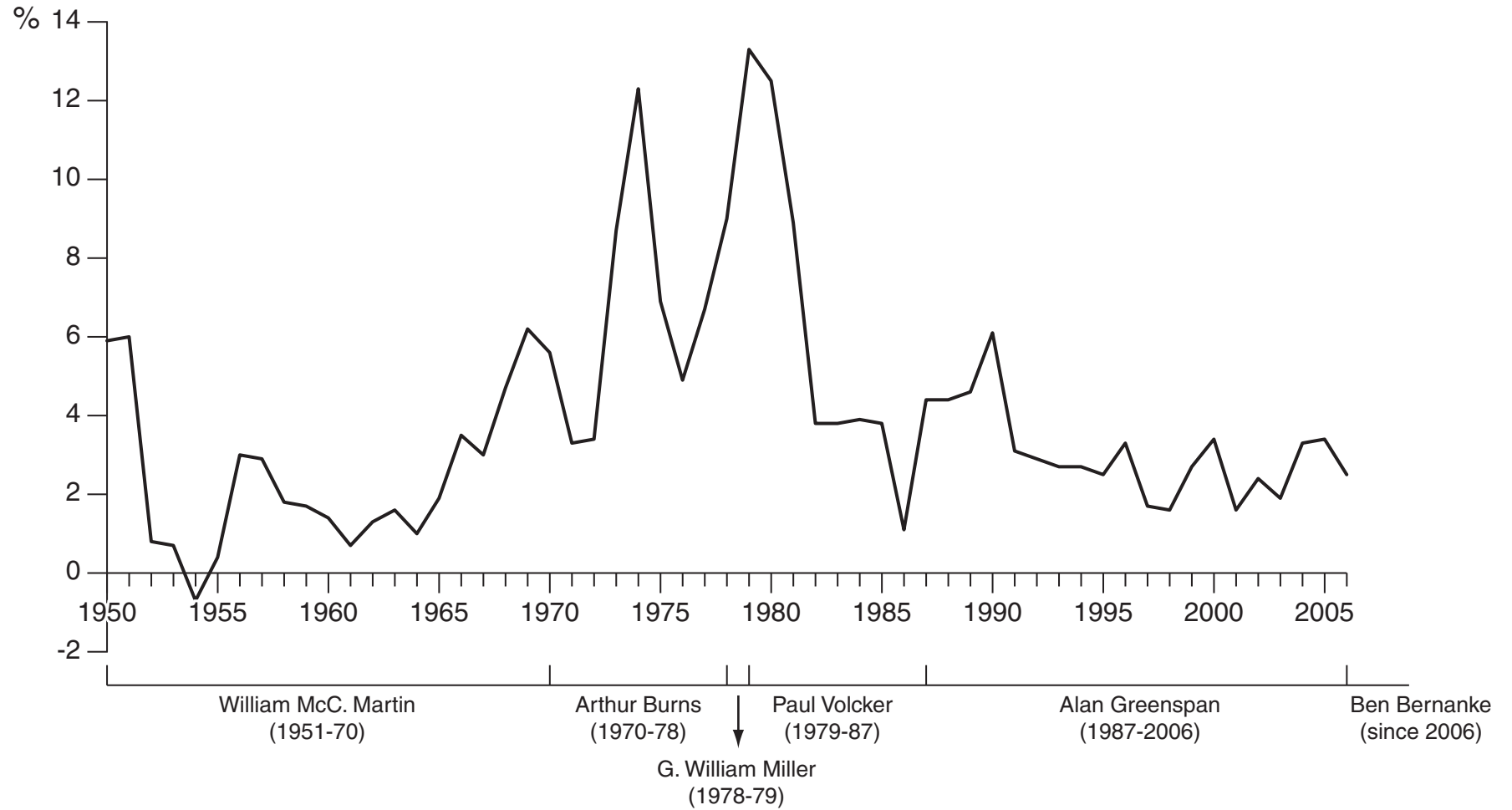
Source: US Department of Labor, Bureau of Labor Statistics

