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Deliberation and Oversight in Monetary Policy, 1976-2008

Andrew Bailey (Bank of England)

Cheryl Schonhardt-Bailey (LSE)



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Deliberation and Oversight in Monetary Policy, 1976-2008*
(chapter of forthcoming monograph, *Deliberating Monetary Policy*)

Andrew Bailey
Bank of England
Threadneedle Street
London EC2R 8AH
andrew.bailey@bankofengland.co.uk

Cheryl Schonhardt-Bailey
Government Department
London School of Economics and Political Science
Houghton Street
London WC2A 2AE
c.m.schonhardt-bailey@lse.ac.uk
<http://personal.lse.ac.uk/schonhar/>

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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). 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 by Governments over the independence of the Fed (Hetzl 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 the central bank operates. 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” (Hetzl 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, starting in the mid-1970s—the period of sustained high inflation—and ending in early 2008, thereby capturing the early days of the financial crisis. The main task of this paper is to map out the terrain necessary for more detailed investigation of the motivations of Members of Congress (MCs) as they oversee the policy making decisions of the Fed. (This detailed investigation appears in a previous paper (Bailey and Schonhardt-Bailey 2009), and will form the basis for a subsequent chapter in our larger book project—of which this paper is part.) To do this, we first provide a summary of monetary policy over our 33 year period, and then move on to provide a “bird’s eye view” of the ebb and flow of themes discussed by the chairman of the Fed and congressional members of the House and Senate Banking Committees. Our subsequent chapters explore in greater depth the motivations of these committee members as well as the extent to which discussions in these committees adhere to more theoretical notions of “deliberative democracy”.

While we acknowledge the important contributions from the literature on the politics of monetary policy,² our underlying concern 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, but these developments lie beyond the scope of the present project, as does the important objective of ending the dependence on public money created by Too Big To Fail.

We begin the paper in Section II 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. Section IV describes the specific hearings that comprise our data and provides a brief overview of the methodology employed (see our appendix for a more detailed description). Section V describes our results, while Section VI 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 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 employ automated content analysis in order to evaluate statistically the 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 Bernanke].

IV. 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 hearings⁶ and 30 Senate hearings⁷ grouped into sixteen text files (one file for each chamber in each of the eight time periods). In our subsequent chapter, we analyze these sixteen text files separately, but here, we merge all the House hearings into one corpus, and similarly, all the Senate hearings into a single corpus. As mentioned earlier, our timeframe includes five Fed chairmen—Burns, Miller, Volcker, Greenspan and Bernanke—but it also includes Henry Wallich for one Senate hearing, when he stood in for Miller.⁸

Within each corpus, each speech, question or interjection by a committee member or the Fed Chairman constitutes a “case”. Each case is identified (or “tagged”) with identifying characteristics, including the speaker’s name, the date of the meeting, and for Members of Congress only, his party affiliation and whether the speaker is the committee chair or a member.⁹

b. A Typology of Expected Findings

We have posited above that congressional oversight is likely to be conditional on both the success of the Fed in achieving price stability (the policy outcome) and whether MCs came to accept the merits of the low inflation consensus. Within this broad framework, we may anticipate that content analysis of the hearing transcripts (either automated or manual) would detect an evolution in the discourse from a period of greater conflict between MCs and the Fed chairman to one of less conflict—and this should roughly follow the timeline in Figure 1. In other words, during the period of the Great Inflation we should find MCs (and particularly Democrats) expressing more confrontational language vis-à-vis the Fed chairman than in the later period of the Great Moderation. If MCs increasingly embraced the benefits of low inflation, we might also expect to find them speaking more about, and linking more closely, such terms as *price stability*, *low inflation* and *stable economic growth*. Findings that support these priors would not be terribly interesting in themselves, although they would be reassuring.

The real benefit from employing textual analysis software is that we are able not only to confirm expectations but also to lend precise empirical measurement to what were previously vague generalizations. Moreover, our findings may be organized according to a schema which is typical of the results of statistical text analysis, namely, that the results usually fall into one of five categories: the trivial, the classic, the unexpected, the artifact, and the residue.¹⁰

The trivial are those which are so obvious as to be uninteresting (for example, that the discourse of oversight hearings on monetary policy contains economic terms with significantly high frequency). Statistical software, having no knowledge of the world

outside of the text will invariably convey information which is so commonsensical that it is not worth mentioning.

Classic results are what experts already know or suspect. Our expectations concerning the greater propensity for confrontational language during the period of the Great Inflation may fall into this category. Textual analysis which produces classic results facilitates an empirical verification of our priors, but may also allow quantification and lend statistical significance to our expectations.

Undoubtedly the greatest value from statistical text analysis emerges in results which are unexpected or surprising. Traditional content analysis—or indeed computer-assisted content analysis which requires any form of human coding—will invariably be limited by the preconceptions of the researchers and/or coders. With fewer substantive preconceptions, statistical text analysis software are adept at uncovering counter-intuitive or unusual patterns.

Artifacts are those results which come from the specific biases of the algorithms. For example, all software based on the calculation of co-occurrence will be especially sensitive to repeated chains or idiomatic expressions that artificially create clusters: e.g. “interest rates” or “Federal Reserve”. These must be spotted and corrected, for example by transforming the term into a single item: “interest-rates”. There are also more subtle artifacts; in general, the analyst must use her knowledge of the algorithms to check whether unexpected results are due to some artifact. (As an example, our software reads “Fed” as a derivative of “feed” and so the word “Fed” had to be replaced with the term “Federal-Reserve”.)

Finally, the residue is what the analyst is unable to interpret. This may come from the analyst’s limitations, or from the fact that statistical analysis only sheds light on strong regularities, and therefore there is always a residue that will just be “noise”. A careful analyst will be aware of the limitations of the statistical approach and therefore (a) not try to interpret everything, and (b) be tolerant to the fact that some results may not fit ideally in the analysis.

c. Methodology: Computer-Assisted Content Analysis

The use of text-mining or text analysis software has proliferated in recent years, not least of which in the academic literature. A survey of these software lies outside the scope of this paper; here, we confine our discussion to computer-assisted content analysis.

One form of automated content analysis is topic modelling, where the task is to automatically classify the contents of documents into “topics”. Each topic is understood to comprise a distribution over a fixed vocabulary of words or terms, and each document exhibits any number of topics in different proportions (Blei and Lafferty 2009). The basic idea is that words are indicative of topical content, and the task is to map the words into topics using a specified parametric form. These models are useful for exploring and cataloguing vast digital libraries (Blei and Lafferty 2006; Blei and Lafferty 2009), or for

categorizing a large number of speeches on a variety of subjects, where very little substantive knowledge of the subjects themselves is required (Quinn, Monroe et al. 2010).

A second approach to content analysis assumes that speakers or authors of textual data convey meaning in a more thematic fashion, and so it is not just the words that help to classify content, but also the context in which the words appear. Rather than conceptualizing words in an univariate distributional pattern (e.g., as in topic modelling), a thematic approach examines the bivariate associations between words and sets of words in order to map out so-called “lexical worlds”, and the relationships between lexical worlds within a single corpus.

Here we employ this thematic approach by using a textual analysis software called Alceste. The origins of this software are from the “French School of data analysis”, and as such, it considers the text as a large matrix of co-occurrences between lexical forms, and processes it with multivariate techniques.

One feature of Alceste is that it can be used to identify the speakers’ tendency to articulate particular ideas and arguments—ideas and arguments which can then be correlated with characteristics of the speaker (e.g., name of speaker, party affiliation, constituency characteristics and so on). It 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; Bara, Weale et al. 2007). Its specific advantages have been discussed elsewhere (Jenny 1997; Brugidou, Escoffier et al. 2000).¹¹ Alceste does not require any pre-coding but its application is constrained in that it cannot analyze very large corpora.¹² In contrast to applications of topic modelling where, for instance, vast libraries of documents with diverse topics might be analyzed, Alceste is suited to more focused research projects—for example, documents relating to a particular area of policy (monetary policy, trade policy, health), or the speeches of politicians which may be expected to contain broadly similar themes (State of Union addresses by US presidents). Moreover, whereas topic modelling requires very little substantive knowledge of the topics themselves, Alceste is most effective when it is joined with expert substantive knowledge of the subject matter, since contextual knowledge is often essential for interpreting the form of argumentation as well for extending the analysis into its more specialist usages (as we will see below, with the *Tri-Croisé*).

Alceste was initially designed to measure what Max Reinert calls the “lexical worlds”. As Reinert explains: “... we assume that the speaker, during his speech, is investing successive different worlds and these worlds, by imposing their properties, thereby impose a specific vocabulary. Therefore, the statistical study of the distribution of this vocabulary should be able to trace these ‘mental rooms’ that the speaker has successively inhabited; traces perceptible in terms of ‘lexical worlds’...” (Reinert 1987). In other words, a lexical world is a specific vocabulary, which inherits its properties from what the subject is talking about—e.g., if the text is about medicine, there will be many

medical terms. Conversely, if there are many medical terms, this is a cue that the text may be about medicine.

By purely distributional means the sets of words that go together in the discourse are isolated and represented to the researcher, as a trace of some “lexical world” which remains to be interpreted. The software accomplishes this using only a statistical approach to analyze the distribution of words in the corpus, while remaining completely deaf to the meaning of words themselves. The only semantic aspects inbuilt in the software are some grammatical dictionaries which enable reducing verbal forms to a single root (reducing all the flexions of a single verb to its radical, or names in plural to singular), and classifying words into various grammatical classes (nouns, verbs, articles etc.) so as to eliminate function words (articles, some prepositions) in the analysis.

Operations in Alceste are statistical, transparent and reproducible, until the final moment of interpretation, where the analyst assigns a label to each set of specific vocabulary which was identified as a lexical world by the software, on the basis of co-occurrences and distribution patterns. Our Appendix gives a more detailed description of the algorithms and of their rationale.

In short, Alceste operates in four steps: it parses the vocabulary (step A); it transforms the corpus into a sequence of Elementary Context Units (ECUs) containing words (or more exactly stemmed words or “lexemes”) and operates a descending classification which produce stable classes of these ECUs, leaving what does not fit in these classes “unclassified” (step B); it operates a series of statistical characterizations of the classes (typical words, typical sentences, crossing variables, providing χ^2 values, etc.) (step C), which enable the analyst to operate interpretation (step D). The interpretation consists in attributing meaning to the “lexical world” that is latent in each class based on these statistical results. The software provides a number of tools for the researcher to interpret each class, and two tools are particularly useful—the characteristic words and the characteristic phrases.¹³ Both are ranked in order of χ^2 significance, to allow a clearer understanding of the terms and phrases which predominate in each class.

V. RESULTS OF TEXTUAL ANALYSIS OF HEARINGS

a. Identifying the Themes

Table 1 provides summaries of the basic statistics from Alceste for the two sets of hearing transcripts. For each set of hearings, the total word count is about three-quarters of a million words, while the number of unique words that were analyzed by the program is about 300,000.¹⁴ The passive variables¹⁵ (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).

[Table 1 – 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 Table 1. Overall, it is not surprising to find that more speeches appear in the House hearings (i.e., even though the length of each speech is more time-constrained, there are after all, about three times the number of members in the House Financial Services Committee than in the Senate Banking Committee).

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. As we explain in our Appendix, the program uses the presence or absence of words in each ECU to calculate matrices on which to build the classification process. It then conducts two preliminary analyses, each using slightly different lengths for the contextual unit,¹⁶ and then opts for the length that allows the greater proportion of ECUs to be successfully classified, relative to the total available. We can see from Table 1 that for both the House and Senate hearings, over 90% of the ECUs are successfully classified, which is a remarkably robust classification rate. (With respect to our typology of results, this means that about ten percent of each set of hearings data is residue, or unexplained.)

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*, etc) 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. As noted above, it is for the researcher to provide labels for the classes, based largely upon the characteristic words and characteristic ECUs.¹⁷ 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 freedom¹⁸), 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. Tables A1 and A2 in our Appendix provide the characteristic words and phrases for each class, and for the phrases, we identify each by the name of the speaker.

b. Schematic Overview of the Themes in the House and Senate Hearings

Unlike most cluster analysis software (e.g., XLMiner, T-Lab) that employ ascending hierarchical classification, Alceste uses a descending method, which facilitates greater stability to the classes. As we describe more fully in our Appendix, the software adopts a recursive algorithm to partition the data into classes. Figures 1 and 2 present dendrograms, or tree diagrams of the clustering of the classes, where the nearer the proximity of the tree “limbs”, the more overlapping is the vocabulary or terms (e.g., in Figure 1, the greatest overlap in vocabulary is between classes 2 and 5).

[Figures 2a and 2b – about here]

A good starting point for our analysis begins with understanding the basic fault line that separates the themes in both the House and Senate hearings. Beginning, for example, from right to left in Figure 2a, the first class comprises the total set of context units (i.e., the joined branches at the right). The program then attempts to partition that class into two further classes which are each as homogeneous as possible and as different as possible from one another. In Figure 2a, this first partition is fundamentally important for our hearings data, as it distinguishes a cleavage in the discourse between Members of Congress and the chairman of the Federal Reserve. Following an iterative process, the descending hierarchical classification method decomposes the classes until a predetermined number of iterations fails to result in further statistically significant divisions. The result is a hierarchy of classes.

In Figures 2a and 2b, the blue-coloured classes are those for which the tags of Members of Congress (name, party affiliation, role) are predominantly significant, the red-coloured classes are those for which the chairman of the Fed is predominantly significant, and black signifies shared significance (Figures 6 and 7, presented below, provide details for the significance of these tags). Over the period of the mid 1970s to 2008, representatives in the House hearings (Figure 2a) devoted their attention to (a) *criticizing the Fed* as out of touch with “real America” (a populist critique stemming mostly from Representative Bernie Sanders), (b) highlighting aspects of *fiscal policy*, and (c) predominantly from 2006 onwards, the Fed’s *regulatory activities*. Within this congressional discourse, we also find a distinct presence for rhetoric that reflects the more formal process of hearings (e.g., “Let me ask a question...”)—a class that we label “*Q and A Format*”. For the House hearings, there is little substantive content in this class, except to say that it is closely linked to another class (Class 2), in which Chairman Paul Volcker and committee members interacted quite closely in conflict regarding the Fed’s new monetary policy target and its determination credibly to commit to price stability.

It is quite conspicuous that MCs are largely silent on themes relating to the “guts” of monetary policy—namely, discussion of *money growth*, the *real economy* and external issues such as *capital inflow*, the *exchange rate* and the *current account deficit*. On these issues, it is the Fed chair who dominates the discussion.

Bridging the divide between areas of concern to MCs and those of concern to the Fed chair is Class 8, where committee members are seen to draw the chair (most notably Greenspan) into commenting on what might be described as “non-monetary policy” issues such as Government Sponsored Enterprise (Fannie Mae and Freddie Mac), education policy and Social Security. A plausible interpretation of this behavior is that MCs are seeking to draw the Fed Chairman into lending his authority to support their position in a policy debate largely unrelated to monetary policy. We are not surprised that this behaviour becomes more pronounced as the Fed’s own reputation and credibility grows in terms of the successful pursuit of monetary policy. As such, MCs exploit a spin-off from successful monetary policy.

In the Senate hearings (Figure 2), we observe the same cleavage in areas of focus between the Fed chair and senators, with core monetary policy areas of the world economy, monetary aggregates and the real economy the exclusive domain of the Fed chairman. Senators, like representatives, offer *critiques of the Fed’s operations and priorities* (in the Senate, led by Donald Riegle) and devote some attention to *fiscal policy* issues. In contrast to the House, however, senators are seen to be more concerned with the *quality of American workers in the context of US international competitiveness*. Moreover, given the Senate’s role in confirming appointments to the Board of Governors, it is perhaps not surprising to find more discussion concerning these appointments, and more broadly, the *institutional relationship between the Federal Reserve, Congress and the Administration*.

There is some overlap in—or interplay between—committee members and the Fed chair in discussions concerning *banking regulation*, but the bulk of the significance is given to Bernanke during the financial crisis and so we illustrate this in red.

The tree diagrams provide a reasonably simple initial portrayal of the relationships between the themes. Figures 3 and 4 extend this by placing the themes (or classes) and the tags on a single correspondence graph—where distance between a class and a tag (or between two classes) reflects the degree of co-occurrence.

[Figures 3 & 4 – about here]

For these graphs, the program cross-tabulates classes and words in their root form in order to create a matrix that can then be subjected to factor correspondence analysis (Greenacre and Hastie 1987; Greenacre 1993).¹⁹ In this way, we obtain a spatial representation of the relations between the classes—in other words, we can observe *how* the classes are related to one another (and tags related to the classes), and not just that relationships exist. By one estimation, “correspondence analysis remarkably simplifies complex data and provides a detailed description of practically every bit of information in the data, yielding a simple, yet exhaustive analysis.” (Nagpaul 1999) The positions of the points is contingent on correlations rather than coordinates, where distance reflects the degree of co-occurrence.²⁰ With respect to the axes, correspondence analysis aims to account for a maximum amount of association²¹ along the first (horizontal) axis. The second (vertical) axis seeks to account for a maximum of the remaining association, and so on. Hence, the total association is divided into components along principal axes.²² The resulting map provides a means for transforming numerical information into pictorial form. It provides a framework for the user to formulate her own interpretations, rather than providing clear-cut conclusions. It is generally used to identify systematic relations between variables when *a priori* expectations of relationships are incomplete or absent. (Nagpaul 1999) (For the mathematics of correspondence analysis, see (Nagpaul 1999).)

Beneath the correspondence map for the House hearings (Figure 3) are the percentage associations for each factor, with the first accounting for about 30% and the second accounting for an additional 21%. Hence, a two-dimensional correspondence space accounts for about 51% of the total variation in the corpus.²³ In total, seven factors are identified in the correspondence analysis.²⁴ For the Senate hearings (Figure 4) the

percentages are quite similar, and again the number of factorial dimensions is seven.²⁵ Dimensionality in this context requires careful dissection; we will return to this below.

From Figure 3 we can observe first that the horizontal axis captures the same cleavage we saw in the tree diagram between the themes discussed by the Fed chairmen and those of interest to committee members—that is, Greenspan, Burns, Miller, Bernanke and Volcker appear in the left hand quadrants, while the party tags and committee chair tag appear in the right hand quadrants. This same basic cleavage also appears in the Senate hearings (Figure 4), but with the Fed classes and tags on the right side and those associated with senators on the left side (here, it is the relative positions that matter, not the absolute).

There are, moreover, five noteworthy features which appear in the two figures. First, for each graph, seven factors are required to account for the total variation, with six factors accounting for 95% of the variation for the House and 93% for the Senate. Inasmuch as the dimensionality of the system is usually determined to be one less than the number of classes in the profile ((Greenacre 1993), p. 14), this means that for both graphs, further classes beyond eight are not plotted (i.e., the ninth class does not appear in either graph). In a more substantive vein, the high dimensionality of both sets of hearings is indicative of discourse that is thematically diverse—or in other words, the vocabulary is not particularly cohesive. A second, but related feature is that while the two-dimensional correspondence graphs are useful, their value is limited by the very fact that in these two cases they are, after all, attempting to capture a large number of dimensions in just a two-dimensional space. The program does allow us to investigate one further dimension with three-dimensional graphics. In these graphs (not presented here) we find, for example, that the third dimension for the House effectively distinguishes the unique vocabulary of anti-Fed populism (Class 1) from that of fiscal policy (Class 3), while for the Senate, the third dimension appears to untangle what appears to be a close association between classes 4 and 5—namely, the institutional relationships between Congress, the Fed and the Administration on one side, and the issue of educating and training American workers to compete more effectively globally on the other. Given the difficulties in unpacking and interpreting the large number of dimensions, we will confine our discussion to just the first dimension, where, together with the tree diagrams, the picture is clearer.

A third feature of the two graphs is that two thematic classes—the *US Real Economy* and *Monetary Aggregates*—are consistently the remit of the Federal Reserve Chairman; i.e., MCs appear to steer well clear of discussion on these issues. Fourth, the tag for the committee chair appears with the Congress discourse for the House, but is more associated with the Fed discourse for the Senate—a feature that may suggest that in the Senate, the committee chair tended to delve more into the “guts” of monetary policy discussions than in the House (we return to clarify this point below). Finally, for both the House and Senate, the issue of bank regulation is something of a discourse “outlier” in that it is positioned at a distance from the remaining classes. This is not surprising since bank regulation is in most respects a distinct activity of the Fed.