Table 1: Basic Statistics for House and Senate Hearings on Monetary Policy (1976-1986) [new Alceste]

	House Hearings, 1976-1977	Senate Hearings, 1976-1977	House Hearings, 1979	Senate Hearings, 1979
Total Word Count	85,623	64,515	35,013	28,320
Unique Words Analyzed	36,898	27,485	14,126	11,314
Passive Variables (Tagged Indicators)	58	23	30	23
I.C.U.s (= number of speeches / comments)	670	606	272	296
Classified E.C.U.s	1849 (= 74% of the retained E.C.U.)	1404 (= 71% of the retained E.C.U.)	571 (= 57% of the retained E.C.U.)	611 (= 68% of the retained E.C.U.)
Lexical Classes	5	5	5	4
Distribution of Classes (%) and Thematic Content	1 (40) *Labor Market / Employment & Inflation* 2 (16) *Growth of Monetary Aggregates* 3 (13) *Capacity Utilization & Investment by Firms* 4 (9) *Innovation in Bank Accounts w/ links to Monetary Aggregates* 5 (23) *Independence & Structure of the FOMC*	1 (10) *Exchange Rate, Monetary Policy & the World Economy* 2 (37) *Transparency of the Fed; Relations between Fed & Congress* 3 (19) *Monetary Aggregates* 4 (10) *Labor Markets / Employment* 5 (24) *Business Investment & its Financing*	1 (18) *Describing Economic Growth Data* 2 (13) *Fiscal Policy / Tax Measures* 3 (38) *Inflation / Monetary Policy* 4 (20) *Credit Creation / Money Growth* 5 (11) *Exchange Rate / Cost of Foreign Currency Debt*	1 (34) *Fed Independence* 2 (29) *Monetary & Credit Aggregates, and Innovation in Bank Accounts .* 3 (21) *Labor Markets, Unemployment & Inflation* 4 (15) *Stance of Monetary Policy & Objectives*

Table 1: Basic Statistics for House and Senate Hearings on Monetary Policy (1976-1986) [new Alceste] (cont.)

	House Hearings, 1979-1981	Senate Hearings, 1980-81*	House Hearings, 1984-86	Senate Hearings, 1984-86
Total Word Count	130,888	93,607	116,992	113,866
Unique Words Analyzed	52,483	37,246	46,676	48,061
Passive Variables (Tagged Indicators)	63	35	50	27
I.C.U.s (= number of speeches / comments)	1215	965	1296	1113
Classified E.C.U.s	2780 (= 71% of the retained E.C.U.)	2200 (= 75% of the retained E.C.U.)	2875 (= 76% of the retained E.C.U.)	2888 (= 81% of the retained E.C.U.)
Lexical Classes	7	5	6	6
Distribution of Classes (%) and Thematic Content	1 (13) *Bank Credit / Structure of Deposit Banking / Account Types* 2 (11) *Fiscal Policy (Spending & Deficits)* 3 (12) *Inflation Problems* 4 (12) *Fiscal Policy (Tax)* 5 (10) *Productivity, Inflation and the Labor Market* 6 (19) *Monetary Aggregates* 7 (22) *Investment in Housing & by Small Businesses*	1 (32) *Credit Restraint (Signals from Monetary Policy)* 2 (18) *Interest Rates & Credit Conditions* 3 (16) *Monetary Aggregates* 4 (9) *Fiscal Policy* 5 (26) *Volcker Revolution / Anti-Inflation Policies*	1 (14) *Transparency of the FOMC (demands for more)* 2 (11) *Regulation of the Banking System* 3 (10) *Fiscal Policy* 4 (23) *US Imbalances / Exchange Rate / World Economy* 5 (25) *Monetary Aggregates* 6 (17) *Uncertainty & Risks around Forecasts of Interest Rates*	1 (18) *Capital Flows / External Imbalances / Exchange Rate / World Economy* 2 (16) *Bank Failures (esp. Continental Illinois)* 3 (7) *Fiscal Policy* 4 (7) *Structure of Banking System / Creation of 'Non-Bank' Banks* 5 (30) *Uncertainty around Course of, and Target of Monetary Policy* 6 (22) *Economic Activity / Monetary Aggregates & Inflation*