An interim conclusion is therefore that taken at face value MCs and Fed Chairmen talk across each other in oversight hearings. The content of their remarks is quite distinct.

But further analysis suggests that the picture is not so simple. At the least MCs are seeking to “recruit” a successful Fed Chairman to support their view on a range of associated policy issues. Thus, while monetary policy is the stated focus of the hearings, there is a lot more going on in the actual discourse.

c. Significance of Themes over Time, by Political Party, and by Fed Chairman

Labelling the themes within the hearings is only the first step in our analysis. Figures 5 through 7 provide graphical presentations for how these themes varied (a) from 1976 to 2008, (b) by political party affiliation and role (committee chair or member), and (c) by Fed chairman.

[Figures 5, 6 and 7, about here]

To compile these figures, we extract from each thematic class the statistically significant tagged indicators. As noted above and in our Appendix, significance is interpreted as the χ^2 value, with one degree of freedom, where:

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

Our legend to the right of each graph depicts two groupings of significance—the first from 2 to 50, and the second from 51 to 300. To distinguish the two groups, we size the boxes into small and large, and within each group, the darker the shading, the higher the χ^2 value. As can be seen from the above table of statistical significance, χ^2 values below 10 are less robust but are nonetheless noteworthy. Very high values (e.g., over 50) are, on the other hand, exceptionally robust. Our interpretation does not rely on or adhere rigidly to the specific intervals of these values (e.g., 200 as exactly ten times the significance of 20), but rather to a more relative standard in levels of categories, and particularly the distinction between the two groups of χ^2 values.

In all the Figures 5, 6 and 7, the top panel lists the thematic classes identified in the House banking hearings from 1976-2008, while the bottom panel lists the same for the Senate. Figure 5 maps out the varying levels of significance for each theme over time. The advantage of this graph is that we can observe for any year or collection of years, the themes that obtain some level of prominence *relative* to others that do not receive particular prominence. (For some years, no date tag acquires significance, which suggests

that for that particular hearing, none of the themes is unusually distinctive. In these cases, other tags—e.g., the Fed chairman or party affiliation—are the prominent ones.) The disadvantage of Figure 5 is that it is more difficult to convey the varying levels of significance for *all* the classes, across *all* the years, since this creates numerous columns that span many pages. To address this difficulty, we present an alternative set of bar charts in our Appendix (Figures A1 – A18), with each theme in a separate graph, thereby allowing the observer to view the whole period at a glance.

(i) *Significance Over Time*

Taking Figure 5 and Figures A1 - A18 together, we can highlight six findings. Below we present most of these fairly briefly, but in later chapters of this project, we explore each more fully.

First, discussion of monetary aggregates (Classes 6 [House] and 7 [Senate]) is prominent from the mid-1970s until about 1984, but disappears thereafter. This provides a clear empirical basis for the more casual observation that by the mid-1980s, the focus on money growth had dissipated in the minds of monetary policy makers. The reasons for this are not hard to find. The Volcker approach of targeting a quantity measure was shock therapy without precision and without transparency. As the immediate need for this approach diminished, so the approach of focusing on the price of money interest rate re-appeared.

Second, in the wake of the Fed’s remarkable policy shift to an anti-inflation stance in 1979 (Bailey and Schonhardt-Bailey 2008), it is clear that Paul Volcker devoted considerable attention to explaining and defending this stance to MCs until nearly the end of his term in 1987 (Class 2 [House] and part of Class 3 [Senate]).

Third, to the extent that MCs directly challenged the decisions and institutional independence of the Fed, this is seen mostly during the period of the Great Inflation and is more evident in the Senate than the House, where its ability to approve appointments to the Board of Governors lent it greater authority (Class 4 [Senate]). As the relationship between Congress and the Fed is core to our research, it is useful to examine more closely the actual words of senators on this topic during the 1970s as compared to later decades. In our Appendix, Table A2 lists the top ECUs for all the classes, including that of the *Relationship between the Fed, Congress and the Administration*. Senator Proxmire, chairing the committee in 1977, paints the relationship between Congress, the Carter Administration and the Fed as confrontational and hierarchical—with the Fed chairman (Burns) and the president as “the two most powerful men in our country” who then see their task as lecturing to MCs to “hold down federal spending”. In contrast, the complaint of Senator Bunning in 2006 to Ben Bernanke is far milder in its focus on the perceived lack of transparency in FOMC minutes of the internal debate of the committee members. Taking the dialogue before and after the ECU (in italics) captured by the analysis helps to illustrate this further:

Bunning: “. . . . The Federal Reserve minutes say that there is a discussion of a range of options. But it turns out that the vote is almost always unanimous. I had to go back, I cannot remember when the last dissenting vote in the FOMC occurred. Leading up to the June meeting, public statements by some of the Federal Reserve Members indicated there might be a pause. But once again the vote was unanimous to raise rates. How much serious debate is there really if the Federal Reserve keeps coming up with unanimous decisions?”

Bernanke: “Senator, different committees have different approaches to decision-making. The Monetary policy Committee in the United Kingdom, for example, like the Senate, is where everybody votes directly. And on a recent occasion, the Governor of the Bank of England was voted down in his recommendation.”

Bunning: “Gee, that would be a very pleasant surprise at times.”

Bernanke: “In the Federal Reserve, we are more of a consensus-based organization. We do try to come to an agreement among ourselves, the same way other organizations like the ECB do. But I assure you that we have lengthy and spirited discussions within the meetings, and outside the meetings with staff. And each person is contributing a perspective and a point of view to the policy.”

Bunning: “*Mr. Bernanke, they never show up in the minutes of the FOMC meetings. All this discussion, all this debate never shows up in the minutes when we get them.*”

Bernanke: “Perhaps the minutes could be more detailed.”

Bunning: “Transparent?”

Bernanke: “Possibly. Another possibility, sir, is to look at some of the transcripts, which are of course only available with 5-year lags. But they give a full verbatim description of the meeting. You will see there, if you look, quite a bit of debate and discussion. That is the tradition we continue today.”

Bunning: “It took me years of practice, but before Mr. Greenspan left, I was actually able to understand what he was talking about. There is still a problem with understanding what the Federal Reserve is thinking though totally. You have thought about bringing back the balance of risk statements or doing something else so people can understand what is going through all of your heads. Is that a fact? Is that going to happen?”

Bernanke: “In the short-run, Senator, we are trying to maintain some continuity with previous practice so as not to confuse people who are paying attention to the Federal Reserve too much. But what we are doing, as was revealed in the minutes,

we have set up a small committee which is going to help the entire FOMC think through our entire range of communications, all aspects, including the minutes, including the statements, and try to develop a better, more explicit, and more useful form of communication. And I will certainly keep Congressional leaders apprised of this. And if anything happens that is a departure from past practice, I will certainly let you know about it and get your input.”

Bunning: “Last but not least, one thing different in your time as Federal Reserve Chairman than when Mr. Greenspan, is the amount of attention the public is paying to statements from other Federal Reserve Members. There was even a Bloomberg article yesterday about that. Do you have any problem with other Federal Reserve Members speaking out with different points of view? Do you think that is good for the markets and the economy?”

Bernanke: “Senator, you were asking about differences of opinion and getting around group think, and this is one way in which Members of the FOMC can express different shades of their views. We do not restrict, we do not coordinate, the speeches of FOMC Members. They are going out on their own in their own districts and talking about whatever issues are important to them. And sometimes they make comments on monetary policy.”

While this interchange between Bunning and Bernanke is fairly muted, other more hostile exchanges by MCs and Fed chairmen are so prominent as to become well-known clips on YouTube (at least in recent years, as seen with Bernie Sanders and Alan Grayson). The oversight hearings thus offer individual MCs the opportunity to capture the media limelight (and speak to constituents in their districts) with their sustained critiques against the Fed—and our textual analysis captures this in two classes, one in the House (Class 1) and one in the Senate (Class 9). In both cases, the discourse is *almost* exclusively that of just one individual—in the House, Rep. Bernie Sanders (the only Democrat Socialist in Congress, an Independent from Vermont who has gone on to become senator for that state) and in the Senate, Senator Don Riegle (Democratic Senator for Michigan from 1977, and chair of the Senate Banking committee from 1989-95).

Fourth, it is not surprising that in the midst of the financial crisis, banking regulation rises to prominence in 2007-08 (Classes 4 [House] and Class 2 [Senate]). Interestingly though, prior to the crisis, the Fed’s regulatory activities received almost no significant discussion in the oversight hearings—except for two notable instances in the Senate hearings. These appear in 1984, with the failure of Continental Illinois National Bank, and in 1999, following the Long-Term Capital Management problem of 1998.

In the late 1990s and continuing up to the financial crisis, senators become increasingly more focused on declining US international competitiveness and its link to deficiencies (education and training) in the labour market (Class 5). The intriguing element of this

fifth finding is that there is no equivalent discourse in the House hearings—except for occasional references within the more populist critique of Rep. Sanders.

Finally, fiscal policy receives regular, though not overwhelming, attention in the House hearings, and almost no significant attention in the Senate hearings—with the exceptional year of 2005, when discussions of spending on the Iraq war captured their attention (Classes 3 [House] and 6 [Senate]). Discussions of fiscal policy, and particularly, the mix between fiscal and monetary policy, require closer examination, which we provide below in our “Closer Look” section.

(ii) Significance by Party and Chairman

In brief, Figure 5 and Figures A1 – A18 provide ample material for further exploration—a task for later chapters of this project. Turning to Figures 6 and 7, we can begin to isolate more clearly where committee members of different partisan orientation tended to focus their concerns, and the areas of focus for each successive Fed chair.

First, both Figures 6 and 7 illustrate the same thematic cleavage we observed in the tree diagrams and correspondence analysis. In particular, MCs acquire no statistical significance whatsoever for discourse on core issues in monetary policy—e.g., the battle against inflation, the US real economy, monetary aggregates—nor on issues of the US external balance or the world economy. For these issues, the Fed chairmen dominate the discussion. We do, however, observe one notable exception—namely that of Senator Riegle—whose discourse (both as committee chair and member) comprises the bulk of Class 9 in the Senate. We have labelled this class “Criticism of the Fed” but we note that a large share of Riegle’s attacks focused on the Fed’s perceived inattention to, or failure to support economic growth. While the critical and less technical vocabulary in the class distinguishes it from the vocabulary of the Fed chairmen on the US real economy (Class 8), it is important to note that Riegle’s comments were relevant to the real economy. This feature of Riegle’s discourse also helps account for the anomalous placement of the Committee Chair tag in the Senate correspondence graph (Figure 4), where it is positioned nearer to the Federal Reserve classes on the right of the graph.

A second and related observation is that our two “limelight” MCs—Riegle and Sanders—are evident from their large chi square significance values in Figure 6a and 6b. We also note that to capture the limelight, a MC need not also be in the chair. Riegle’s critiques are significant even when he was not chairing the Senate Banking Committee, and Sanders’ populist anti-Fed remarks (along with other such sentiments by some Democrats and Republicans) are not contingent upon sitting in the role of committee chairman.

Following on from this, we also note that—perhaps contrary to conventional wisdom, and committee practice which allows the chair to speak first—the committee chair does not appear to consistently outweigh the rhetorical significance of the members. This is particularly evident for fiscal policy, where the chair scores no statistical significance in either the House or the Senate hearings.

Finally, as anticipated from our earlier overview of Fed-Congress relations, challenges to the policies and priorities of the Fed tend to come more from the Democrats than the Republicans—as seen in Class 1 (House), noting that Sanders caucuses with the Democrats, and in Class 4 (Senate). Meanwhile, Republicans are slightly more inclined to discuss banking regulation, but as this theme receives very little attention before the recent financial crisis, it should not be overstated.

Turning specifically to Figure 7, we can see that Fed chairmen are closely associated with particular themes: monetary aggregates for Burns, Miller and Volcker; the fight against inflation for Volcker; the US real economy, the world economy (including trade and current account) and the willingness to explore non-monetary policy issues for Greenspan; and regulation of financial institutions, along with the real economy for Bernanke. Figure 7 provides a concise summary of the priorities of each Fed chairman, but it also encapsulates the changing context of US monetary policy from the mid-1970s to 2008. It depicts the shift from commentary on monetary quantities to the US real economy, with the transition most obviously between the Volcker and Greenspan years. It also shows the degree to which Bernanke has been able to avoid commenting on regulatory matters during the crisis. Another finding, which we find less straightforward to interpret, is that the distribution of significance by thematic classes is weighted towards the Volcker, Greenspan and Bernanke periods, and not the Burns and Miller years.

d. A Closer Look at the Thinking of Fed Chairmen (using Tri Croisé)

Our examination of the distribution of attention to the themes across time, party and Fed chairmen provides a good initial overview of the core ideas and areas of focus in the congressional hearings, but we can delve deeper by employing what is known as *Tri-Croisé* or Cross-Data analysis in Alceste. This analysis crosses a tag (name of speaker, etc.) or a single word with the entire text and identifies the strongest statistical associations between the specified tag or word, and other words and phrases in the text.²⁶ Here we cross each of the Fed chairmen and each of the two major party affiliations with the entire set of House hearings, and again, with the entire set of Senate hearings. This allows us the ability to identify those words and phrases which are most closely associated with Burns, Miller, Volcker, Greenspan and Bernanke, as well as those most closely associated with Republicans and Democrats in the House and Senate hearings. (As a conceptual short-hand, this analysis is akin to holding constant each of our relevant tags.)

For each relevant tag (Fed chairman, party label), the program generates two classes (each with characteristic words and phrases, ordered by chi square significance). One class is unique to the vocabulary of the Fed chairman or party label, and the other class consists of words and phrases that are *least* associated with the tag. We focus here only on the first class, and from that, we examine the top ECUs (which, automatically generated, number 19).

Table 2 presents a simple list of the top phrases for each Fed chairman and party label. From a close reading of each set of 19 ECUs, we tally and group them into common categories. While there is of course some overlap between these categories and our thematic classes reported in the first part of this paper, our cut into the data here is different, as we are not attempting to use the program to identify themes across the whole corpus, but rather simply to identify vocabulary that is statistically associated with a particular Fed chairman or group of political party members. Moreover, for simplicity, we do not weight or list the ECUs in terms of their χ^2 ranking in the *Tri-Croisé* reporting, but rather treat all the reported ECUs equally. We are therefore applying a structured approach to capturing the meaning of the text.

[Table 2 – about here]

To aid in the interpretation, we convey the same distribution from Table 2 in two graphs—Figures 8 and 9.

[Figures 8 and 9 – about here]

From Table 2 and Figures 8 and 9, we can make at least a number of observations: (1) the distribution in topics between Burns and Miller (in both the House and Senate) is quite similar, which is perhaps not surprising; (2) indicative of his revolutionary shift in monetary policy, Volcker is almost exclusively associated with discourse on money and inflation; (3) both Greenspan and Bernanke devote considerably more attention to the US real economy (including labour markets) in the House hearings than the Senate hearings; (4) as one would expect with the financial crisis, Bernanke devotes considerable attention to discussing the regulation of financial institutions—but surprisingly, far more so in the House than in the Senate; and (5) the political party divide is far more distinct in the Senate than in the House, with Republicans focusing predominantly on fiscal policy and Democrats on the US real economy (particularly labour markets). This divide still appears in the House hearings, but overall, the discourse is more spread across more areas.

The variations in the distributions tell part of the story of the differences among the Fed chairmen, but one aim of our project is to understand more fully the thinking of each chairman on monetary policy per se. To achieve this, we extract from the 19 ECUs for each Fed chairman, those in which he describes his approach to monetary policy to the congressional committees. (These are listed in part IV of our Appendix.) From these descriptions, in this section, we draw out the key points and differences in the comments of the chairmen, taking each in turn. We do not seek to distinguish between comments made to the House and Senate Committees, though in our Appendix the comments are shown separately.

(i.) Arthur Burns placed an emphasis on describing monetary policy in the context of the business cycle, as befits his background in economics (his academic career had been associated with business cycle analysis). In terms of the direction of monetary policy he placed emphasis on “*the course of moderation*”, thus:

“The principal contribution that the Federal Reserve can now make to the achievement of our nation’s basic economic objectives is to adhere to a course of moderation in monetary policy.”

What did he mean by a *course of moderation*? The ECUs reveal that Burns interpreted his role as one of “*formulating public policy*” which appears to bear out an interpretation of the Fed being prepared to subordinate its independence in monetary policy to a broader objective of public policy alongside other objectives which were the responsibility of Congress and the Administration [see our comments in sections II and III]. Thus, Burns recognised inflation as “*a major consideration in formulating public policy.*” An important part of this focus on public policy by Burns is his willingness to place regaining “*satisfactory levels of production and employment*” ahead of the “*eventual return to stability of the general price level*” (our emphasis on “eventual”). In a second quote, Burns describes the Fed as:

“seeking to foster financial conditions that would facilitate a good expansion in economic activity without aggravating in any way the troublesome problem of inflation.”

This can be interpreted as a willingness to foster growth without making a bad inflation problem worse. Finally, Burns also describes in familiar terms (Burns 1979 (1987)) the origin of the inflation problem in the loose fiscal policies of the 1960s, which he associated with the Great Society initiatives of the Johnson Administration.

This encapsulates the paradox of Arthur Burns, namely placing blame on other dimensions of public policy for creating the inflation problem while being prepared to harness and even subordinate monetary policy to those other dimensions of public policy.

(ii.) William Miller used stronger language in describing “*the war against inflation*” and he did not repeat the phrase “*course of moderation*” in the way that Burns did to Congress. Rather, Miller talked in similar terms of gradual adjustment in policy:

“I have been a proponent of adjusting our economy to a slower growth mode, on a gradual basis, so we don’t shock it, don’t create dislocations, and don’t interrupt the process of investment in a way that would trigger a serious recession.”

Miller was clear that a “*recession is not going to cure inflation.*” Moreover, he used similar language to Burns in describing the mix of public policies that would tackle inflation:

“It had been our report to this committee that with the strategic policies being put into place involving fiscal discipline, involving incomes policy, involving dollar and international account policies, involving energy policies, and involving monetary policies we would wring out inflation over 5, 6, or 7 years.”

It is notable that monetary policy does not come first in this list, indeed it comes last. And, Miller’s ambition was to tackle inflation over a period of five to seven years (albeit that he was clear in describing the effects of the second oil price shock in setting back the timetable).

Miller used somewhat stronger headline rhetoric than Burns (“*war against inflation*”) but he operated in a similar framework in thinking of monetary policy as one amongst a number of public policies tackling inflation, and of a gradual adjustment downwards of inflation.

(iii.) As we would expect, the arrival of **Paul Volcker** as chairman marked a distinct break in the language used by the chairman to Congress. Volcker’s language is clear and direct, talking of “*the need for greater monetary and price stability for its own sake*”. Volcker’s language did not include the moderation or gradualism of Burns and Miller:

“Against the background of the strong inflationary momentum in the economy, the targets are frankly designed to be restrictive. They do imply restraint on the potential growth of the nominal GNP. The heart of the problem is that if inflation continues unabated or rises, real activity is likely to be squeezed. But, as inflation begins noticeably to abate, the stage will be set for stronger real growth. Monetary policy is designed to encourage that disinflationary process.”

Moreover, Volcker introduced a clear hierarchy of public policy objectives:

“The experience of the Seventies strongly suggests that the inflationary process undercuts efforts to achieve and maintain other goals, expressed in the Humphrey-Hawkins Act, of growth and employment.”

Here we see the shift to the modern idea that low inflation is the necessary condition for stable economic growth. While he recognised that “*indefinitely continued high levels of unemployment and poor economic performance*” were not a satisfactory remedy, “*ratifying strong price pressures by increases in the money supply offers no solution*”. This was different language to that of Burns when he described unemployment as “*deplorably high*”. But Volcker recognised though that the success of anti-inflationary monetary policy was dependent on “*other public policies and private attitudes and behavior*”:

“Monetary policy is only one part of an economic program. It is an essential part, but success is dependent on a coherent whole.”