- *** The Senate did not hold its usual November Hearing in 1979.**

Table 2: Basic Statistics for House and Senate Hearings on Monetary Policy, 1990s to 2008 [new Alceste]

	House Hearings, 1991-1993	Senate Hearings, 1991-1993	House Hearings, 1997-1999	Senate Hearings, 1997-1999
Total Word Count	71,553	123,922	105,805	79,077
Unique Words Analyzed	30,949	52,456	43,153	36,796
Passive Variables (Tagged Indicators)	34	37	47	33
I.C.U.s (= number of speeches / comments)	510	815	670	398
Classified E.C.U.s	1517 (= 74% of the retained E.C.U.)	3084 (= 86% of the retained E.C.U.)	2374 (= 82% of the retained E.C.U.)	1905 (= 88% of the retained E.C.U.)
Lexical Classes	5	5	5	5
Distribution of Classes (%) and Thematic Content	1 (14) *Fiscal Policy* 2 (16) *Interaction of Fed with Presidency & Elections* 3 (18) *Credit Flows / Asset Prices* 4 (24) *Economic Outlook /Inflation / Money Supply* 5 (27) *Bank Lending – espec. Small Businesses*	1 (15) *Health of Banking System* 2 (38) *Role of Congress in Economic Policy / Fiscal Policy* 3 (7) *Fiscal Policy* 4 (21) *Monetary Aggregates* 5 (18) *Labor Markets / Unemployment*	1 (42) *Role of Government in the Economy (Domestic & International)* 2 (24) *Economic Activity & Growth in the US* 3 (14) *Labor Markets / Unemployment* 4 (10) *Asian & Russian Crises* 5 (10) *Fiscal Policy*	1 (15) *Structure of Banking System / Regulation* 2 (12) *Praising Greenspan & Seeking His Advice* 3 (10) *Fiscal Policy* 4 (23) *World Economy / Y2K Conversion of IT System* 5 (40) *Economic Outlook & Growth*

Table 2: Basic Statistics for House and Senate Hearings on Monetary Policy, 1990s to 2008 [new Alceste] (cont.)

	House Hearings, 2003-2005	Senate Hearings, 2003-2005	House Hearings, 2006-2008	Senate Hearings, 2006-2008
Total Word Count	98,507	97,601	113,723	99,451
Unique Words Analyzed	40,427	39,878	47,099	40,496
Passive Variables (Tagged Indicators)	64	34	67	34
I.C.U.s (= number of speeches / comments)	761	760	843	791
Classified E.C.U.s	1141 (= 61% of the retained E.C.U.)	1566 (= 56% of the retained E.C.U.)	2458 (= 72% of the retained E.C.U.)	2304 (= 76% of the retained E.C.U.)
Lexical Classes	6	5	5	6
Distribution of Classes (%) and Thematic Content	1 (18) *Labor Markets, Wages, Employment* 2 (19) *Productivity, Economic Growth & Investment by Businesses* 3 (26) *Education & Equality* 4 (14) *Social Security Reform* 5 (11) *Fiscal Policy* 6 (12) *Banking System / Bank Regulation / Punishing Foreign Banks for Misdemeanours*	1 (22) *Fiscal Policy* 2 (33) *Praising Greenspan & Seeking His Advice* 3 (20) *Economic Activity / Role of Monetary Policy in Sustaining Growth* 4 (10) *Energy Policy* 5 (15) *Labor Markets / Earnings*	1 (26) *Education & Income Inequality* 2 (17) *Investment in Corporates / Role of Hedge Funds* 3 (17) *Inflation & Economic Activity* 4 (17) *Mortgage Lending / Conduct of Business* 5 (23) *Wages & Productivity*	1 (20) *Challenging the Fed & Bernanke with Introduction of Legislation* 2 (34) *Economic Activity & Inflation* 3 (17) *Controls on the Conduct of Mortgage Lending* 4 (9) *Foreign Ownership of US Firms / Sovereign Wealth Funds / China* 5 (9) *Education & Raising Skills of Labor Force* 6 (11) *Wage Inequality & Employment*