Volcker’s language to Congress also introduced for the first time the notion of the importance of public attitudes and expectations towards future inflation:

“The legacy of the Seventies was deeply ingrained patterns of behavior in pricing, in wage bargaining, in interest rates, and in financial practices generally built on the assumption of continuing, and accelerating inflation.”

Another noticeable shift in the language used by Volcker to Congress was to describe the Fed as being “*guided by the need to maintain financial discipline*”:

“I think the markets reflect and it is apparent in other contexts that for the time being there is a particularly heavy burden on monetary policy in dealing with the inflationary situation.”

The role and position of financial markets did not feature in the language of Burns and Miller.

Volcker’s change of language in addressing Congress was just as abrupt as his change in policy, recognising the primacy of anti-inflationary policy, the role of public expectations of inflation, and the importance of financial markets.

(iv.) The language of **Alan Greenspan** has to be interpreted against the marked change in inflationary conditions. Unlike Burns, Miller and Volcker, Greenspan talked from a position of well-established low inflation. As we have noted elsewhere, this changes the whole dialogue with Congress in terms of substance and the language used. Greenspan talked about benign economic conditions resulting from the achievement of low inflation:

“The essential precondition for the emergence, and persistence, of this virtuous cycle is arguably the decline in the rate of inflation to near price stability. In recent years, continued low product price inflation and expectations that it will persist have promoted stability in financial markets and fostered perceptions that the degree of risk in the financial outlook has been moving ever lower.”

Greenspan’s focus was therefore on the forward-looking outlook for inflation, but in terms of what it might be rather than what it ought to be:

“Whether inflation actually rises in the wake of slowing productivity growth, however, will depend on the rate of growth of labor compensation and the ability and willingness of firms to pass on higher costs to their customers. That, in turn, will depend on the degree of utilization of resources and how monetary policymakers respond.”

It is though worth noting that Greenspan’s language was cast in terms of a conditional outlook (continuing low inflation is conditional on the growth of labour compensation etc.) rather than a more formal statement of risks on either side of the outlook.

(v.) The contemporary orthodox statement of monetary policy which recognises both the uncertainty in the outlook and the normal presence of risks on either side of the central case outlook comes from **Ben Bernanke**:

“As always, in determining the appropriate stance of policy, we will be alert to the possibility that the economy is not evolving in the way we currently judge to be the most likely. One risk to the outlook is that the ongoing housing correction might prove larger than anticipated, with possible spillovers onto consumer spending. Alternatively consumer spending, which has advanced relatively vigorously on balance in recent quarters, might expand more quickly than expected. In that case, economic growth could rebound to a pace above its trend. With the level of resource utilization already elevated, the resulting pressures in labor and product markets could lead to increased inflation over time. Yet another risk is that energy and commodity prices could continue to rise sharply, leading to further increases in headline inflation and, if those costs pass through to the prices of non energy goods and services, to higher core inflation as well.”

There is no debate with Congress on the role of monetary policy (a feature also of Greenspan’s language) and the low inflation consensus. Bernanke is also explicit in setting out the lagged transmission mechanism of monetary policy:

“Monetary policy works with a lag. Therefore, our policy stance must be determined in light of the medium term forecast of real activity and inflation as well as the risks to that forecast.”

Monetary policy is appropriately cast as forward looking, and the exchanges with Congress should be on the outlook for the economy and inflation. It is however quite possible that Members of Congress feel less confident debating what will happen with an expert who is armed with a forecasting machinery and a successful policy record than they were in the past arguing about a past record of policy that could not be regarded as a success.

VI. Conclusion

A pessimist might conclude that we have turned up evidence that Congressional oversight of the Fed consists of two sets of people talking across each other. Fed Chairmen go to Congress to talk about monetary policy, while MCs want to talk about other policy areas. One interpretation of this outcome is that when done well, monetary policy is both technical and dull, which is not the stuff that interests most Members of Congress. But this does not in itself devalue the purpose of congressional oversight, even if it cautions us that telling this story is not as trivial as we might have thought.

We have used our analytical approach to illustrate the evolution of monetary policy as described by successive Fed Chairmen to Congress. This is a commentary that is not so readily obtainable from the records of the FOMC itself, which provide a closer reading of policymaking, but are less focused on putting monetary policy into the context of overall

public policy. Perhaps unsurprisingly, success in monetary policy making changes the focus of congressional oversight. It has not fully eliminated the tradition of the political divide whereby Democrats maintain the tradition of a populist suspicion and criticism of the motives of the Fed, but it has been pushed more into the wings (as represented by Bernie Sanders).

A next step in our work is to understand how these empirical observations affect the views of the political science literature on congressional oversight, and particularly what motivates Members of Congress to devote time and energy to this activity. As for the Fed, if we go back to the quotes at the start of the paper, the objective of oversight has changed. The contemporary orthodoxy is that Congress represents the public to whom monetary policymakers are accountable. Moreover, this accountability requires a platform to give it a concrete form and for it to be reported. Going back in time, the position is more paradoxical. Arthur Burns was keen to avoid any sense of interference by Congress, while maintaining a desire to position monetary policy as one part of a broader public policy front in tackling the macroeconomic problems of the day. A perhaps obvious, but nonetheless important conclusion is that public accountability for an operationally independent policy through the political process is easier to achieve when policymaking is successful.

APPENDIX

Part I : The ALCESTE methodology

Overview:

The basic idea of the software is to find “lexical worlds” in the speaker’s discourse. As a metaphor, consider a tourist who visits a country where there is a seaside, a town, a desert and a forest. The tourist stays in this country for a month and goes to various places; maybe several times a day to the town, every second day to the seaside and the rest of the time in the forest, but very few times in the desert. Every 10 minutes, the tourist posts what he sees around him on his internet blog. Let us organize his posts by putting together those which share the same lexical content (e.g. the ones containing “building”, “street” in one class; the ones containing “trees”, “plants” in another; the ones with “sea”, “beach” in a third, etc.). In doing so, even without knowing the country we will reconstruct through these lexical associations classes corresponding to the areas to which they refer (town, forest, seaside, desert) and understand what these areas are based on the lexical content of the classes (the class containing “sea” and “beach” probably refers to the seaside, etc.). It is because co-occur locally that we can make interpretations (a tree alone means nothing, and could be found in towns; but a tree co-occurring with other trees and with plants means forest). We shall also be able to assess in which of these areas the tourist stayed more often. And if we did that with two tourists, we may find some differences in the places where they tend to stay (assuming that if one was more often at the seaside and the other in the forest, this would be reflected in their discourse).

In the same way, as Reagan and Thatcher run through semantic fields when producing discourse, their statements provide us with a lexical distribution that reflects the content of these fields (their lexical worlds). By classifying together the statements that contain similar words, we

can hope to understand what semantic territories were behind the construction of the observed discourse.

Alceste operationalizes these notions of “statements”, “words”, and “similarity”. Statements are approximated by “Elementary Context Units” (ECUs), which are natural sentences or natural fragments of sentences delimited by punctuation so as to have similar length. Alceste constructs a dictionary of “lexical forms” (“lexemes”) which are lemmatized words, more useful for our purpose in terms of semantics.

To assess similarity between statements, Alceste constructs a matrix that crosses ECUs and lexemes, where the cells sign the presence or absence of that lexeme in the ECU. Alceste then operates on this matrix a descending classification, which produces classes of similar context units. The descending classification technique used maximizes the similarity between statements in the same class *and* also maximizes the difference between the classes (cf. *infra*).

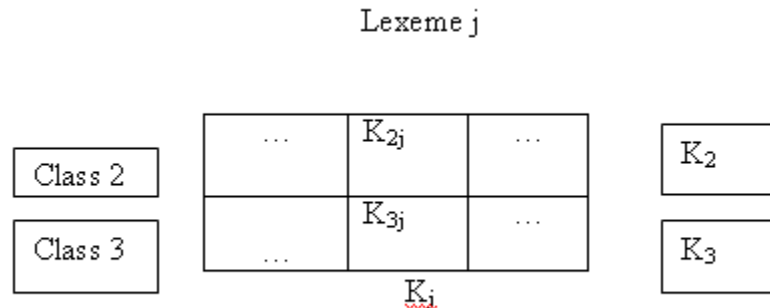
In the end, the analyst is provided with a series of classes and of statistical cues in the form of typical words, typical ECUs, typical authors and so on. This provides basis for “interpreting” the classes as lexical worlds.

The principle of descending classification

The core of ALCESTE is based on descending classification of text segments. The objective is to sort the ECUs in a partition of classes which are each homogeneous and as different as possible from one another. The initial table consists of as many lines as ECUs, and as many columns as lexemes chosen for analysis. At the intersection of a row i and column j the value is either 1 if ECU_i contains at least one occurrence of the lexeme j ; 0 otherwise.

The classification is a recursive algorithm. The first class comprises the total set of context units. The program then attempts to partition that class into two further classes which are each as homogeneous as possible and as different as possible from one another. This overlap between classes can be measured by the χ^2 of a table with 2 rows (one for each class) and as many

columns as there are lexemes. A cell at the intersection of row i and column j will contain the number k_{ij} of context units of class i containing lexeme j .



With, for example :

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

The χ^2 can be written as:

$$chi2 = k_2 \cdot k_3 \sum_{j \in J} (k_{2j} / k_2 - k_{3j} / k_3)^2 / k_j$$

The objective is to search, among all possible partitions in two classes, for the one that maximizes the χ^2 of this table. In practice, the algorithm

- a) Calculates the first factor of the Correspondence Factor Analysis of the table (R_j space, with the χ^2 metrics (Benzecri 1973));
- b) Slides the orthogonal hyperplane along that axis until it reaches a position that maximizes the inter-class inertia of the two parts of the cloud of context units that are separated by this hyperplane;
- c) Optimizes the partition with a local exchange algorithm by swapping context units individually around the hyperplane.

Following an iterative process, the descending hierarchical classification method decomposes the classes until a predetermined number of iterations fails to result in further significant divisions.

The result is a hierarchy of classes, which may be schematized as a tree diagram.

One advantage in using of descending classification (e.g. over ascending clustering techniques) is robustness. Textual data matrices are “scarce matrices” (mostly constituted of zeros, since only a small part of the whole vocabulary is used in each sentence) and as such, are very sensitive to artifacts. A few very similar sentences (e.g. using a fixed expression) will create a strong correlation that can “pull” an artifactual class. In the descending classification algorithm used, such effects stay local and do not propagate to the whole analysis.

The 4 steps of the method

Alceste has been described as a “methodology” insofar as it “integrates a multitude of highly sophisticated statistical methods,” (Kronberger and Wagner 2000: 306). The detail of the algorithms has been extensively described (Reinert 1983; Reinert 1987; Reinert 1990; Beaudouin and Lahlou 1993; Reinert 1993; Lebart and Salem 1994; Lahlou 1995; Reinert 1998; Reinert 2003).

Step A : The dictionaries of the vocabulary are created. It identifies word categories (verbs, nouns, etc.) which are useful because only some categories are be used in analysis (excluding “tool words” such as articles or pronouns). Vocabulary is parsed using a grammatical dictionary, and reduced into a dictionary of (lemmatized) lexical forms. All forms of a verb are converted to their infinitive, plurals are reduced to singular, and some variants of the same lexical root are reduced to the root. These forms are the basic “lexemes” upon which calculations are made.

Couples (two consecutive forms) and repeated segments (consecutive series of forms) are also found and listed in this step. They are useful in illustrating the classes at a later step. Calculations of frequencies of the forms is also done at this stage, which may be used in further steps, e.g. for eliminating from the analysis words which occur only once.

Step B: The software cuts the text into "statements". These are obtained empirically as Elementary Context Units ("ECUs"), in practice sentences or parts of sentences cut by natural punctuation. There are three types of context units. Initial Context Units or "ICUs" are the pieces of text that constitute the corpus to be analyzed (here, the speeches of Reagan and Thatcher). The

ICU is essentially the sampling unit—i.e., a pre-existing division of the text and is specified by the user.

Elementary Context Units (“ECU”) are the atomic pieces of text. The ECU is a “gauged sentence”, which the program automatically constructs based upon and punctuation in the text.²⁷

An ECU is delimited by a punctuation sign, and contains at least 15 occurrences of words.

In the course of segmentation, the software will also use somewhat larger Context Units (CUs), made by concatenation of several succeeding ECU.

In text analysis, a persistent and difficult issue concerns the optimal length of a “statement” as a semantic unit. Various possible solutions for a contextual unit would be a sentence, a paragraph, a piece of sentence, and so on. Alceste resolves this issue by not trying to identify directly the statement length; rather it produces classifications that are *independent* of the length of the statements.

For this Alceste creates two classifications, each using units of different lengths of CUs, and then retains only the classes which appear in both classifications: these classes are independent of the length of statements. In practice, CUs in each classification are constructed as concatenations of ECUs which have a minimal length of N1 *active words* (e.g. 12), and in the second classification a length of N2 active words (e.g. 18). An active word is a lexical root or “lexeme” (see Step A) of a noun, verb or adverb which occurs at least two times in the corpus. Alceste compares the two classifications, on the basis of ECUs in the classes. Only the classes that appear in both classifications are retained for analysis. The resulting classification is stable, and, as said, independent of the length of the CUs. This leaves a number of ECUs unclassified; thereby approximating a measure of goodness-of-fit.

The stability of the partitioning is measured by constructing a table that crosses all the classes (including all levels of nodes) obtained in the first classification and all the classes obtained in the second classification. In each cell (Cpq) of this table is the χ^2 associating the two classes p and q. The result is a “signed chi-square table”—that is, a data table with the positive

and negative links between the classes. This table helps to select the classes which share the higher number of ECUs. Interestingly, this table not only enables the program to retain the stable partitions, but also to obtain an empirical solution as where to stop descending classification in the classification tree: when stems are not stable, the tree truncates at the higher node.

This description, although limited, provides an indication of the elegance of the algorithm and the statistical underpinnings necessary to cope with the specific type of matrices encountered in textual data analysis (“scarce matrices”). This accounts for this specific software’s exceptional robustness. For a detailed exposition of the algorithm, see (Reinert 1983; Lahlou 1995; Bastin 2002); for a step-by-step explanation of each stage of the analysis, see (Reinert 1990), and for a simple illustration (Kronberger and Wagner 2000).

Steps C & D provide various auxiliary calculations to assist in the interpretation and description of classes. Most suggestive are the lists of the most representative vocabulary of each class (lexemes ordered by decreasing χ^2), and selected ECUs that best represent the class, based on their lexical content.

A correspondence analysis is also performed in this step to provide a comprehensive representation of the semantic field that situates the relative positions of the classes and lexemes.

Part II: Tables A1 and A2

[Insert Tables A1 and A2 – about here]

Part III: Figures A1 through A18

[Insert Figures A1 through A18 – about here]

Part IV: Core Statements of Fed Chairmen on Monetary Policy (extracted from Tri

Croisé ECUs)

Burns

House

“We knew from a careful reading of history that the turnover of money balances tends to rise rapidly in the early stages of an economic upswing. Consequently, we resisted the advice of those who wanted to open the tap and let money flow out in greater abundance. Subsequent events have borne out our judgment.”

“I believe that the course of moderation in monetary policy pursued by the Federal Reserve last year has contributed to economic recovery. The board are pleased to learn that the Senate Banking Committee, in its recent report on the conduct of monetary policy agrees with this view.”

“The downward adjustments of those growth ranges served to reassure the business and financial community that we intend to stick to a course of moderation in monetary policy. Another indication of our firm resolve was the prompt action taken some weeks ago to ward off a threat of excessive growth of the monetary aggregates.”

“Unemployment is still deplorably high, and activity in not a few of our nation’s industries remains depressed. Continuance of moderately rapid expansion is, therefore, essential to the restoration of our economic well being as a nation.”

“I must report, moreover, that despite the gradual reduction of projected growth ranges for the aggregates during the past two years, no meaningful reduction has as yet occurred in actual growth rates. That unintended consequence is partly the result of data deficiencies that complicate the already formidable task of adjusting or approximating monetary growth objectives. Some of the data deficiencies we have experienced are being overcome. Even so, monetary measurement will continue to lack the precision of a science. So too will the Federal Reserve’s actions aiming to influence developments in financial markets.”

Senate

“The underlying trend of costs and prices thus is still clearly upward, and inflation must remain a major consideration in formulating public policy. We at the Federal Reserve recognize our responsibility for sticking to a course of monetary policy that will promote further economic expansion, so that our nation may regain satisfactory levels of production and employment. We also recognize that monetary policy needs to be consistent with an eventual return to stability of the general price level.”

“Let me take this opportunity to state unequivocally once again that further reductions in the growth ranges of all the major monetary aggregates will continue to be needed if the United States is to succeed in unwinding the inflation that still plagues our economy.”

“The Federal Reserve has pursued a moderate monetary policy during the course of this recovery, seeking to foster financial conditions that would facilitate a good expansion in economic activity without aggravating in any way the troublesome problem of inflation.”

“I believe that the course of moderation in monetary policy pursued over the past year has significantly aided the process of recovery in economic activity. We at the Federal Reserve remain deeply concerned about the high level of unemployment that still exists in our country. We recognize the need to regain more prosperous economic conditions. We also recognize, as thoughtful Americans generally do, that lasting prosperity will not be achieved until our country solves its chronic problem of inflation. The inflation that is still damaging our economy and troubling our people began over a decade ago largely as a consequence of loose fiscal policies. During the early 1970s, the underlying inflationary trend was aggravated by a variety of special factors; poor crop harvests here and abroad, a worldwide boom in economic activity, devaluation of the dollar in international exchange markets, and an enormous run up in the prices of gasoline, fuel oil, and other energy items brought on by the OPEC cartel.”

“The principal contribution that the Federal Reserve can now make to the achievement of our nation’s basic economic objectives is to adhere to a course of moderation in monetary policy.”

Miller

House

“The oil price shock, as I say, sets us back in our timetable for winning the war against inflation. It had been our report to this committee that with the strategic policies being put into place involving fiscal discipline, involving incomes policy, involving dollar and international account policies, involving energy policies, and involving monetary policies we would wring out inflation over 5, 6, or 7 years. We have been put back in that timetable, in my opinion, by 1 year or more. And we are now going to start downward in wringing out inflation from a higher plateau than we otherwise would have reached.”

“The inflation rate for 1979, measured on the GNP deflator, shows an 8.75 percent increase, a rather disturbing rate that is causing us difficulty in adjusting the economy to our long term objectives.”

“Monetary policy continues to be an important influence on the performance of the economy, and there are some exogenous forces whose effects it might well be able to offset. However, monetary policy cannot simultaneously offset the inflationary impulse

of the rise in oil prices and the contractionary impact of the income transfer to foreign oil producers.”

“We do not anticipate pegging the Fed Funds rate at any particular level although avoiding sharp shifts in policy will allow us gradually to wind down inflation without a severe economic downturn.”

“I have been a proponent of adjusting our economy to a slower growth mode, on a gradual basis, so we don’t shock it, don’t create dislocations, and don’t interrupt the process of investment in a way that would trigger a serious recession.”

Senate

“I would say we must rely upon our best judgment, and it seems to coincide with the outlook in the President’s Economic Report for a growth rate in 1979 below the trend. Now if there are those who prefer a more restrictive policy and produce a recession, I would argue with them that they are wrong. A recession is not going to cure inflation.”

“Now the balance we are seeking is moderation, a slow growth philosophy for a period of time to get inflation down. We are not seeking a recession.”

“I think we ought to accommodate more through monetary policy and not have the tendency to become too stimulative in fiscal policy.”

Volcker

House

“As part of the process of restoring price stability, as I see it, this continuing effort reflects not simply a concern about the need for greater monetary and price stability for its own sake critical as that is. The experience of the Seventies strongly suggests that the inflationary process undercuts efforts to achieve and maintain other goals, expressed in the Humphrey-Hawkins Act, of growth and employment.”

“The legacy of the Seventies was deeply ingrained patterns of behavior in pricing, in wage bargaining, in interest rates, and in financial practices generally built on the assumption of continuing, and accelerating inflation. Starving an inflation of the money needed to sustain it is a difficult process in the best of circumstances; it was doubly so when the continuing inflationary momentum was so strong. Now, after a great deal of pain and dislocation, attitudes have changed, there is a sense of greater restraint in pricing and wage behavior.”

“Against the background of the strong inflationary momentum in the economy, the targets are frankly designed to be restrictive. They do imply restraint on the potential growth of the nominal GNP. The heart of the problem is that if inflation continues unabated or rises, real activity is likely to be squeezed. But, as inflation begins noticeably to abate, the stage will be set for stronger real growth. Monetary policy is designed to encourage that disinflationary process. But the success of that policy and the extent to which it can be achieved without great pressure on interest rates and stress on financial markets that have already been heavily strained will also depend upon other public policies and private attitudes and behavior.”

“In approaching our own operational decisions, the actual and prospective size of the budget deficit inevitably complicates the environment within which we work. By feeding consumer purchasing power, by heightening scepticism about our ability to control the money supply and contain inflation, by claiming a disproportionate share of available funds, and by increasing our dependence on foreign capital, monetary policy must carry more of the burden of maintaining stability and its flexibility, to some degree, is constrained. Monetary policy is only one part of an economic program. It is an essential part, but success is dependent on a coherent whole.”

“The experience of recent months demonstrates that monetary and fiscal policies alone cannot by themselves offset the present instability of our domestic and international economic affairs. We need urgently to develop comprehensive stabilization policies. As the chairman has emphasized, the direction of economic activity has changed swiftly in recent months. We have acute problems of recession and inflation. There have been unprecedented changes in interest rates and the imposition and removal of extraordinary measures of credit restraint. The fiscal position of the federal government is changing rapidly. In these circumstances, confusion and uncertainty can arise about goals and policies, not just those of the Federal Reserve, but of economic policy generally. That is why I particularly welcome the opportunity to be here to emphasize the underlying continuity in our approach at the Federal Reserve and its relationship to other economic policies, matters that are critical to public understanding and expectations. The Federal Reserve has been, and will continue to be, guided by the need to maintain financial discipline.”

“Let there be no doubt, the Federal Reserve is determined to make every reasonable effort to work toward reducing monetary growth from the levels of recent years, not just in 1980, but in the years ahead.”

“I think the whole weight of my remarks is that the one thing we can do really constructively, from this standpoint and from the domestic standpoint, is to reduce the demands on our credit markets. How do you do that constructively? You don’t want to do it by reducing home building, by reducing business investment, and all the rest. The obvious way to do it is to reduce the budget deficit, take some of the pressure off our markets. To the extent that that is influencing the market artificially in a sense, a reduction in the deficit will be effective.”

“Obviously, a satisfactory answer cannot lie in the direction of indefinitely continued high levels of unemployment and poor economic performance. On the other hand, ratifying strong price pressures by increases in the money supply offers no solution; that approach could only prolong and intensify the inflationary process, and in the end undermine/ the expansion.”

Senate

“Let there be no doubt; the Federal Reserve is determined to make every reasonable effort to work toward reducing monetary growth from the levels of recent years, not just in 1980, but in the years ahead. The policy actions taken on October 6th of last year, which entailed changes in our operating techniques to provide better assurance of containing the growth in the money supply, were one demonstration of that commitment.”

“The Federal Reserve has been, and will continue to be, guided by the need to maintain financial discipline a discipline concretely reflected in reduced growth over time of the monetary and credit aggregates as part of the process of restoring price stability.”

“I think the markets reflect and it is apparent in other contexts that for the time being there is a particularly heavy burden on monetary policy in dealing with the inflationary situation.”

“An effective program to restore price stability requires reducing growth in money and credit over time to rates consistent with the growth of output and employment at stable prices. That is the basic premise of our policies.”

Greenspan

House

“To a considerable extent, investors seem to be expecting that low inflation and stronger productivity growth will allow the extraordinary growth of profits to be extended into the distant future.”

“The essential precondition for the emergence, and persistence, of this virtuous cycle is arguably the decline in the rate of inflation to near price stability. In recent years, continued low product price inflation and expectations that it will persist have promoted stability in financial markets and fostered perceptions that the degree of risk in the financial outlook has been moving ever lower. These perceptions, in turn, have reduced the extra compensation that investors require for making loans to, or taking ownership positions in private firms. With risks in the domestic economy judged to be low, credit and equity capital have been readily available for many businesses, fostering strong investment. And low mortgage interest rates have allowed many households to purchase homes and to refinance outstanding debt.”

“A consequence of the rapid gains in productivity and slack in our labor and product markets has been sustained downward pressure on inflation.”

“Notwithstanding a reasonably optimistic interpretation of the recent productivity numbers, it would not be prudent to assume that even strongly rising productivity, by itself, can ensure a non inflationary future. Certainly wage increases, per se, are not inflationary, unless they exceed productivity growth, thereby creating pressure. Inflationary price increases can eventually undermine economic growth and employment. Because the level of productivity is tied to an important degree to the stock of capital, which turns over only gradually, increases in the trend growth of productivity probably also occur rather gradually. By contrast, the potential for abrupt acceleration of nominal hourly compensation is surely greater. As I have noted in previous appearances before Congress, economic growth at rates experienced on average over the past several years would eventually run into constraints as the reservoir of unemployed people available to work is drawn down.”

Senate

“In recent years, continued low product price inflation and expectations that it will persist have promoted stability in financial markets and fostered perceptions that the degree of risk in the financial outlook has been moving ever lower.”

“Investors seem to be expecting that low inflation and stronger productivity growth will allow the extraordinary growth of profits to be extended into the distant future.”

“Whether inflation actually rises in the wake of slowing productivity growth, however, will depend on the rate of growth of labor compensation and the ability and willingness of firms to pass on higher costs to their customers. That, in turn, will depend on the degree of utilization of resources and how monetary policymakers respond.

Bernanke

House

“Monetary policy works with a lag. Therefore, our policy stance must be determined in light of the medium term forecast of real activity and inflation as well as the risks to that forecast. Although the FOMC participants’ economic projections envision an improving economic picture, it is important to recognize that downside risks to growth remain. The FOMC will be carefully evaluating incoming information bearing on the economic outlook and will act in a timely manner as needed to support growth and to provide adequate insurance against downside risks.”

“As always, in determining the appropriate stance of policy, we will be alert to the possibility that the economy is not evolving in the way we currently judge to be the most likely.”

Senate

“As always, in determining the appropriate stance of policy, we will be alert to the possibility that the economy is not evolving in the way we currently judge to be the most likely. One risk to the outlook is that the ongoing housing correction might prove larger than anticipated, with possible spillovers onto consumer spending. Alternatively consumer spending, which has advanced relatively vigorously on balance in recent quarters, might expand more quickly than expected. In that case, economic growth could rebound to a pace above its trend. With the level of resource utilization already elevated, the resulting pressures in labor and product markets could lead to increased inflation over time. Yet another risk is that energy and commodity prices could continue to rise sharply, leading to further increases in headline inflation and, if those costs pass through to the prices of non energy goods and services, to higher core inflation as well.”

“The recent rise in inflation is of concern to the FOMC. The achievement of price stability is one of the objectives that make up the Congress’s mandate to the Federal Reserve. Moreover, in the long run, price stability is critical to achieving maximum employment and moderate long term interest rates, the other parts of the congressional mandate.”

“We are trying to balance a number of different risks against each other. With respect to inflation, as I said, our anticipation is that inflation will come down this year and be close to price stability this year and next year. If it does not, then what we will be watching

particularly carefully is whether or not inflation expectations or non energy, non food prices are beginning to show evidence of entrenchment, of higher inflation, as you point out. That would certainly be of significant concern to us and one that we are watching very carefully.”

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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 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.

⁷ The Senate hearings covered were in: May 1976, November 1976, May 1977, November 1977, February 1979, July 1979, February 1980, July 1980, February 1981, 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.

⁸ 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.

⁹ We do not use ideology scores since our methodology is not well-suited for interval data. Instead, we use party affiliation.

¹⁰ This typology is from (Schonhardt-Bailey, Lahlou et al. 2010).

¹¹ See also <http://www.cmh.pro.ens.fr/bms/arcati/BMS54-Jenny-New.htm> for a list of the websites and papers comparing text mining software.

¹² Although subsequent versions may allow a larger corpus, Alceste 4.7 requires that the corpus not exceed 15 mb.

¹³ See (Lahlou 1995) for a detailed description of the interpretation procedure and its theoretical basis.

¹⁴ 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.

¹⁵ These are deemed “passive” as they do not contribute to either the calculation of the word classes or the factors in the correspondence analysis.

¹⁶ 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)

¹⁷ The standard report lists the top 19 or 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.

¹⁸ 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 both the House and Senate files, the value for word selection is 20 (df=1).

¹⁹ While correspondence analysis is well-established in the French literature (see (Benzecri 1973) and the journal *Cahiers de l'Analyse des Donnees*) its use has spread with the publication of English applications (Greenacre and Underhill 1982; Greenacre 1984; Weller and Romney 1990; Greenacre 1993), and is occasionally used by political scientists (Blasius and Thiessen 2001). Correspondence analysis using numerical data is available in several major statistical packages, including BMDP, SPSS, and SAS.

²⁰ For this, correspondence analysis uses the “chi-squared distance”, which resembles the Euclidean distance between points in physical space. (Here, chi-squared distance—which is distinct from the chi-squared statistic used to measure the significance of the words and tags—can be observed in Euclidean space by transforming the profiles before constructing the plots.) In correspondence analysis, each squared difference between coordinates is divided by the corresponding element of the average profile (where the profile is a set of frequencies divided by their total). The justification for using the chi-squared concept is that it allows one to transform the frequencies by dividing the square roots of the expected frequencies, thereby equalizing the variances. This can be compared to factor analysis, where data on different scales are standardized. For more detailed discussion and further geometric reasons for using the chi-squared distance in correspondence analysis, see (Greenacre 1993), pp. 34-36.

²¹ Correspondence analysis usually refers to the “inertia” of a table, which can also be called “association” (Weller and Romney 1990). (A corresponding chi-squared value can be obtained by multiplying the association value by the total n of the table.) Conceptually, inertia represents a cloud of profile points with masses which sum to one: “These points have a centroid (i.e., the average profile) and a distance (Chi-square distance) between profile points. Each profile point contributes to the inertia of the whole cloud.” (Nagpaul 1999) For the computation of inertia, see (Nagpaul 1999).

²² The association and chi-squared statistic may be interpreted geometrically as the degree of dispersion of the set of rows and columns (or, profile points) around their average, where the points are weighted.

²³ Usually, the dimensionality of the system is one less than the number of classes in the profile (Greenacre 1993), p. 14; however, where the correspondence space contains high dimensionality (e.g., over six factors), this may not always hold.

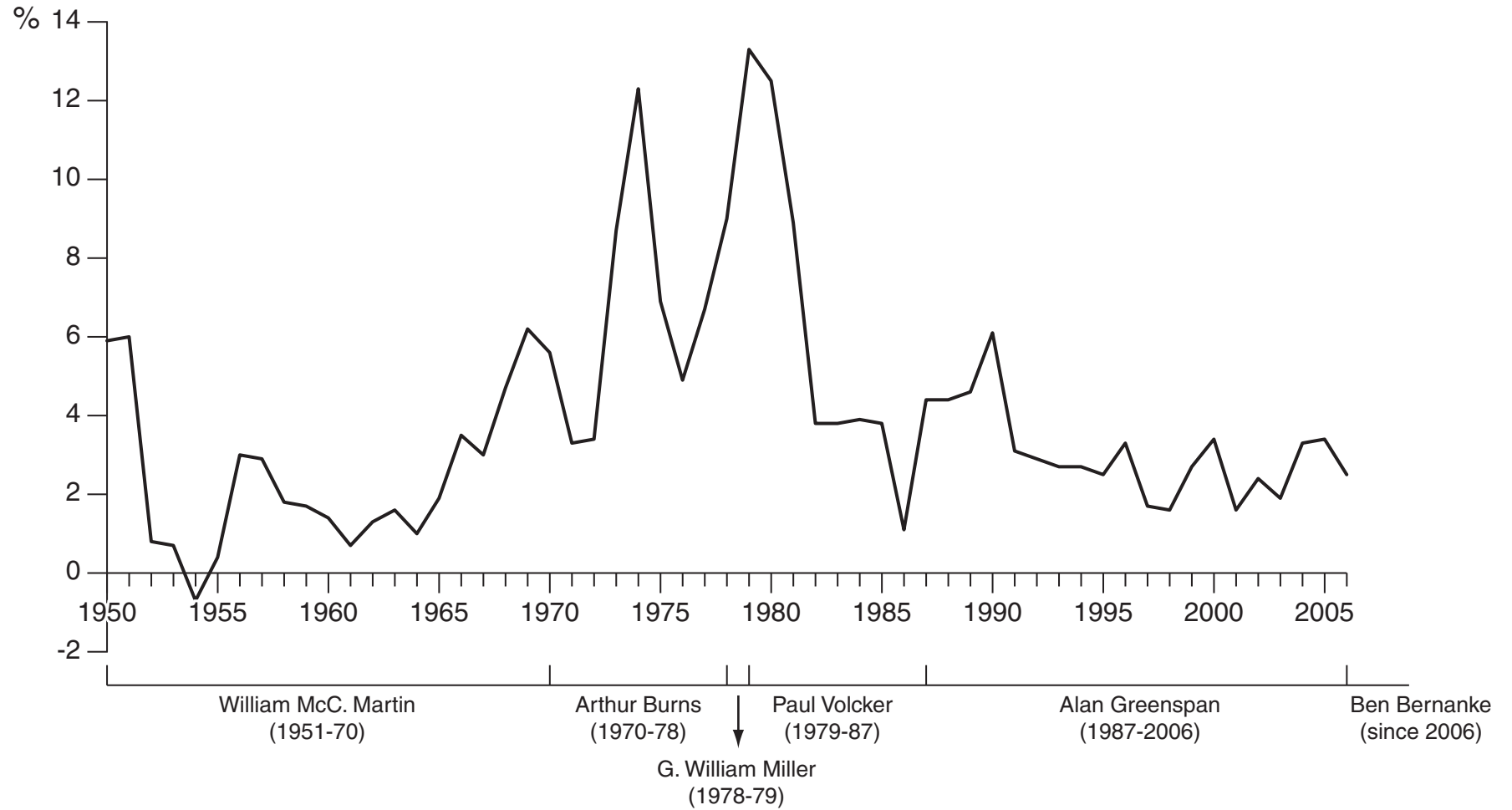
²⁴ The inertia and percentage contribution of each factor are (respectively): 0.14 (29.8%); 0.10 (20.5%); 0.08 (16.8%); 0.06 (12.9%); 0.04 (8.1%); 0.03 (7.2%); and 0.02 (4.7%)

²⁵ The inertia and percentage contribution of each factor are (respectively): 0.14 (28.9%); 0.10 (20.3%); 0.08 (16.4%); 0.06 (11.3%); 0.04 (8.9%); 0.04 (7.5%); and 0.03 (6.8%).

²⁶ For a good example of this technique applied to parliamentary debates see (Bicquelet 2009).

²⁷ 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).

Figure 1: US Consumer Price Inflation (% Change YOY Dec/Dec)



Source: US Department of Labor, Bureau of Labor Statistics

Table 1: Basic Statistics for Aggregate House and Senate Hearings on Monetary Policy (1976-2008)

	House Hearings, 1976-2008	Senate Hearings, 1976-2008
Total Word Count	758,092	700,368
Unique Words Analyzed	312,071	297,108
Passive Variables (Tagged Indicators)	237	129
I.C.U.s (= number of speeches / comments)	6,237	5,744
Classified E.C.U.s	7,506 (= 92% of the retained E.C.U.)	6,984 (= 91% of the retained E.C.U.)
Lexical Classes	9	9
Distribution of Classes (%) and Thematic Content	1 (14) <i>Populist Attack on Fed/Greenspan (B. Sanders)</i> 2 (13) <i>Volcker Defending Anti-Inflation Stance (give & take; speculative)</i> 3 (13) <i>Fiscal Policy</i> 4 (12) <i>Fed's Regulatory Activity</i> 5 (12) <i>Q & A Format (Process); Mixed Substance</i> 6 (11) <i>Monetary Aggregates</i> 7 (10) <i>US Real Economy</i> 8 (9) <i>MCs Prompting Fed Chair on Non-Monetary Issues</i> 9 (6) <i>Capital Inflows, Exchange Rate, Current Account Deficit</i>	1 (14) <i>World Economy & US External Balance (Trade & Current Account)</i> 2 (13) <i>Bank Regulation & Banking Industry Structure</i> 3 (12) <i>Q & A Format (Volcker trying to define limits of Fed's knowledge / role)</i> 4 (12) <i>Fed Appointments & Relationship between Fed, Congress & Administration</i> 5 (9) <i>Education, Training & US Competitiveness (Labour Market)</i> 6 (9) <i>Fiscal Policy</i> 7 (9) <i>Monetary Aggregates & Objectives of Monetary Policy</i> 8 (9) <i>US Real Economy</i> 9 (14) <i>Criticism of Fed for failing to support growth (D. Riegle)</i>

Table 2 Distribution of Major Themes, by Fed Chairmen and Political Party (count of top 19 ECUs)

<u>Top Themes, Condensed</u>	Burns	Miller		Volcker	Greenspan	Bernanke	Republican Committee Members	Democrat Committee Members
<i>House</i>								
Real Economy (Labour Markets, US Economy)	9	6		0	10	11	2	7 ½
Money, Inflation, Credit & Financial Markets	10	8		16	7	0	0	3
External (World Economy for Miller, Volcker, Greenspan; US Competitiveness for Republicans)	0	3		1	1	0	7 ½	0
Fiscal Policy	0	2		2	1	0	5 ½	4 ½
Regulation of Financial Institutions	0	0		0	0	8	1	0
Other (Process, Relations between Congress, Fed & Admin.; one War on Terror for Republicans)	0	0		0	0	0	3	4
<i>Senate</i>								
	Burns	Miller	Wallich	Volcker	Greenspan	Bernanke	Republican Committee Members	Democrat Committee Members
Real Economy (Labour Market, US Economy, Productivity)	7 ½	7 ½	0	0	6	6 ½	3	11
Money, Monetary Policy, Inflation	10	9 ½	10	15 ½	½	5 ½	0	3
External (LDC Debt for Volcker; Current Acct. for Greenspan; US Competitiveness for Republicans)	½	0	0	2	1	0	1	0
Fiscal Policy	0	2	9*	1 ½	0	0	12	3
Regulation of Financial Institutions	0	0	0	0	1 ½	4	1	0
Bank Lending	1	0	0	0	6	3	0	0
Financial Markets/Assets	0	0	0	0	4	0	0	0
Other (Criticism of Fed & Homeland Security for Democrats; Education & Process for Republicans)	0	0	0	0	0	0	2	2

* As a former economist at Yale, Wallich's expertise in fiscal policy prompted MCs to ask his advice on fiscal policy

Figure 2a: Tree Diagram of Relative Associations between Classes for House Hearings, 1976-2008