Table 3: Thematic Classes for 1976-1977 Congressional Hearings, With Statistically Significant Tags for Party Affiliation and Fed Chairman [new Alceste]

Classes for House Hearings, 1976-77 (with thematic classification group indicated in brackets)	Democratic Tag (with χ^2 value)	Republican Tag (with χ^2 value)	Burns Tag (with χ^2 value)	Other Tags (with χ^2 value)
Labor Market / Employment & Inflation (3)		*** (49.9)		*** (82.5) member
Growth of Monetary Aggregates (4)	* (4.1)			*** (133.1) Chairman Reuss-D
Capacity Utilization & Investment by Firms (2)			*** (126.2)	
Innovation in Bank Accounts w/ links to Monetary Aggregates (5)			*** (31.6)	
Independence & Structure of the FOMC (7)	*** (51.9)			*** (44.0) member
Classes for Senate Hearings, 1976-77				
Exchange Rate, Monetary Policy & the World Economy (9)			(3.0)	*** (25.8) Stevenson-D
Transparency of the Fed; Relations between Fed & Congress (7)	*** (86.1)	* (6.4)		*** (45.1) Chairman Proxmire-D *** (34.4) member
Monetary Aggregates (4)			*** (46.2)	
Labor Markets / Employment (3)	*** (26.2)	(3.3)		*** (16.2) Chairman Proxmire-D ** (9.7) member
Business Investment & its Financing (2)			*** (67.4)	

Statistical Significance (df = 1)	χ^2 value
N.S.	< 2.71
10 %	< 3.84
5 % (*)	< 6.63
1 % (**)	< 10.80
< 1 % (***)	≥ 10.80

Tags given for individual members only for those classes in which neither party affiliation nor Fed Chairman is a dominant tag, or where a tag (e.g., the Committee Chairman or member) is unusually significant. **(Applies also for Tables 4 – 10)**

Table 4: Thematic Classes for 1979 Congressional Hearings, With Statistically Significant Tags for Party Affiliation and Fed Chairman [new Alceste]

Classes for House Hearings, 1979 (with thematic classification group indicated in brackets)	Democratic Tag (with χ^2 value)	Republican Tag (with χ^2 value)	Miller/Wallich Tag (with χ^2 value)	Other Tags (with χ^2 value)
Describing Economic Growth Data (2)			*** (11.5) [Miller]	
Fiscal Policy / Tax Measures (6)				* (5.7) Cavanaugh-D *** (11.9) Evans-D ** (8.0) Ritter-R
Inflation / Monetary Policy (1)	* (3.9)			*** (14.7) Blanchard-D *** (17.1) Vento-D
Credit Creation / Money Growth (4)				*** (15.7) Patterson-D *** (15.1) Paul-R *** (40.4) St. Germain-D *** (15.1) Watkins-D
Exchange Rate / Cost of Foreign Currency Debt (9)		*** (11.7)		*** (57.9) Leach-R
Classes for Senate Hearings, 1979				
Fed Independence (7)	*** (39.5)			** (9.7) Chairman Proxmire-D *** (52.0) Riegle-D *** (34.1) member
Monetary & Credit Aggregates, and Innovation in Bank Accounts (4)			*** (12.8) [Miller] *** (26.9) [Wallich]	
Labor Markets, Unemployment & Inflation (3)				* (4.4) Chairman Proxmire-D
Stance of Monetary Policy & Objectives (1)			(2.8) [Miller]	*** (32.8) Stewart-D

Table 5: Thematic Classes for 1979-81 Congressional Hearings, With Statistically Significant Tags for Party Affiliation and Fed Chairman [new Alceste]