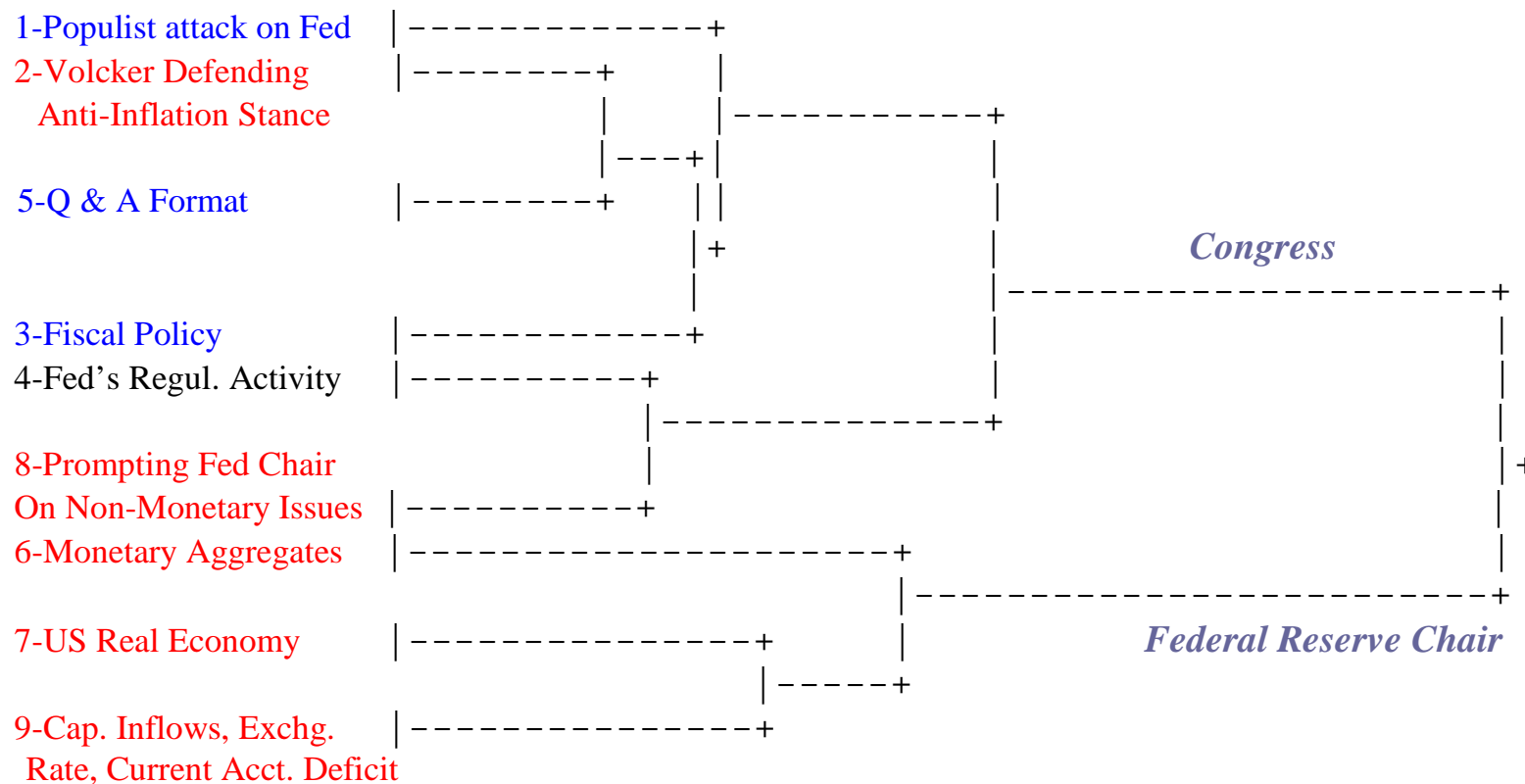


Figure 2b: Tree Diagram of Relative Associations between Classes for Senate Hearings, 1976-2008

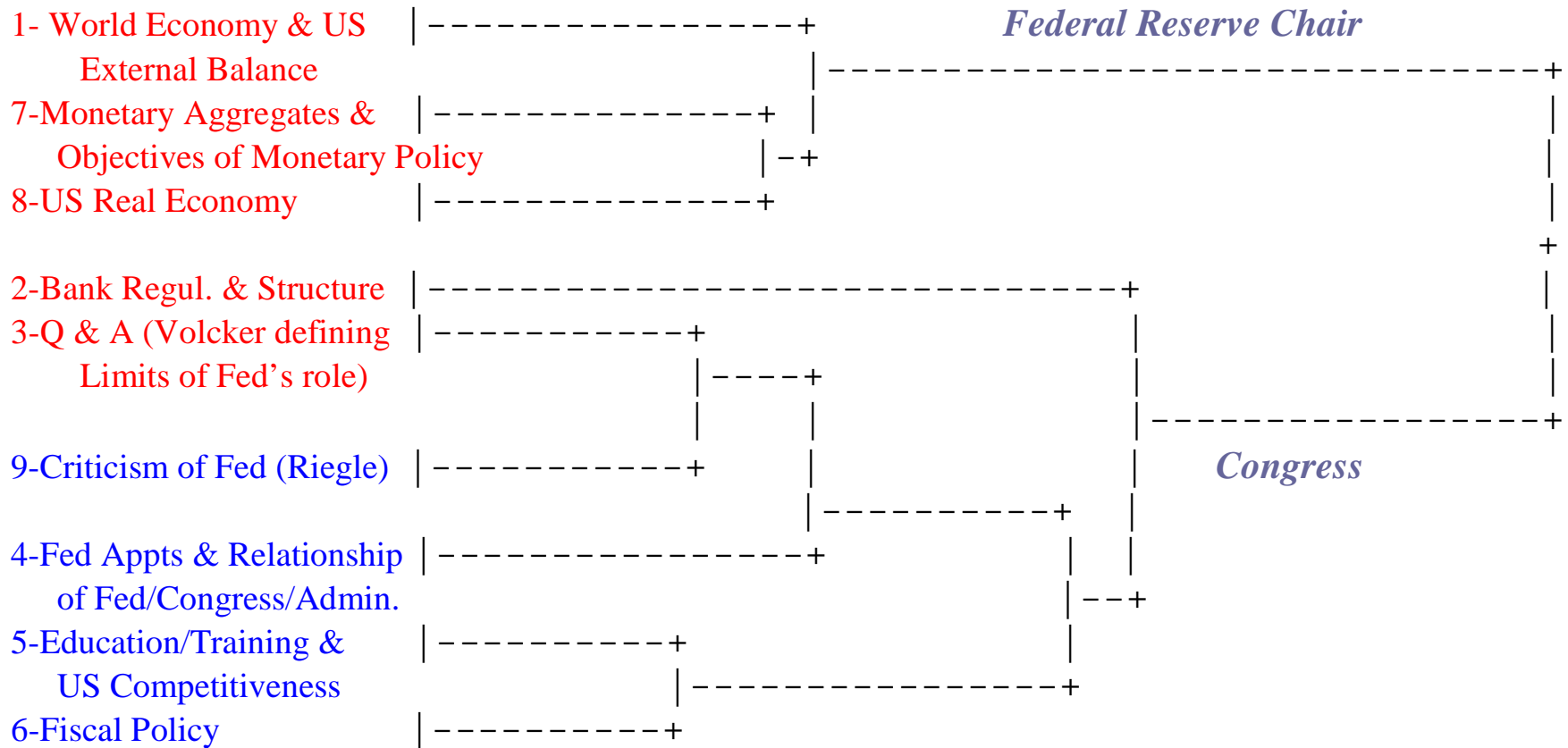
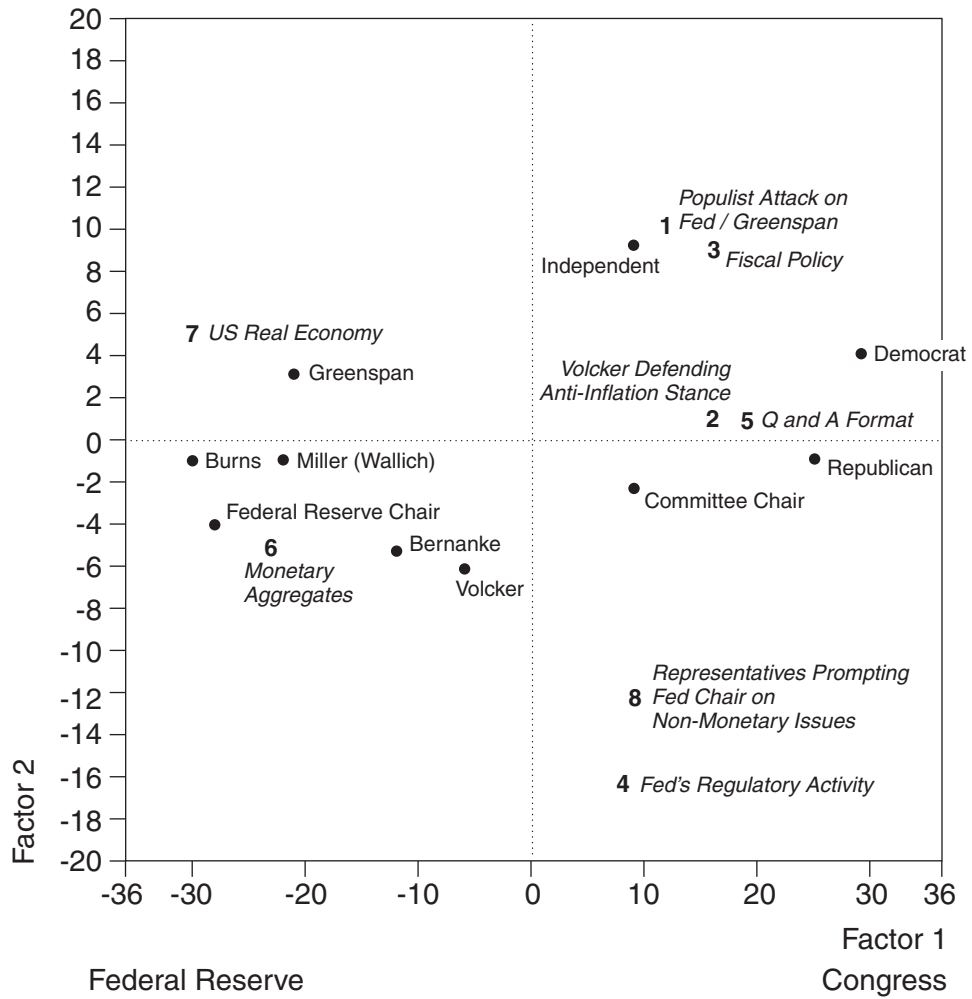
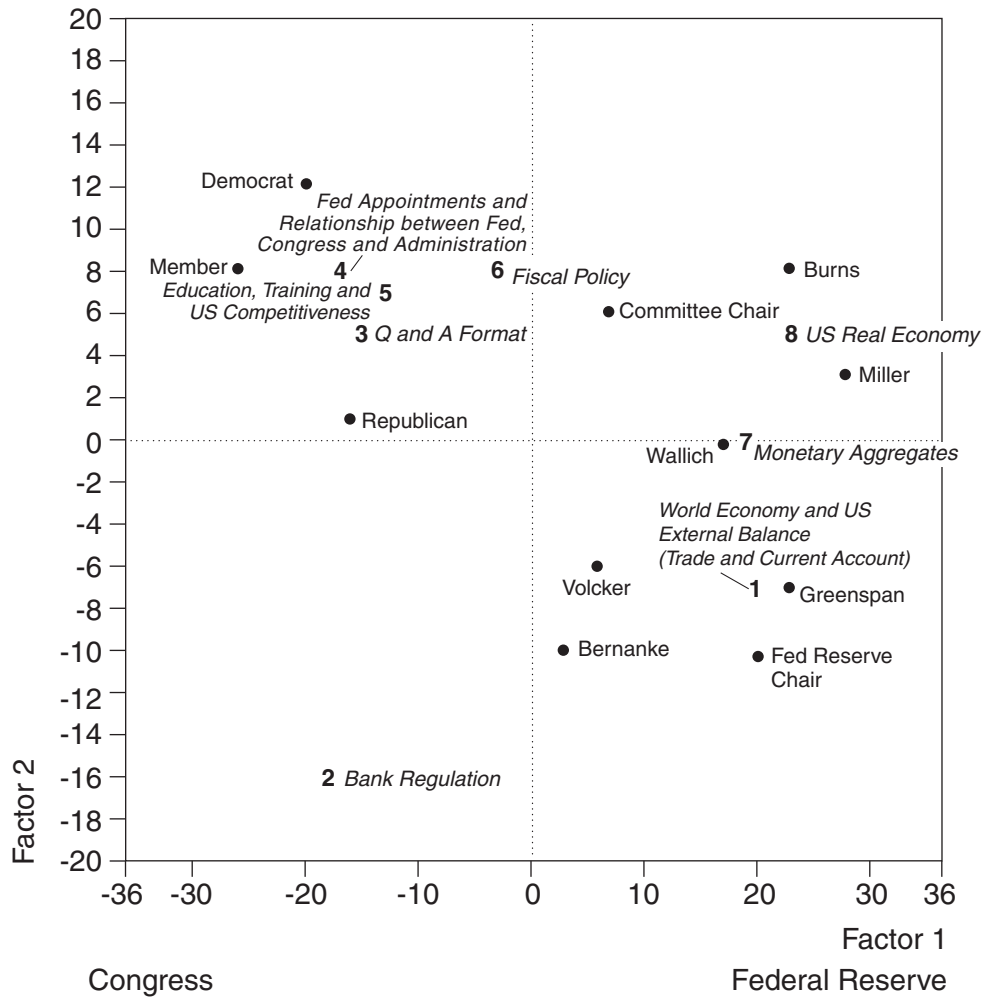


Figure 3: Correspondence Analysis of House Hearings – Composite (1976-2008)



	% Association
Factor 1	29.76
Factor 2	20.54

Figure 4: Correspondence Analysis of Senate Hearings – Composite (1976-2008)



	% Association
Factor 1	28.86
Factor 2	20.28

Figure 5: Distribution of Statistical Significance for Each Thematic Class, by Congressional Hearing

Figure 5a: House – All Years

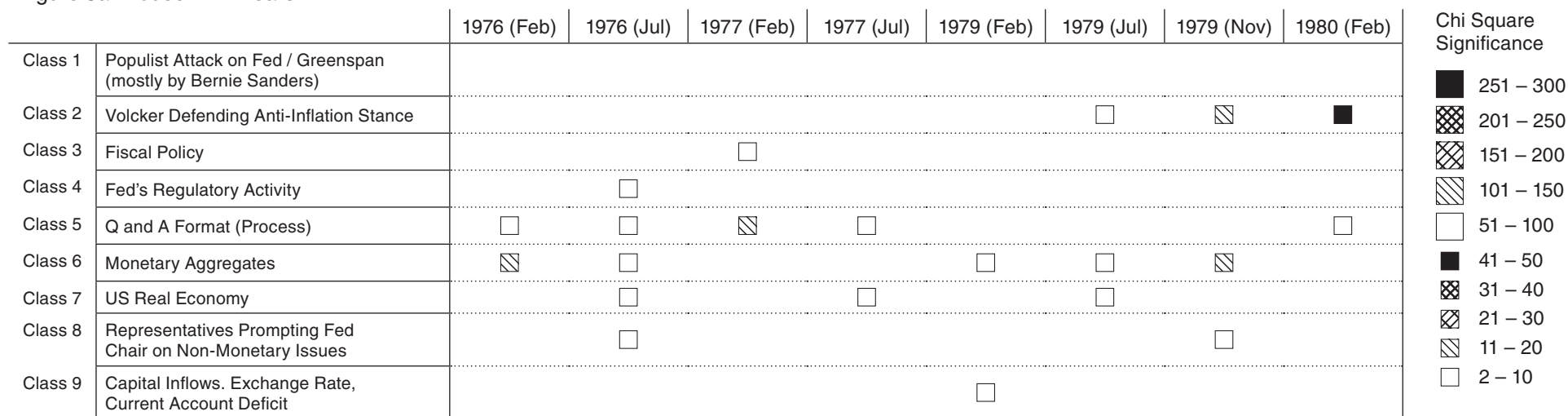


Figure 5b: Senate – All Years

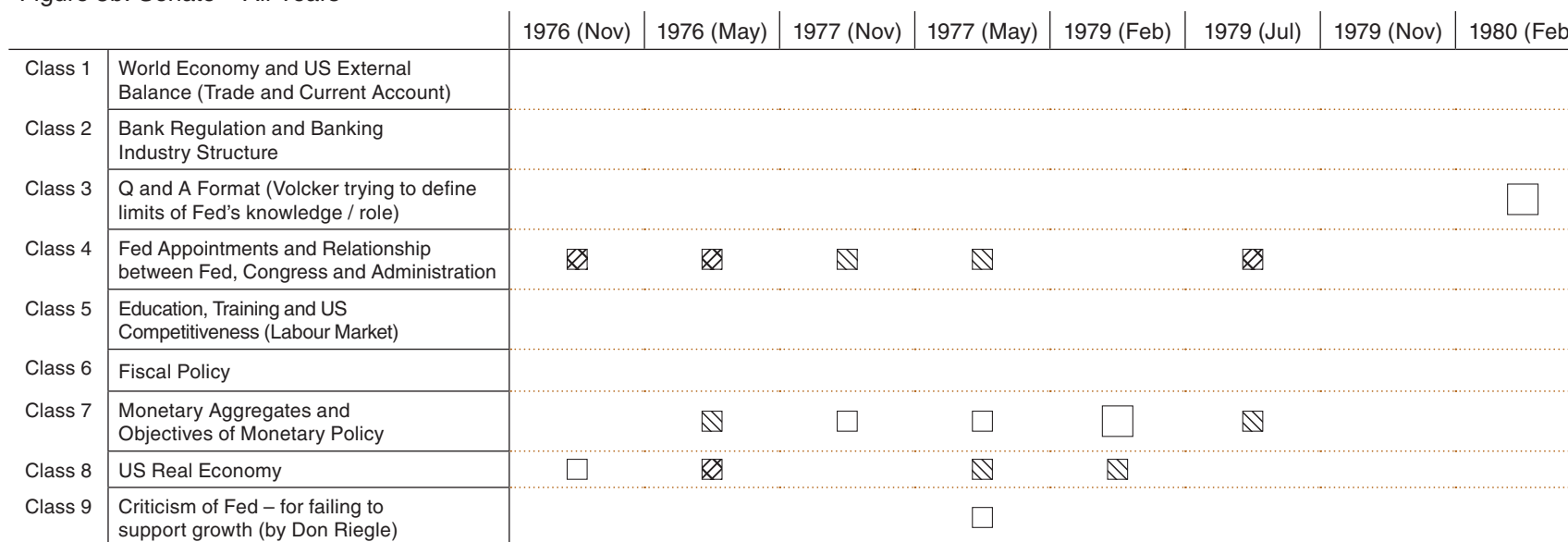


Figure 5: Distribution of Statistical Significance for Each Thematic Class, by Congressional Hearing

Figure 5a: House – All Years *Continued*

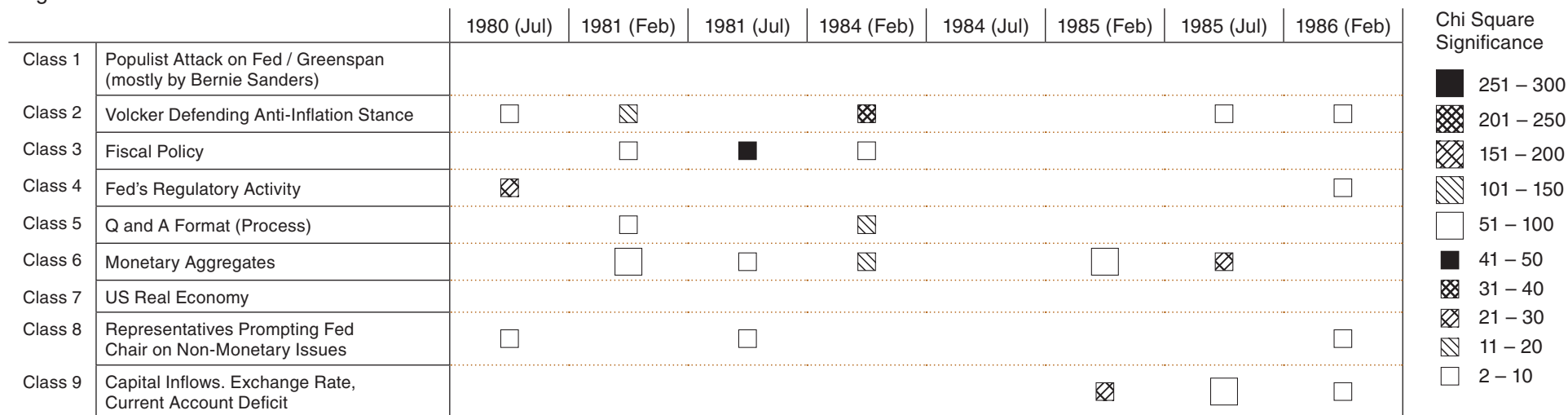


Figure 5b: Senate – All Years *Continued*

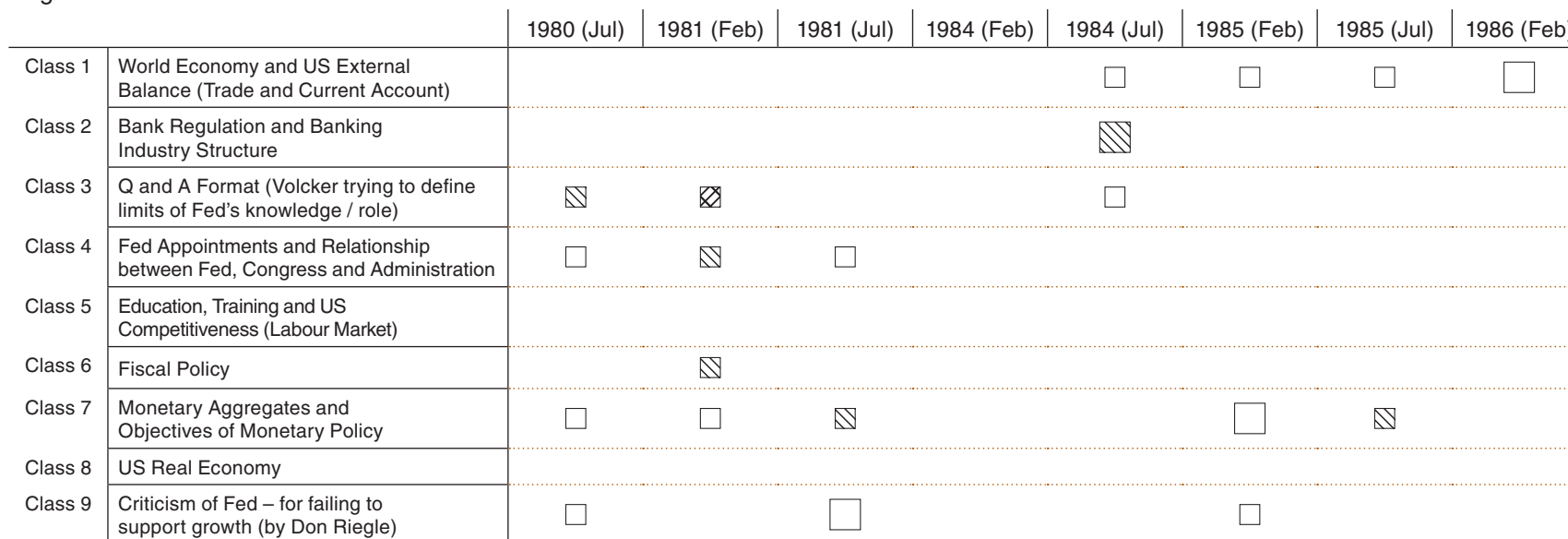


Figure 5: Distribution of Statistical Significance for Each Thematic Class, by Congressional Hearing

Figure 5a: House – All Years *Continued*

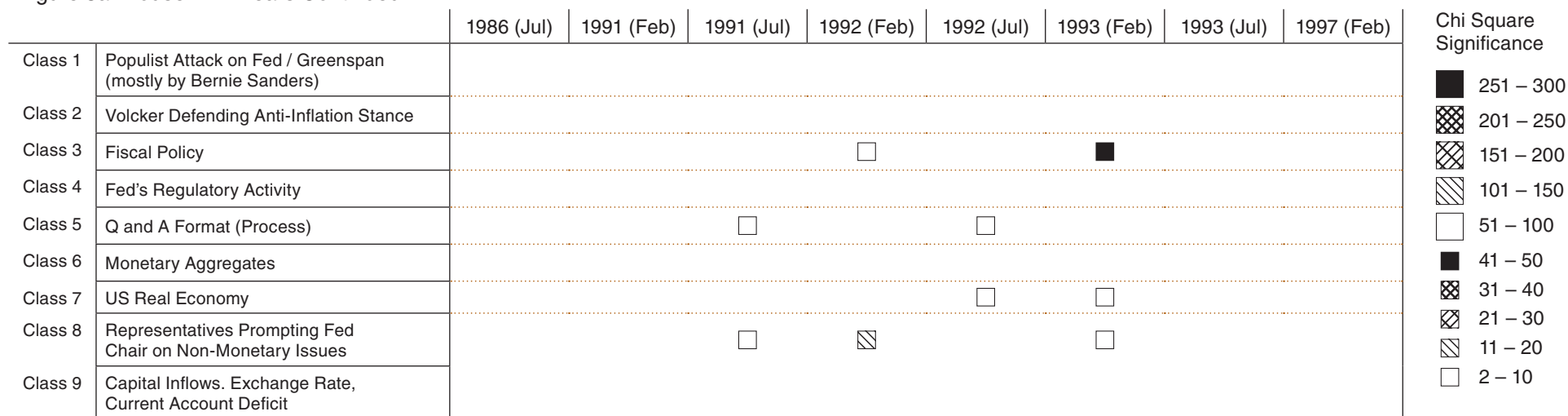


Figure 5b: Senate – All Years *Continued*

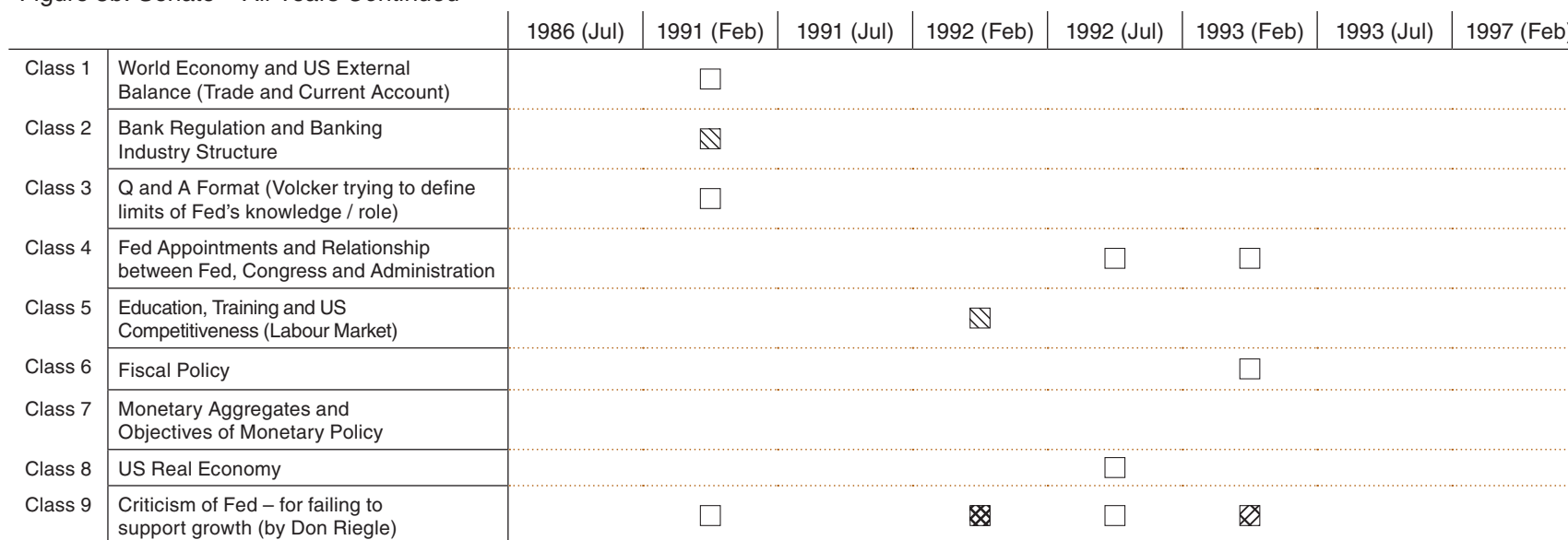


Figure 5: Distribution of Statistical Significance for Each Thematic Class, by Congressional Hearing

Figure 5a: House – All Years *Continued*

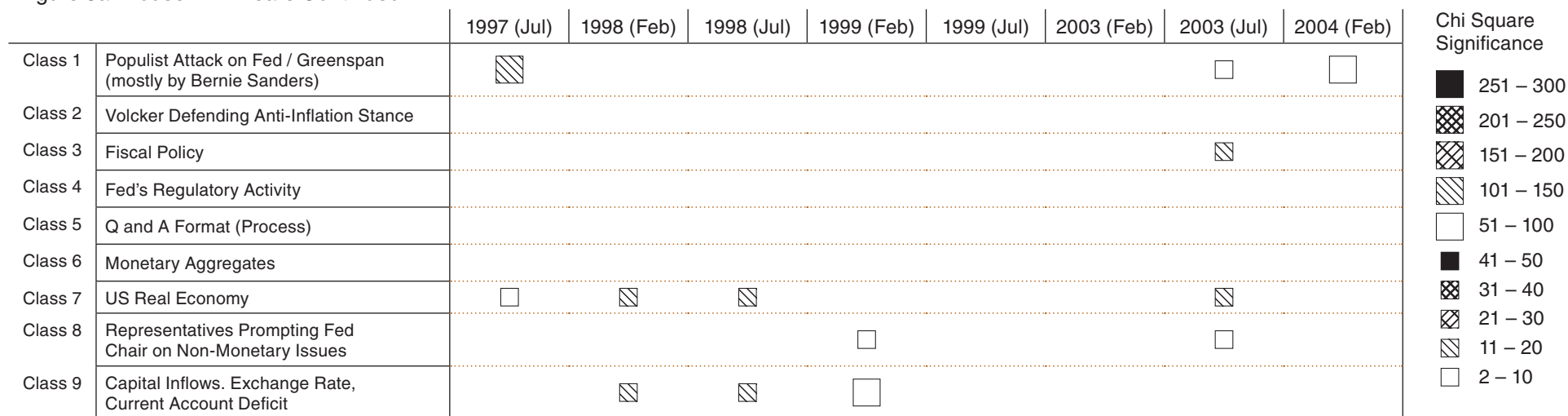


Figure 5b: Senate – All Years *Continued*

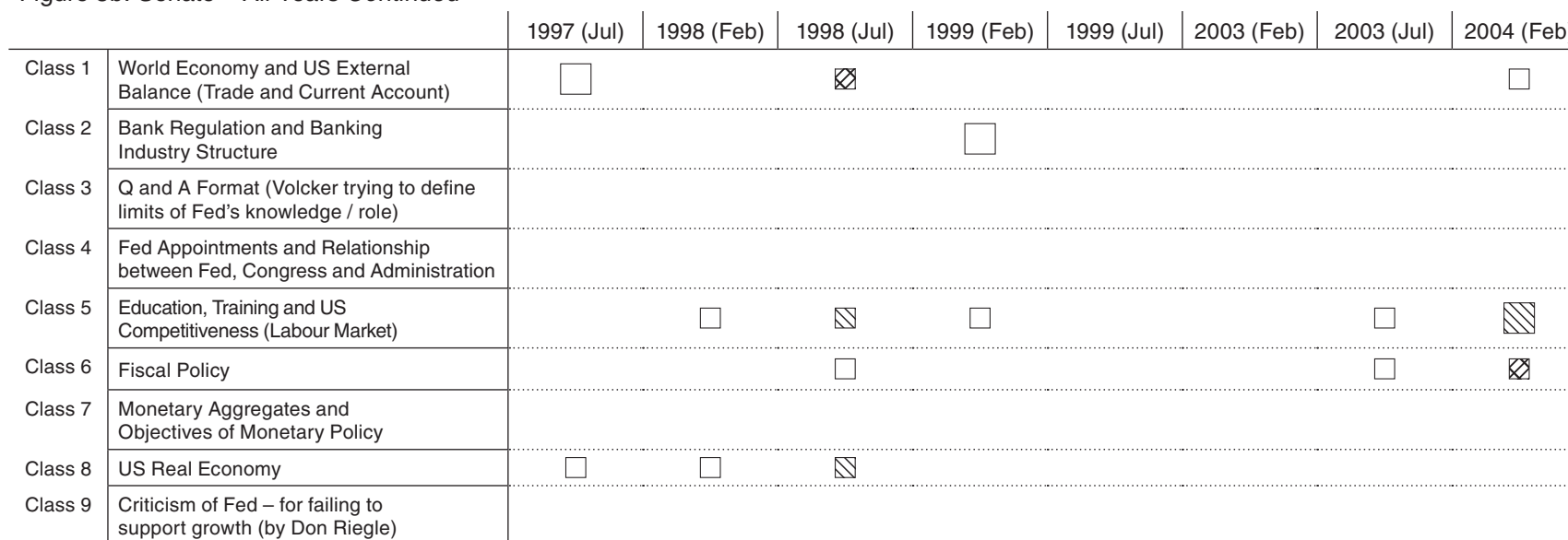


Figure 6: Distribution of Statistical Significance for Each Thematic Class, by Party and Role of Committee Members

Figure 6a: House – All Years

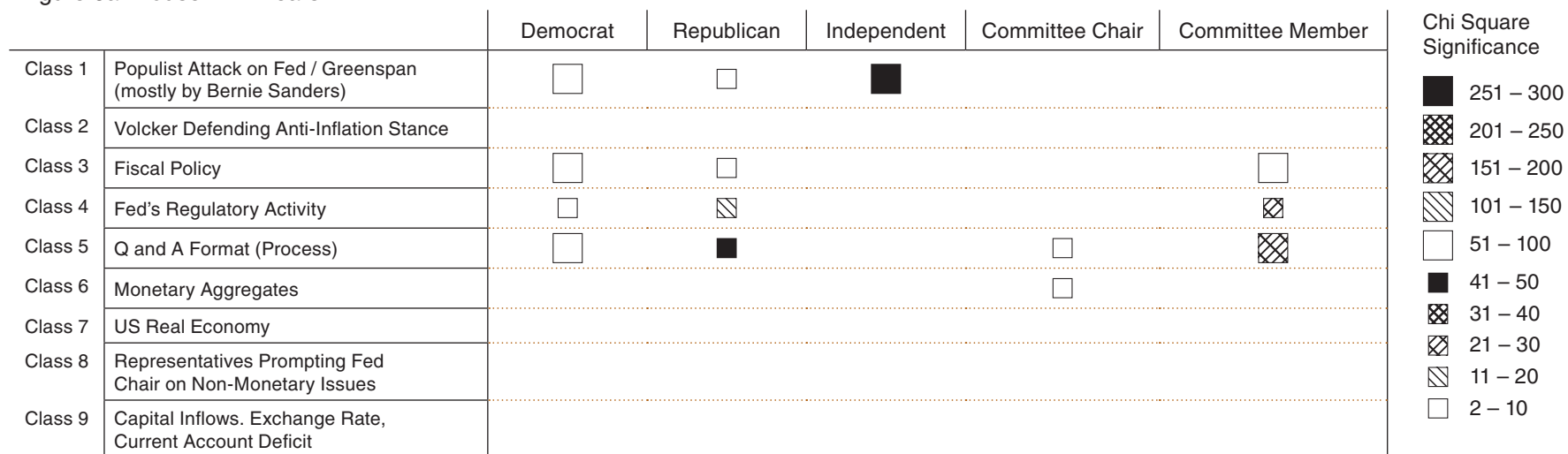


Figure 6b: Senate – All Years

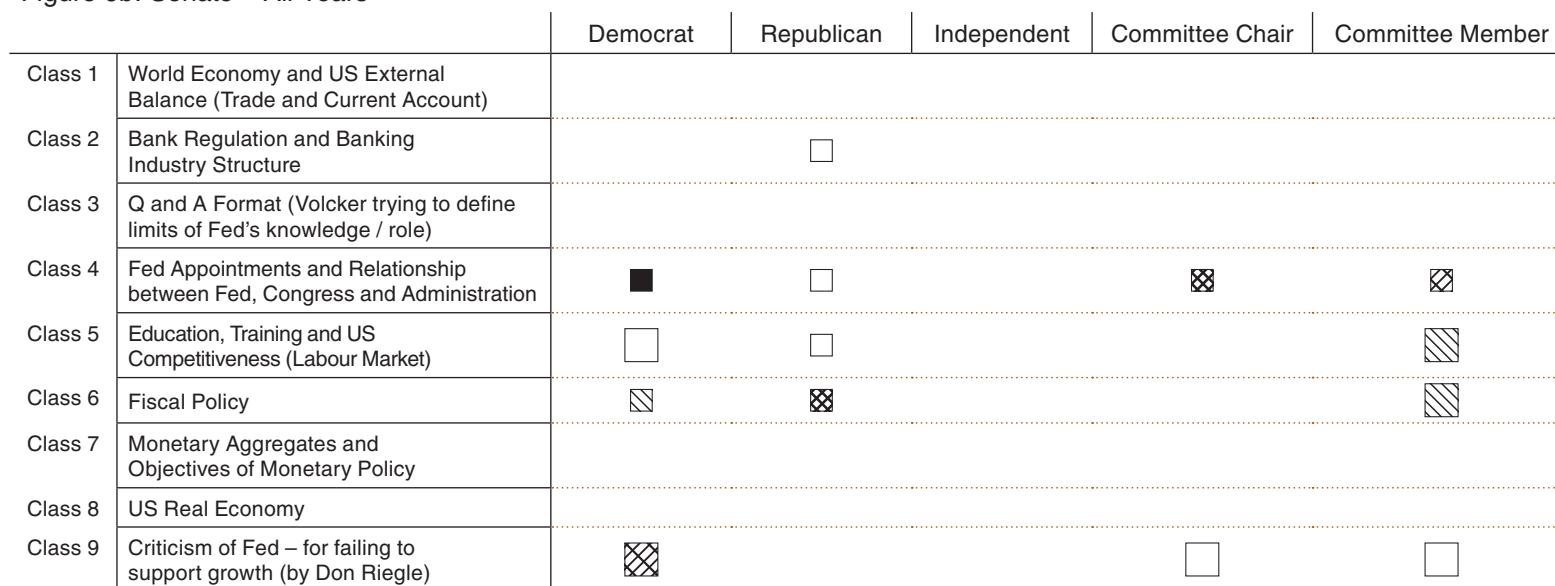


Figure 7: Distribution of Statistical Significance for Each Thematic Class, by Fed Chairman