Classes for House Hearings, 1979-81 (with thematic classification group indicated in brackets)	Democratic Tag (with χ^2 value)	Republican Tag (with χ^2 value)	Volcker Tag (with χ^2 value)	Other Tags (with χ^2 value)
Bank Credit / Structure of Deposit Banking / Account Types (5)				*** (115.0) Chairman Reuss-D *** (56.7) McCollum-R *** (37.6) Leach-R *** (16.9) LaFalce-D *** (13.7) Chairman St. Germain-D
Fiscal Policy (Spending & Deficits) (6)	*** (105.8)	*** (11.8)		*** (130.2) member
Inflation Problems (1)			*** (77.4)	
Fiscal Policy (Tax) (6)			*** (30.2)	*** (26.2) Frank-D *** (21.1) Carman-R
Productivity, Inflation and the Labor Market (1)			*** (50.9)	
Monetary Aggregates (4)			*** (19.0)	*** (19.6) Hansen-R *** (19.4) Mitchell-D *** (16.1) Stanton-R
Investment in Housing & by Small Businesses (2)	*** (93.4)	* (5.6)		*** (157.7) Watkins-D *** (139.3) member *** (81.8) Annunzio-D
Classes for Senate Hearings, 1980-81				
Credit Restraint (Signals from Monetary Policy) (4)	*** (15.6)			*** (135.4) Riegle-D *** (53.6) member
Interest Rates & Credit Conditions (4)		** (8.9)		*** (11.0) Chairman Garn [in 1981]-R
Monetary Aggregates (4)			*** (28.7)	
Fiscal Policy (6)	*** (72.7)	** (10.4)		
Volcker Revolution / Anti-Inflation Policies (1)			*** (28.2)	

Table 6: Thematic Classes for 1984-86 Congressional Hearings, With Statistically Significant Tags for Party Affiliation and Fed Chairman [new Alceste]

Classes for House Hearings, 1984-86 (with thematic classification group indicated in brackets)	Democratic Tag (with χ^2 value)	Republican Tag (with χ^2 value)	Volcker Tag (with χ^2 value)	Other Tags (with χ^2 value)
Transparency of the FOMC (demands for more) (8a)	*** (113.8)	*** (88.1)		*** (204.2) member *** (113.2) Frank-D
Regulation of the Banking System (5)				*** (44.6) Leach-R *** (24.7) McCandless-R *** (23.1) McKinney—R *** (19.3) Oakar-D
Fiscal Policy (6)	*** (126.4)			*** (74.7) member
US Imbalances / Exchg.Rate / World Economy (9)			*** (98.2)	
Monetary Aggregates (4)			*** (41.3)	*** (31.8) McCollum-R
Uncertainty & Risks around Forecasts of Interest Rates (1)			*** (16.9)	
Classes for Senate Hearings, 1984-86				
Capital Flows / External Imbalances / Exchange Rate / World Economy (9)			*** (17.2)	*** (18.9) Heinz-R
Bank Failures (esp. Continental Illinois) (5)				*** (46.9) Trible-R *** (23.8) Hecht-R *** (15.8) Riegle-D
Fiscal Policy (6)	*** (107.2)	*** (10.8)		*** (129.7) member
Structure of Banking System / Creation of 'Non-Bank' Banks (5)			*** (17.7)	
Uncertainty around Course of, and Target of Monetary Policy (1)	*** (41.0)			*** (65.4) Riegle-D
Economic Activity / Monetary Aggregates & Inflation (4)			*** (32.7)	

Table 7: Thematic Classes for 1991-1993 Congressional Hearings, With Statistically Significant Tags for Party Affiliation and Greenspan [new Alceste]

Classes for House Hearings, 1991-1993 (with thematic classification group indicated in brackets)	Democratic Tag (with χ^2 value)	Republican Tag (with χ^2 value)	Greenspan Tag (with χ^2 value)	Other Tags (with χ^2 value)
Fiscal Policy (6)	*** (112.1)	*** (26.3)		*** (127.7) member
Interaction of Fed with Presidency & Elections (8a)	*** (130.2)	*** (91.4)		*** (214.4) member
Credit Flows / Asset Prices (4)			*** (96.2)	
Economic Outlook /Inflation / Money Supply (1)			*** (89.9)	
Bank Lending – especially Small Businesses (4)			*** (47.6)	
Classes for Senate Hearings, 1991-1993				
Health of Banking System (5)			*** (107.2)	
Role of Congress in Economic Policy / Fiscal Policy (8a)	*** (76.0)	*** (22.0)		*** (52.9) member *** (36.3) Chairman Riegle-D
Fiscal Policy (6)		*** (238.0)		*** (110.5) member *** (208.7) Gramm-R
Monetary Aggregates (4)			*** (547.5)	
Labor Markets / Unemployment (3)	*** (318.6)			*** (162.8) Chairman Riegle-D *** (118.40 Sarbanes-D