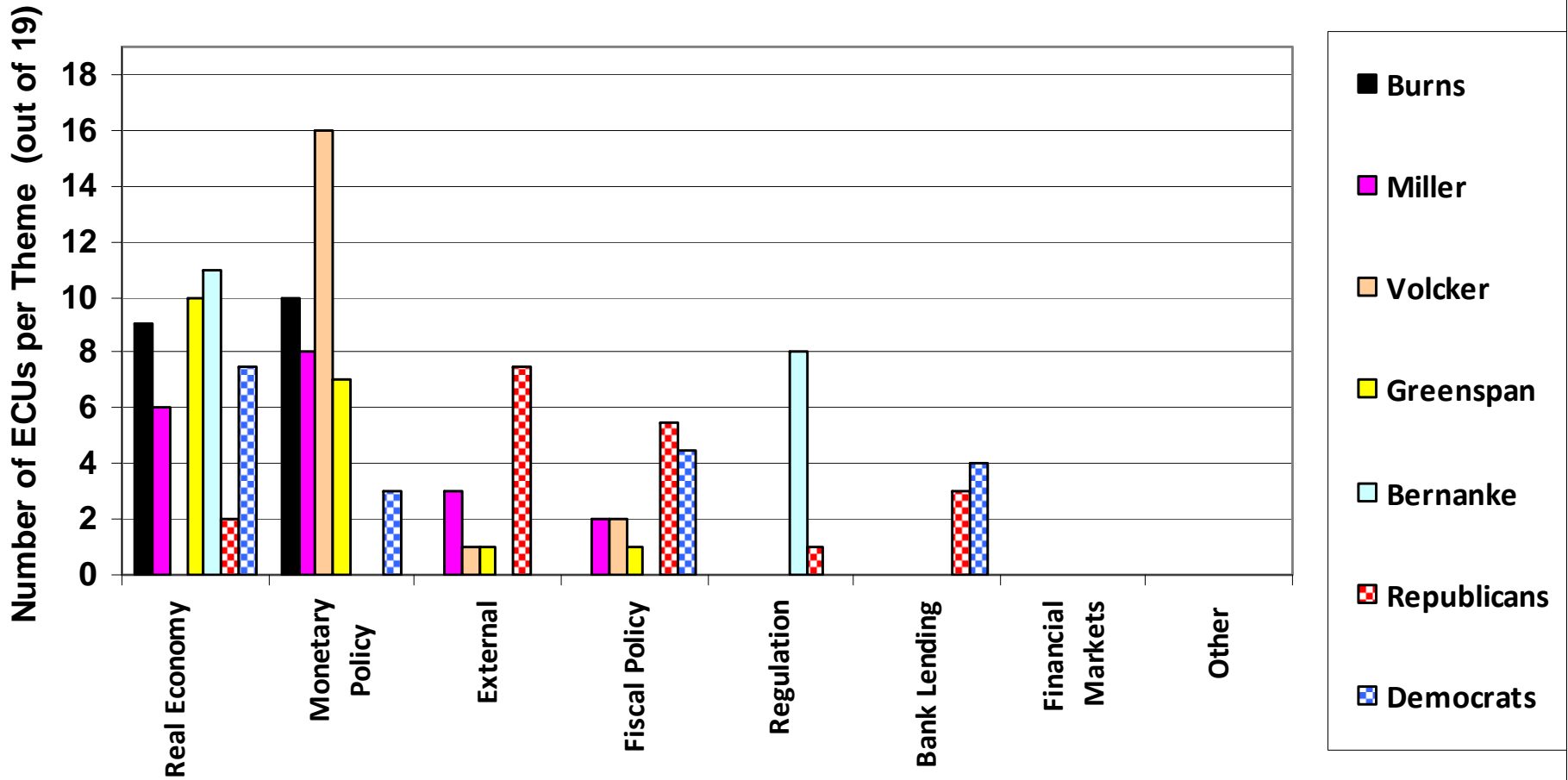
Figure 7a: House – All Years

		Burns	Miller (Wallich)	Volcker	Greenspan	Bernanke	Chi Square Significance
Class 1	Populist Attack on Fed / Greenspan (mostly by Bernie Sanders)						251 – 300
Class 2	Volcker Defending Anti-Inflation Stance			101 – 150			201 – 250
Class 3	Fiscal Policy						151 – 200
Class 4	Fed's Regulatory Activity					101 – 150	101 – 150
Class 5	Q and A Format (Process)						51 – 100
Class 6	Monetary Aggregates	11 – 20		101 – 150			41 – 50
Class 7	US Real Economy	31 – 40			251 – 300	51 – 100	31 – 40
Class 8	Representatives Prompting Fed Chair on Non-Monetary Issues			11 – 20	101 – 150		21 – 30
Class 9	Capital Inflows. Exchange Rate, Current Account Deficit			31 – 40	51 – 100	51 – 100	11 – 20

Figure 7b: Senate – All Years

		Burns	Miller (Wallich)	Volcker	Greenspan	Bernanke
Class 1	World Economy and US External Balance (Trade and Current Account)		51 – 100	11 – 20	201 – 250	
Class 2	Bank Regulation and Banking Industry Structure					51 – 100
Class 3	Q and A Format (Volcker trying to define limits of Fed's knowledge / role)			201 – 250	21 – 30	
Class 4	Fed Appointments and Relationship between Fed, Congress and Administration					
Class 5	Education, Training and US Competitiveness (Labour Market)	51 – 100				51 – 100
Class 6	Fiscal Policy					
Class 7	Monetary Aggregates and Objectives of Monetary Policy	21 – 30	11 – 20	51 – 100		
Class 8	US Real Economy		51 – 100		51 – 100	51 – 100
Class 9	Criticism of Fed – for failing to support growth (by Don Riegle)					

Figure 8: Major Themes in House Hearings, by Fed Chairman & Political Party (using Cross Data Analysis)



APPENDIX

For Tables A1 and A2, the following levels of statistical significance apply

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

Table A1: Characteristic Words and Phrases for Classes in House Hearings (Years, 1976-2008)

Class	Characteristic Words (with χ^2)	Examples from Top Four Characteristic Phrases, or ECUs (with χ^2)
<i>Populist Attack on Fed / Greenspan (mostly B. Sanders)</i>	people+ (909) job+ (753) wage+ (445) work+ (427) education+ (333) skill+ (330) American+ (249) lose (244) inequality+ (242) society+ (209)	<p>Mr. Greenspan, nice to see you again. I always #enjoy your presentations, as you #know, and I never cease to be astounded about how your observations about our economy are so far removed from the reality that I see every #day in my state, #middle #class #people and what I see all over the #country. It is like we #live in two different worlds. You #talk about optimism. I see in my state and around this #country that the #middle #class is shrinking, that ordinary #people are #working longer hours for lower #wages. I see that since 2001, three #million more #Americans have become #poor. I see more and more #Americans without any #health insurance. I see retirees now #losing the #benefits that corporate #America #promised to them. I see older #workers #worried about the #pensions that they were #promised but which they may never get. And that is what I see. That is the #bad news. But the good news, which I haven't #talked about enough, is that many of your friends, the wealthiest #people in this #country are doing phenomenally well. (113) [Rep. B. Sanders, Feb 2004]</p> <p>Well, you --#tell you #know, maybe, Mr. Greenspan, one of the problems we have is you #talk to CEOs, I #talk to #working #people. And what #working #people #tell me is they are #losing good #paying #jobs, parents are #worried about the #fact they are sending their kids to #college now for information #technology #jobs; those #jobs are going to china. You are #telling me we are #creating good #paying #jobs with good #benefits? (90) [Rep. B. Sanders, Feb 2005]</p>
<i>Volcker Defending Anti-Inflation Stance</i>	go (160) thing+ (132) right+ (91) sense+ (81) trying (79) problem+ (74) happen+ (68) can't (64) say (58) situation+ (58)	<p>I think I would #agree with the #thrust of his statement. We have got to #come to grips with this #problem, and that is what we are #trying to do at the Federal-Reserve. But the process is #going to #go much more smoothly, much more rapidly, and we are #going to get #down to that unemployment-rate much more quickly, if the other arms of #policy are in tune with that objective. (33) [Volcker Feb 1980]</p> <p>I have been fascinated, during the 10 years that I have been here, at Congress #lack of desire to have a fiscal #policy or a governmental #policy to control the economy of this country. We have always said, "let the Federal-Reserve do it." Now, when #things #go #wrong, and the inflation-rate #goes up, we always say it's the Federal-Reserve's fault. I think it is only fair to state for your #point, and the Federal-Reserve's #point, that although certainly monetary-policy has a great #deal to do with the #problem and unemployment, inflation and fiscal #policy are the #responsibility of the Congress, and fiscal damage is the #direct #responsibility of the Congress. It is governmental #policy, governmental spending, and governmental fiscal #policy that is clearly #responsible for the unemployment #figures that you show in your projection. It is very #comfortable and it is very convenient to #blame the Federal-Reserve. But the #blame rests #right here, in these three buildings and across the street, in the Capitol of the United States. I do have one concern, which I have always had, and I think it is a concern of yours. (31) [Rep. McKinney (R), Feb 1981]</p>
<i>Fiscal Policy</i>	tax (1412) cut (1114) taxe+ (615)	<p>If we #pass the #tax #cut #bill, and I am talking about the multiyear personal #tax #cuts, not the business and the targeted personal #tax #cuts if we #pass the whole #package now, then we will build into the system an additional 75 #billion dollars in personal #tax #cuts for 1983. That indicates to me that we will be facing this time next year a #budget-deficit of somewhere between 60 and 100 #billion dollars. And we are going to have to make some</p>

	<p>spend (575) budget+ (491) deficit+ (486) revenue+ (472) bill+ (344) expenditure+ (300) reduction+ (240)</p>	<p>very difficult #choices. Now the #choices will be as follows, it seems to me. Either we will go into that basic #social safety net, #social #security retirement #program, disability #program, and there is some indication that the #reagan #administration wants to do that. But I think that the #congress will reject that approach. Or we will go into #defense #spending, and I think neither the #congress nor the #president will want to do that. We can't go into the 100 #billion dollars of interest on the #national debt. So we will be looking at now 110 #billion dollars. (93) [Rep. Neal (D) July 1981]</p> <p>So, Mr. #Greenspan, it is safe for me to say, #opposes making the #president's #proposed #tax #cuts #permanent unless they go along with increases in other #taxes and #cutting #expenditures that we now have in other #programs. (80) [Rep. Ackerman (D) Feb 2005]</p>
<i>Fed's Regulatory Activity</i>	<p>regul+ (595) bank+ (418) disclosure+ (357) mortgage+ (309) loan+ (277) lend (261) legislat+ (256) agencies+ (253) regulator+ (222) practice+ (205)</p>	<p>We continue to work with #organizations that #provide counselling about #mortgage products to current and potential #homeowners. We are also #meeting with market #participants #including #lenders, investors, servicers, and community #groups to discuss their #concerns and to gain #information about market developments. We are conducting a top to bottom #review of possible actions we might #take to help #prevent recurrence of these/ problems. first, we are committed to #providing more effective #disclosures to help consumers defend against improper #lending. Three years ago, the #board began a #comprehensive #review of #regulation Z, which #implements the #Truth in #Lending Act. The #initial focus of our #review was on #disclosures #related to credit #cards and other revolving credit accounts. After conducting #extensive consumer #testing, we issued a proposal in may that would #require credit #card issuers to #provide clearer and easier to understand #disclosures to customers. In particular, the new #disclosures would highlight #applicable rates and fees, particularly penalties that might be #imposed. The proposed #rules would also #require #card issuers to #provide 45 days' advance notice of a rate increase or any other change in account terms so that consumers will not be surprised by unexpected #charges and will have time to explore alternatives. (90) [Bernanke July 2007]</p> <p>We are certainly aware, however, that #disclosure alone may not be sufficient to #protect consumers. #Accordingly, we #plan to exercise our #authority #under the #home #ownership and equity #protection act to #address #specific #practices that are #unfair or deceptive. We held a #public hearing on June 14th to discuss #industry #practices, #including those pertaining to prepayment penalties, the use of escrow accounts for taxes and #insurance, stated income and low documentation #lending, and the evaluation of a borrower's ability to repay. The discussion and ideas we heard/ were extremely useful, and we look forward to receiving additional #public comments/ in coming weeks. Based on the #information we are gathering, I expect that the #Board will propose additional #rules #under the #Home #Ownership and Equity #Protection Act later this year. In #coordination with the other federal #supervisory #agencies, last year we issued principles based #guidance on nontraditional #mortgages, and in June of this year, we issued #supervisory #guidance on sub-prime-lending. These statements emphasize the fundamental consumer #protection principles of #sound underwriting and effective #disclosures. In addition, we #reviewed our policies #related to the #examination/ of non #bank subsidiaries of #bank and financial holding #companies for compliance with consumer #protection #laws and #guidance. (90) [Bernanke July 2007]</p>
<i>Q & A Format (Process)</i>	<p>ask+ (228)</p>	<p>#Mr. Sanders, you have #asked a #question. Let's #let #Mr. Greenspan #answer that and then we'll have plenty of time for additional #questions when the other #members have had a #chance to #ask #questions. (82) [Rep.</p>

	<p>Mr (215) question+ (133) Dr (126) answer+ (110) comment+ (102) hear (100) say (95) understand (92) hope+ (79)</p>	<p>Castle, Chair (D), July 1997]</p> <p>That is my #feeling. I #want to convey it to you and to the #members of this #committee, and now I #want to raise a #question with you unless you have some #comment to make on my feelings before I #ask the #question. (63) [Rep. Mitchell (D) July 1979]</p>
<p><i>Monetary Aggregates</i></p>	<p>range+ (681) aggregate+ (598) growth+ (581) monetar+ (560) velocit+ (534) target+ (470) rate+ (308) money+ (293) consistent+ (202) quarter+ (186)</p>	<p>The #tentative #ranges for the #broader #aggregates in 1982 were left unchanged at 6 to 9 percent and 6 1/ 2 to 9 1/ 2 percent for M2 and M3 respectively. However, we would #anticipate actual #growth #closer to the midpoint in 1982, #consistent with the #desired reduction over time. #Setting precise #targets has inevitably involved us in consideration of the effects of technological and regulatory #change on #monetary measures. Those #technical considerations should not obscure the #basic thrust of our #intentions that is, to #lower progressively effective #money and #credit #growth to amounts #consistent with price #stability. We believe the #targets for both 1981 and 1982, and our #operations, are #fully #consistent with that #objective. I have often #emphasized that #money #supply data like many other financial and economic data have some inherent #instability in the #short run. The trend over time is what counts, both as a measure of #monetary-policy and in terms of economic effect. For some months in the latter part of 1980, as you will recall, the rise in M1 was relatively rapid. (86) [Volker July 1981]</p> <p>However, the #operational guide from day to day in #conducting #open market #operations has typically been the so called #Fed-Funds-Rate the #rate #established in inter bank trading of #reserve balances. Translation of #money stock #objectives into day to day management of the #Fed-Funds-Rate is effective if the #relationship between the public's demand for cash balances and #short term market #interest-rates is relatively #stable and #predictable. But in an environment of high and relatively volatile inflation-rates, the #relationship between #interest-rates and #money or, for that matter, between #interest-rates and economic activity is more difficult to appraise. Moreover, the #operating #techniques over time may have contributed to #excessive #supplies of #credit by encouraging a #view by banks or others that they could count on access to liquidity at #interest-rates reasonably #close to whatever levels were currently #prevailing. #Consequently, we are now placing more #emphasis on controlling the provision of #reserves to the banking system which ultimately governs the #supply of #deposits and #money to keep #monetary #growth within our #established #targets. In changing that #emphasis, we #necessarily must be less concerned with day to day or/ week to week #fluctuations in #interest-rates, because those #interest-rates will respond to #shifts in demand for #money and #reserves. (75) [Volker Nov 1979]</p>
<p><i>US Real Economy</i></p>	<p>rise (734) product+ (731) price+ (591) pace (555)</p>	<p>Since the closing #months of 1976, our #nation has #experienced a #vigorous and broadly based economic #expansion. The #gains in the #industrial #sector have been #especially #impressive; during the #past 8 #months, the #combined #output of #factories, mines, and #power #plants has #risen at an #annual rate of 9 1/ 2 per #cent. #Activity in other #sectors of the economy also has #increased briskly. As a #result, #total #employment in #June was almost 3 million #higher than #last October an #unprecedented #gain in so short a #period. The</p>

	<p>expansion+ (498) increase+ (494) output 9409) consumer+ (405) firm+ (383) household+ (382)</p>	<p>#unemployment-rate #remains #high; but it has #declined in #recent #months by nearly a full #percentage point, despite #rapid growth of the #labor #force. The rate of #utilization of our #industrial #plant #capacity also has #risen #significantly, and now #exceeds 83 per #cent in manufacturing. #Demand for #consumer #goods has #continued to propel the #expansion. With #confidence buoyed by #improving economic #conditions, #consumers have been spending freely from #current #income besides #adding #significantly to their #personal indebtedness. The #strong buying mood of #consumers is #reflected in the #personal #saving rate, which in the first half of this year #averaged less than at any time since the #early 1960s. (74) [Burns July 1977]</p> <p>. . . and this #accelerated #increase in #output per #hour has #enabled #firms to #raise workers' #real wages while #holding the line on #price #increases. #Gains in #productivity #usually vary with the #strength of the economy, and the #favorable #results that we have #observed during the #past two years or so, when the economy has been #growing more #rapidly, almost certainly overstate the #degree of structural #improvement. But #evidence #continues to mount that the #trend of #productivity has #accelerated, even if the #extent of that #pickup is as yet unclear. #Signs of #major technological #improvements are all #around us, and the benefits are #evident not only in #high tech #industries but also in #production processes that have #long been #part of our #industrial economy. Those technological #innovations and the #rapidly declining #cost of #capital #equipment that embodies them in #turn #seem to be a #major #factor behind the #recent enlarged #gains in #productivity. #Evidently, #plant managers who were involved in planning #capital-investments #anticipated that a #significant/ #increase in the #real rates of #return on #facilities could be achieved by exploiting #emerging #new technologies. (73) [Greenspan July 1998]</p>
<p><i>Representatives Prompting Fed Chair on Non- Monetary Policy Issues</i></p>	<p>bank+ (295) endeavor+ (142) central+ (135) system+ (107) intervention+ (85) treasur+ (82) involve+ (81) tool+ (77) manner+ (77) definit+ (69)</p>	<p>With #respect to the GSE regulator #issue {=Government Sponsored Enterprises}, I have not commented, you know, nor have any of my colleagues on the specific #structure or the form of the regulator. In our testimony, I have #argued the necessity of increasing the share of home mortgages purchased by the GSEs which are securitized rather than kept in #portfolios at we at the fed #perceive a significant subsidized rate. But we haven't thought through any of the #issues with #respect to where the regulator is located and what he does. with #respect to the so #called overdrafts that the Federal-Reserve #essentially has been #changing, what happened was that initially we #perceived that, as a #matter of convenience, it was quite #helpful to treat GSEs #differently from other private corporations in #various #different things, #specifically the payment #principal and interest to the banks. What occurred as a consequence of our varying from how we #handle other private corporations, was a huge increase in what we #call daylight overdrafts, which are very large, intraday lending. And what we #chose is that, as these drafts got very large and/ these institutions got very large and the amounts got very large, was to effectively #handle these #issues of payments exactly the way all private organizations do; (52) [Greenspan July 2004]</p> <p>Let me just say that we are having #conversations, as we always do, on #issues of the #structure of international financial institutions with the #treasury. We are the #relevant agencies in this regard, or the ones who are most directly #involved. The #Secretary is the senior member of our representation with the IMF--I am the alternate delegate. We are the two who are effectively interfacing with that. I don't think it is #appropriate for me to be discussing what it is we discuss or the like. I think it is #appropriate for us to be thinking about these #issues; and, #obviously, we are. (51) [Greenspan Feb 1999]</p>

<p><i>Capital Inflows, Exchange Rate, Current Account Deficit</i></p>	<p>foreign+ (628) unite+ (551) abroad (519) export+ (469) trade+ (412) countries+ (359) dollar+ (339) inflow+ (337) domestic (322) international+ (293)</p>	<p>If the budgetary deficit absorbs #amounts #equal to 5 percent or more of the GNP as the economy grows and that is the present #prospect for the “current services” or ”base line” budget not much of our #domestic savings will be left over for the investment we need. Over the past year, our needs have been increasingly met by savings from #abroad in the form of a #net capital #inflow. That money has come #easily; amid #world economic and political uncertainty, the #United #States has been a highly #attractive #place to invest. But part of the #attraction for investment in #dollars has been #relatively high interest-rates. In #effect, the growing capital #inflow has, directly or #indirectly, #helped to #finance the #internal budget, by the #same token #helping to moderate the pressures of the budget-deficit on the #domestic #financial-markets. At the #same time, the #flow of funds into our capital and money #markets pushed the #dollar higher in the #exchange #markets even in the #face of a growing #trade and current #account deficit and the #dollar appreciation in turn undercut our worldwide #trading #position further. (114) [Volcker Feb 1984]</p> <p>By now, a substantial adjustment in #exchange-rates has been made, placing our #producers in a stronger #competitive #position. But we also know, from hard experience here and #abroad, that changes in actual #trade #flows necessarily lag changes in #exchange-rates by a period extending into years, that #currency adjustments can assume a momentum of their own, and that sharp #depreciation in the #external #value of a #currency #carries pervasive inflationary #threats. No doubt, some #depreciation in the #dollar, after the rapid run up, could be absorbed without a sharp or immediate impact on #domestic prices. But we cannot afford to be complacent. #Inevitably, #prospects for balance in our #internal capital #markets and therefore #prospects for interest-rates remain for the time being #heavily #dependent on the #willingness of #foreigners to #place huge #amounts of funds in #dollars and on the incentives for Americans to employ their money at home. In essence, the financing of both our current #account deficit and our #internal capital needs so long as the government deficit remains so high is #dependent on a historically high #net capital #inflow. (71) [Volcker Feb 1986]</p>
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++ For all ECU tables, # indicates a characteristic word within the specific class. We have edited the ECUs slightly from the software-generated format, in order to make them more readable, and to indicate (with a hyphen) where words have been linked together in order to signify unique phrases or terms.