Table 8: Thematic Classes for 1997-99 Congressional Hearings, With Statistically Significant Tags for Party Affiliation and Greenspan [new Alceste]

Classes for House Hearings, 1997-1999 (with thematic classification group indicated in brackets)	Democratic Tag (with χ^2 value)	Republican Tag (with χ^2 value)	Independent Tag (Bernie Sanders) (with χ^2 value)	Greenspan Tag (with χ^2 value)	Other Tags (with χ^2 value)
Role of Government in the Economy (Domestic & International) (8a)	*** (28.8)	*** (62.8)			*** (46.2) member
Economic Activity & Growth in the US (2)				*** (264.2)	
Labor Markets / Unemployment (3)	*** (22.4)		*** (312.0)		
Asian & Russian Crises (9)				*** (19.6)	*** (21.7) Lucas-R *** (20.7) Vento-D
Fiscal Policy (6)	* (5.5)	* (5.2)			*** (63.8) McCollum-R *** (54.5) Goode-D *** (38.8) Bentsen-D *** (38.0) Royce-R
Classes for Senate Hearings, 1997-1999					
Structure of Banking System / Regulation (5)				* (4.6)	*** (13.6) Reed-D *** (11.8) Chairman D'Amato-R
Praising Greenspan & Seeking His Advice (8b)	*** (118.3)	*** (130.1)			*** (222.8) member
Fiscal Policy (6)	* (6.5)	*** (26.2)			*** (49.2) Moseley-Braun-D *** (47.3) Bayh-D *** (43.0) Grams-R *** (37.1) Allard-R *** (43.2) member
World Econ./ Y2K Conversion of IT System (9)				** (8.6)	*** (11.7) Bennett-R
Economic Outlook & Growth (2)				*** (128.1)	

Table 9: Thematic Classes for 2003-05 Congressional Hearings, With Statistically Significant Tags for Party Affiliation and Greenspan [new Alceste]

Classes for House Hearings, 2003-05 (with thematic classification group indicated in brackets)	Democratic Tag (with χ^2 value)	Republican Tag (with χ^2 value)	Independent Tag (Bernie Sanders) (with χ^2 value)	Greenspan Tag (with χ^2 value)	Other Tags (with χ^2 value)
Labor Markets, Wages, Employment (3)	*** (87.3)	*** (20.9)	*** (119.9)		*** (204.9) member
Productivity, Economic Growth & Investment by Businesses (2)				*** (89.3)	
Education & Equality (10)				*** (174.4)	
Social Security Reform (6)	*** (106.7)				*** (71.1) member
Fiscal Policy (6)	*** (54.5)				*** (17.2) member
Banking System / Bank Regulation / Punishing Foreign Banks for Misdemeanours (5)		*** (27.0)			*** (128.8) Chairman Kelly-R
Classes for Senate Hearings, 2003-05					
Fiscal Policy (6)	*** (11.8)				*** (46.7) Reed-D
Praising Greenspan & Seeking His Advice (8b)	*** (17.4)				*** (35.3) member *** (28.3) Bunning-R *** (24.1) Dodd-D *** (19.0) Carper-D
Economic Activity / Role of Monetary Policy in Sustaining Growth (2)				*** (138.1)	
Energy Policy (10)		(3.2)			*** (84.7) Dole-R *** (68.9) Enzi-R
Labor Markets / Earnings (3)	** (7.7)				*** (36.9) Sarbanes-D

Table 10: Thematic Classes for 2006-08 Hearings, With Statistically Significant Tags for Party Affiliation and Bernanke [new Alceste]

Classes for House Hearings, 2006-08 (with thematic classification group indicated in brackets)	Democratic Tag (with χ^2 value)	Republican Tag (with χ^2 value)	Bernanke Tag (with χ^2 value)	Other Tags (with χ^2 value) @
Education & Income Inequality (10)	*** (44.6)	*** (20.7)		*** (44.7) Chairman Frank-D *** (40.3) member *** *(23.5) February 07*
Investment in Corporates / Role of Hedge Funds (5)			*** (46.9)	*** (21.3) Meeks-D *** (16.3) Capuano-D ** (10.2) Clay-D *** *(12.4) February 07*
Inflation & Economic Activity (1)			*** (194.9)	*** (39.3) July 06
Mortgage Lending / Conduct of Business (5)			*** (35.1)	*** (80.0) Watt-D *** (27.9) Biggert-R *** (23.3) Moore, D.-D *** *(71.5) February 08*
Wages & Productivity (3)	*** (54.5)	*** (58.6)		*** (135.1) member *** *(66.8) July 06*
Classes for Senate Hearings, 2006-08				
Challenging Fed & Bernanke; Proposing new Legislation (8a)	*** (80.3)	*** (23.0)		*** (52.0) member ** *(8.2) July 07*
Economic Activity & Inflation (1)			*** (123.7)	
Controls on the Conduct of Mortgage Lending (5)			*** (28.6)	*** (21.6) Brown-D *** *(86.3) July 07*
Foreign Ownership of US Firms / Sovereign Wealth Funds / China (9)	*** (10.8)			** *(8.1) February 07*
Education & Raising Skills of Labor Force (10)			*** (15.2)	*** (16.1) Dole-R * *(4.9) February 07*
Wage Inequality & Employment (3)	*** (113.7)			*** (145.0) Menendez-D *** (91.9) member *** *(15.9) February 07*

@ Tags in red signify ones that are not dominant but may be of interest to evaluating the financial crisis. Similarly, the date tags are included for 2006-08, whereas these were not listed for previous years.

Table 11: Summary of Major Themes and Significant* Party and Federal Reserve Chairman Tags (1976-2008)

Major Themes in Hearings, Summarized	1976-1977 (Burns)		1979 (Miller)		1979-1981 (Volcker)		1984-86 (Volcker)		1991-1993 (Greenspan)		1997-1999 (Greenspan)		2003-05 (Greenspan)		2006-08 (Bernanke)	
	H	*S*	*H*	*S*	*H*	*S*	*H*	*S*	*H*	*S*	*H*	*S*	*H*	*S*	*H*	*S*
1. Inflation (U.S.)					F	F	F	D	F						F	F
2. U.S. Economy-Output	F	F	F		D						F	F	F	F		
3. Labor Market / Unemployment	R	D								D	D/ I		D/R/I	D	D/R	D
4. Money Growth / Aggregates / Credit	D	F		F	F	D/R/F	F	F	F	F						
5. Financial Stability / Banking System	F							F		F			R		F	F
6. Fiscal Policy (incl. Social Security)					D/R/F	D/R	D	D/R	D/R	R		R	D	D		
7. Independence of the Fed – Relations between Fed/Congress/Administration	D	D			D											
8. Appraising the Fed a. Challenging the Fed							D/R		D/R	D/R	D/R					D/R
b. Praising the Fed												D/R	D			
9. World Economy (Impact on U.S., Exchange Rate Implications of Monetary Policy)			R				F	F			F	F				D
10. Other (Education & Inequality [w/ links to Labor Market theme], and Energy)											F		D/R	F		

* Tags for which χ^2 value is at least at the 1% significance level--see Table 3). D=Democrat; R=Republican; I=Independent (Bernie Sanders) and F=Federal Reserve Chairman.
Classes in red (classes 1, 2, 3 and 4) are linked in terms of word and sentence overlap, as are classes in blue (7 and 8).

Table 12: **Distribution of Major Themes Within Each Set of Congressional Hearings***

Major Themes in Hearings, Summarized	1976-1977 (Burns)		1979 (Miller)		1979-1981 (Volcker)		1984-86 (Volcker)		1991-1993 (Greenspan)		1997-1999 (Greenspan)		2003-05 (Greenspan)		2006-08 (Bernanke)	
	H	S	H	S	H	S	H	S	H	S	H	S	H	S	H	S
1. Inflation (U.S.)			38	15	22	26	17	30	24						17	34
2. U.S. Economy-Output	13	24	18		22						24	40	19	20		
3. Labor Market / Unemployment	40	10		21						18	14		18	15	23	11
4. Money Growth / Aggregates / Credit	16	19	20	29	19	66	25	22	45	21						
5. Financial Stability / Banking System	9				13		11	23		15		15	12		34	17
6. Fiscal Policy (incl. Social Security)			13		23	9	10	7	14	7	10	10	25	22		
7. Independence of the Fed – Relations between Fed/Congress/Administration	23	37	34													
8. Appraising the Fed							14		16	38	42					20
a. Challenging the Fed b. Praising the Fed												12		33		
9. World Economy (Impact on U.S., Exchange Rate Implications of Monetary Policy)		10	11				23	18			10	23				9
10. Other (Education & Inequality [w/ links to Labor Market theme], and Energy)													26	10	26	9
TOTAL (=100 but for rounding)	*101*	*100*	*100*	*99*	*99*	*101*	*100*	*100*	*99*	*99*	*100*	*100*	*100*	*100*	*100*	*100*

* Defined as the share of retained ECUs that are classified into each theme (links with the percentage distribution classes in the last row of Tables 1 and 2). Note also that the cell entries for this table do not always parallel the significant party and Fed tags given in Table 11, as the entries here include the weights of all themes—including those for which no important tags were statistically significant (e.g., where individual MCs might register significance, but not the party tag).

 Classes in red (classes 1, 2, 3 and 4) are linked in terms of word and sentence overlap, as are classes in blue (7 and 8).

Table 13: Share of Classified ECUs by Party and Fed Chairman (where party or Fed Chairman is statistically significant) * (1976-2008)

Major Themes in Hearings, Summarized	1976-1977 (Burns)		1979 (Miller)		1979-1981 (Volcker)		1984-86 (Volcker)		1991-1993 (Greenspan)		1997-1999 (Greenspan)		2003-05 (Greenspan)		2006-08 (Bernanke)	
	H	*S*	*H*	*S*	*H*	*S*	*H*	*S*	*H*	*S*	*H*	*S*	*H*	*S*	*H*	*S*
1. Share **of Monetary Policy Themes 1, 2, 4** – excluding Labor Markets) for which **Fed Chairman alone** dominates discussion	13	43	18	29	41	26	42	22	69	21	24	40	19	20	17	34
2. Share of **Labor Market Theme** for which **Democrats alone** dominate discussion		10							18		14			15		11
3. Share of **Fiscal Policy Theme**$^@$, Significant for **Democrats**					*23$^@$*	*9$^@$*	10	7$^@$	*14$^@$*				25	22		
Significant for **Republicans**					*23$^@$*	*9$^@$*		7$^@$	*14$^@$*	7		10				
Significant for **Fed Chair**					*23$^@$*											
President's Political Party	Democrat		Democrat		Dem ... Rep		Republican		Rep ... Dem		Democrat		Republican		Republican	
Majority Party in Congress	D	D	D	D	D	D – 80 R - 81	D	R	D	D	R	R	R	R	R – 06 D – 07-08	R – 06 Tied – 07-08

* Party / Fed Chairman tags for which χ^2 value is at least at the 1% significance level)—excluding the one Independent Tag for Bernie Sanders. Hence, themes for which neither party nor fed chairman tags are significant are not included (e.g., where the discussion is spread fairly evenly across party lines).

$^@$ As the share of ECUs in a class/theme is not separable by tag, entries indicated by italics are themes for which the parties share statistical significance.