Table A2: Characteristic Words and Phrases for Classes in Senate Hearings (Years, 1976-2008)

Class	Characteristic Words (with χ^2)	Examples from Top Four Characteristic Phrases, or ECUs (with χ^2)
<i>World Economy & US External Balance (Trade & Current Account)</i>	foreign+ (298) domestic (289) unit+ (285) capital+ (281) value+ (246) moreover (239) decline+ (233) balance+ (231) debt+ (224) demand+ (224)	<p>Although #financial contagion #elsewhere has been #limited to #date, more #significant knock on #effects in financial-markets and in the economies of #Brazil’s #important #trading #partners, #including the #United #States, are still possible. #Moreover, the economies of #several of our #key #industrial #trading #partners have shown #evidence of weakness, which if it deepens could further depress #demands for our #exports. Another downside risk is that growth in #capital spending, #especially among manufacturers, could #weaken #appreciably if #pressures on #domestic #profit #margins mount and #capacity utilization drops further. And it #remains to be seen whether #corporate #earnings will disappoint #investors, even if the slowing of economic growth is only moderate. #Investors #appear to have incorporated into #current #equity #price #levels both #robust #profit expectations and #low compensation for risk. As the economy slows to a more #sustainable pace as expected, #profit forecasts could be pared back, which #together with a #greater sense of vulnerability in #business #prospects could damp appetites for #equities. A downward correction to #stock #prices, and an #associated #increase in the #cost of #equity #capital, could compound a slowdown in the growth of #capital spending. (60) [Greenspan Feb 1999]</p> <p>The #contraction in #Asian economies, along with the rise in the #foreign #exchange #value of the dollar over 1997, #prompted a #sharp #deterioration in the #United #States #balance of trade in the first quarter. #Nonetheless, the American economy proved to be unexpectedly #robust in that period. The growth of real GDP not only failed to slow, it climbed even further, to about a 5 1/2 percent annual rate in the first quarter, according to the #current national #income #accounts. #Domestic #private #demand for #goods and #services #including personal #consumption expenditures, #business #investment, and #residential expenditures was #exceptionally #strong. #Evidently, optimism about jobs, #incomes, and #profits, #high and rising wealth to #income #ratios, #low #financing #costs, and falling #prices for #high tech #goods fed the appetites of #households and #businesses for consumer durables and #capital #equipment. In #addition, inventory #investment #contributed #significantly to growth in the first quarter, #indeed, the growth of #stocks of #materials and #goods outpaced that of #overall output by a wide #margin during the first quarter, adding 1 3/4 percentage points to the annualized growth rate of GDP-- although #accumulation of some #products #likely was unintended (54) [Greenspan July 1998]</p>
<i>Bank Regulation & Banking Industry Structure</i>	bank+ (975) regul+ (808) agencies+ (497) regulatory (341) loan+ (326) safe+ (305) institution+ (290) compan+ (279)	<p>We #held a public hearing on June 14th to discuss #industry #practices including those pertaining to prepayment penalties, the #use of escrow accounts for taxes and #insurance, stated income and low documentation #lending, and the #evaluation of a borrower’s #ability to repay. The discussion and ideas we heard were extremely useful and we look forward to receiving #additional public comments in coming weeks. Based on the #information we are gathering, I expect the #board will #propose #additional #rules #under HOEPA later this year. In coordination with the other #federal #supervisory #agencies, last year we #issued #principles based #guidance for nontraditional #mortgages, and in June of this year we #issued #supervisory #guidance on sub-prime-lending. These statements emphasized the fundamental consumer #protection #principles of #sound underwriting and effective #disclosures. In addition, we #reviewed our policies related to</p>

	<p>author+ (263) soundness (260)</p>	<p>the #examination of non #bank subsidiaries of #bank and financial #holding #companies for compliance with consumer #protection #laws and #guidance. As a result of that #review and following discussions of the office of thrift #supervision, the FTC, and state #regulators as represented by the conference of state #bank #supervisors and the American Association of Residential #Mortgage #Regulators, (107) [Bernanke July 2007]</p> <p>Recently, I think they perhaps tightened a bit, actually, because of some concerns that were initially prompted by the sub-prime-mortgage #lending #issues. Again from the Federal-Reserve's perspectives, our #principal concern is the #safety and #soundness of the #banking #system. What we have done recently is work with other #regulators such as the SEC and the OCC and, in some #cases also with foreign #regulators, the financial services #authority in the United-Kingdom for example and German and Swiss #regulators, to do what we #call horizontal #reviews which is that #collectively we look at the #practices of a large set of #institutions, both #commercial #banks and investment #banks, to see how they are managing certain #types of #activities. For example, the financing of leveraged buyouts, abridged equity and the like. And trying to make an #evaluation of what are best #practices, trying to give back #information back to the #companies and trying to #use those #reviews to #inform our own #supervision. And so we are very aware of these #issues from the perspective of the #risk taking by large financial #institutions and we are studying them, trying to #provide #information to the #institutions themselves, and using them in our own #supervisory #guidance. (100) [Bernanke July 2007]</p>
<p><i>Q & A Format (Volcker trying to define limits of Fed's knowledge/role)</i></p>	<p>answer+ (133) question+ (130) problem+ (115) judgment+ (111) different+ (77) way+ (75) say (66) thing+ (63) try (62) precise+ (62)</p>	<p>In #concept, #obviously, something is #better than #nothing. And what you can get in practice, in some #sense, is what we have to settle for. I would hate to see getting something for the sake of getting something at the expense of giving up a more adequate program. But that's not a #judgment I can #make, whether you have that realistic #choice before you. The more, the #better, within #reason. And as I said before, there is no #danger that you are going to get too much. I would certainly feel the more you could get, the #better. But in the end, something is #better than #nothing, quite #obviously. I think there is inevitably it can't be completely identified some #kind of psychological threshold in terms of market response, and if you go under 50 billion dollars which, I think, has become #kind of a symbol I don't see any #way you're going to get any positive psychological impetus from it. You will #avoid some disappointment. I don't #know whether that adequately #answers the #question or not. (44) [Volcker July 1985]</p> <p>So if you #deal with those three #areas, you would have gone a long #ways toward #dealing with this #situation. You have this #whole #series of insurance #questions that you touched upon, and I think there are very real serious #questions in my #mind partly because they are so #difficult. They are pressing, but maybe they do not have the same #degree of legislative priority, in my opinion, #simply because it is not quite so clear what #directions to go in. I would also say, and maybe less sweepingly, but quite important and a #matter of priority in the current environment and a #matter you are going to have to #deal with #anyway because the present law expires are the provisions in the Garn St. Germain Act for failed institutions to be taken over by an out of state institution. This has been very #useful in some #instances and still, I think, is too narrowly written to #deal with all the #problems that we have today. One #aspect of that is the #problem of #agricultural banks that are individually very small but are very important in terms of the local community. (42) [Volcker February 1986]</p>

<p><i>Fed Appointments & Relationship between Fed, Congress & Administration</i></p>	<p>chairman+ (187) appoint+ (147) Federal-Reserve+ Congress+ (134) Mr (120) Dr (110) president+ (107) thank+ (98) member+ (96) Democrat+ (96)</p>	<p>#Thank you, #Dr. Burns, for another most #impressive statement. We are very grateful to you for your interesting analysis. I'm struck by the fact that both you and President-Carter, the two most powerful men in our country according to the judgment of many distinguished people #agree very largely on our economic outlook and #agree that the no. 1 enemy overwhelmingly is inflation. I understand that you #met #yesterday, along with other economic experts, with President-Carter at the White #House. The story in the paper this #morning said the following: Jimmy-Carter reiterated his gospel of fiscal restraint to #congressional #Democratic leaders and they didn't like it much. The #President had the #congressional #Democrats down to the White #House #yesterday #morning for a 2 hour #meeting with cabinet #members, his chief economic advisers and #Federal-Reserve-Board #chairman Arthur-Burns. According to the lawmakers, one #central theme dominated the pitch made by #President Carter and his aides: hold down #federal-spending. "The only time we need to have strong government spending is if we have a weak private economy," one congressman #quoted the #President as stating. (131) (Proxmire, Chair (D) May 1977)</p> <p>#Mr. Bernanke, they never show up in the #minutes of the FOMC #meetings. All this #discussion, all this #debate never shows up in the #minutes when we get them. (86) (Bunning (R) July 2006)</p>
<p><i>Education, Training & US Competitiveness (Labour Market)</i></p>	<p>job+ (458) educat+ (368) skill+ (345) people+ (333) class+ (277) inequalit+ (272) wealth+ (271) trade+ (257) American+ (227) China+ (215)</p>	<p>The uncertainties that #middle #class #families face are not the uncertainties that the columnist that Senator-Bennett #mentioned and #others and economists #worry about as often perhaps as they should. I know and appreciate your acknowledging the widening #gap of income in our #society. I #commend you for adding your voice to that discussion. I agree with you that we should #look at ways to improve #education and #training of our #citizens, but I do not think that is nearly enough. #globalization has had a #tremendous #impact on #workers in this #country, on #communities, on teachers, on firefighters, on cities' ability to deliver services to their constituents. There is no question that good paying #manufacturing #jobs have gone offshore. Fourteen years ago, the #trade deficit in this #country was 38 billion dollars. Today, announced just this week, it exceeds 760 billion dollars. George-Bush the first said that a 1 billion dollar #trade deficit translates #into 13, 000 #lost #jobs. You do the math. Of course, we must #trade with the #world. The question is not if we will #trade with other countries; rather, it is how we will #trade with them and who will #benefit. (97) [Brown (D) February 2007]</p> <p>. . . one says, #compete down to the lowest #wage, lowest #health #care, #lose a #pension. And the other says, which I espouse, which is race up, which means you level the #playing field on #trade and you #address the costs you can, #health #care, energy, protect #pensions, and then you race like crazy on #education and innovation. That is the #American way. My #concern right now is that in a state like mine, because we make things, grow things, and have been the #leaders in doing that, we now #find ourselves struggling in a #global economy because we do not have those elements in place. We have #lost another 19, 000 #manufacturing #jobs just in the first half of this year. What I cannot seem to grasp in the graphs and #numbers that you have is really the #impact of this as it #relates to #middle #class #jobs, good paying #jobs in #manufacturing in #America. I do not believe we can have a strong economy unless we make things in this #country. That is what we do, make things and invent things, in #Michigan. (91) [Stabenow (D) July 2006]</p>
<p><i>Fiscal Policy</i></p>	<p>tax (722)</p>	<p>Four years ago, we found ourselves at a crossroads, and the #administration chose a #path that led from record #surpluses to record #deficits, both in our #fiscal accounts and our current accounts, our trade balance overseas,</p>

	<p>cut (670) social+ (663) taxe+ (444) spend (325) trillion (320) securit+ (305) budget+ (293) medicare+ (243) entitlement+ (215)</p>	<p>and much of that is being financed now by foreign central banks. And we have that opportunity, I would #suspect, the #obligation to try to change that course. The CBO has estimated that the federal budget-deficit for #fiscal year 2005 will be 368 #billion #dollars. That does not include an 80 #billion #dollar supplemental for iraq and more than likely another 50 #billion #dollar supplemental next year, given the troop #sizes we will have in Iraq. It does not include cost of #Social #Security privatization, whatever they may be, and it does not include other operations. We have record #deficits, stemming primarily from the #tax #cuts and from the steadily increasing #spending for needed #defense and homeland #security measures. Another aspect of the President's #budget for 2006 is the #cutting of numerous #entitlement and domestic discretionary #programs without effectively reining in the #deficit. (95) [Reed (D) 2005]</p> <p>In fact, he has a total of 153 #billion #dollars, when you take out the #taxes like #Social #Security that are counted as #spending #cuts. But the problem is that he has 164 #billion #dollars of new #spending #programs. The #cuts he proposes are basically one time #cuts, #freezing salary increases, #eliminating 100, 000 jobs, which Ronald-Reagan did in 1982, which Ronald-Reagan did in 1983, which George-Bush did once. Never, ever did they in fact happen. The problem is when you #add the new #spending the President proposes, that total #spending for non #defense purposes actually goes up 13 #billion #dollars above current services. The total level of #revenues is 313 #billion #dollars of new #taxes over a 5 year period. #Defense is #cut by 187 #billion #dollars. #Defense and new #taxes #add up to 102 percent of #deficit #reduction. It is going to be #virtually impossible to #cut #defense any further at the end of this 5 year period and, in fact, at the end of 3 years, you're going to have made the big #defense #cuts. (82) [Gramm (R) February 1993]</p>
<p><i>Monetary Aggregates & Objectives of Monetary Policy</i></p>	<p>range+ (1093) monetar+ (737) aggregate+ (657) target+ (641) money+ (628) growth+ (578) velocit+ (278) supply+ (259) consistent+ (236) upper (228)</p>	<p>#Assuming that further "structural" shifts into now account from non #transaction accounts are by that time minimal, "shift adjusted" #targets and data should not be necessary. The #tentative #range for M1 in 1982 was #set at 2 1/2 5 1/2 percent, the #midpoint of 4 percent is three quarters percent below the #midpoint of the #closely #comparable current #range for M1b "shift adjusted". The #tentative #ranges for the #broader #aggregates in 1982 were left unchanged at 6 9 percent and 6 1/2 9 1/2 percent for M2 and M3, respectively. However, we would anticipate #actual #growth #closer to the #midpoint in 1982, #consistent with the #desired reduction #over time. #setting precise #targets has inevitably involved us in #consideration of the effects of technological and regulatory #change on #monetary #measures. Those #technical #considerations should not obscure the basic thrust of our #intentions that is, to #lower #progressively effective #money and #credit #growth to amounts #consistent with price #stability. We believe the #targets for both 1981 and 1982, and our operations, are #fully #consistent with that #objective. The #tentative #range for M_1 in 1982 is substantially below the #range of 6 8 1/2 percent specified for recorded M1b #growth for 1981. (59) [Volcker July 1981]</p> <p>#Lowering the #ranges during the 1980s, for instance, #served as an important signal of the anti #inflationary #commitment of the #Federal-Rreserve. In some #circumstances, the #monetary #aggregates can also be of value by serving as #indicators of the thrust of #monetary-policy. Deviations of #money #growth from #expectations may well signal that #policy is not having its intended effect, and that adjustments should be #considered. #Over much of our nation's financial #history a number of #measures of the #money #supply had reasonably predictable #relationships with #aggregate income. The #period of #rapid financial #change had not yet begun, and measuring #money was more straightforward. Recognition of these predictable #money income</p>

		<p>#relationships was the #basis for the #Federal-Reserve's increased emphasis on #money in the 1970s and the #subsequent Humphrey-Hawkins legislation. And at the beginning of the 1980s, the Congress passed the #Monetary #Control #Act and the #Federal-Reserve #adopted procedures to provide greater assurance that #targets for m1 could be #achieved. But, even by the mid 1970s, the #relationship of the #monetary #aggregates to the economy was becoming more complex. Financial innovation and deregulation significantly altered the spectrum of available #transaction and saving #instruments. (56) [Greenspan February 1993]</p>
<p><i>US Real Economy</i></p>	<p>percent+ (534) quarter+ (465) unemployment-rate+ (306) average+ (273) rise (261) month+ (255) labor+ (223) annual+ (222) rate+ (209) pace+ (205)</p>	<p>The #fall in #housing demand in turn prompted a sharp #slowing in the #pace of #construction of new homes. Even so, the backlog of unsold homes #rose from about 4 1/2 months' supply in 2005 to nearly 7 months' supply by the #third #quarter of #last #year. #Single #family #housing #starts have #dropped more than 30 #percent since the #beginning of #last #year, and #employment growth in the #construction sector has #slowed substantially. Some tentative #signs of #stabilization have recently appeared in the #housing market. New and existing home #sales have flattened out in recent #months. Mortgage applications have #picked up, and some #surveys find that homebuyers' sentiment has improved. However, even if #housing demand #falls no further, #weakness in residential investment is likely to #continue to weigh on economic growth over the next few #quarters as homebuilders #seek to reduce their #inventories of unsold homes to more comfortable levels. Despite the #ongoing adjustments in the #housing sector, overall economic prospects for households remain good. Household finances appear generally #solid and delinquency #rates on most types of #consumer loans and residential mortgages remain low. (90) [Bernanke February 2007]</p> <p>Real activity in the United States expanded at a #solid #pace in 2006, although the #pattern of growth was uneven. After a first #quarter rebound from #weakness associated with the effects of the hurricanes that ravaged the gulf coast the #previous #summer, #output growth #moderated somewhat on #average over the remainder of 2006. Real GDP is currently #estimated to have increased at an #annual #rate of about 2.75 #percent in the #second half of the #year. As we #anticipated in our July #report, the United States economy appears to be making a transition from the rapid #rate of expansion experienced over the preceding several #years to a more sustainable #average #pace of growth. The principal source of the #ongoing #moderation has been a substantial cooling of the #housing market, which has led to a marked #slowdown in the #pace of residential #construction. However, the #weakness in #housing market activity and the #slower appreciation of house prices do not #seem to have spilled over to any significant extent to other sectors of the economy. #Consumer spending has continued to expand at a #solid #rate, and the demand for #labor has remained strong. On #average, about 165, 000 jobs per #month have been added to non #farm #payrolls over the past 6 #months, and the #unemployment-rate, at 4. (88) [Bernanke February 2007]</p>
<p><i>Criticism of Fed for failing to support growth (D. Riegle)</i></p>	<p>that+ (367) we've+ (168) go (158) you've (130) out (107) maybe (106) say (105)</p>	<p>In the meantime, people who have got to get from #today to next week to next month to 6 months #down the road are having a very, very difficult time doing it. People here in this town are #getting by all #right. They have health care. #They've got #pretty good salaries, for the most part, and so #forth. It's not true #out in the countryside. #That's why #you've got something of a political rebellion underway. I don't know how to get the message through to the Federal-Reserve. I don't think you're hearing it because I don't #see it #coming back #out of your testimony or your prepared statement #today. I don't detect the urgency about this problem that the people are #asking for. Now you may #say, #well, they don't #understand. #That's #sort of what the President has been #saying, that things are better than the people think they are. If he believes that, #somebody</p>

	<p>there+ (101) else+ (92) want+ (91)</p>	<p>#really needs to #sit him #down and have a talk with him because people know #what's #going on in their lives, and the anxiety that they're reflecting in these polls and this consumer survey data from Michigan is #real. (62) [Riegle, Chair (D) July 1992]</p> <p>I think you're too passive, quite #frankly. I don't #say that just to you, but I think the response of the Federal-Reserve board has been very modest, very guarded, very slow, and I think not adequate to the problem. The message you're #getting back from the public is that they #want more done because the sickness #out there is more pervasive and deeper than #we've #seen before. You yourself have #said it. #You've #said #you've not #seen economic conditions like these and confidence problems like these ever before in your professional lifetime. There has to be a link between that observation and what people are #reacting to and experiencing in their own lives when they #tell us that and we get that message. We're #going to have to do something that #goes beyond what we normally do to try to respond to it. I don't #understand how #there's a disconnection between the #signals we're #getting and the policy response that we're making in return to the #signals. #You've got to explain that here #today. #You've got to #tell us why we #can't do more when more is needed. (40) [Riegle, Chair (D) February 1992]</p>
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Appendix

Figure A1: House Hearings 1976-2008
Class 1 Populist Attack on Greenspan
 (mostly B. Sanders)
 [chi-square values]

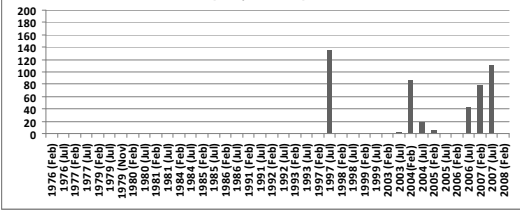


Figure A2: House Hearings 1976-2008
Class 2: Volcker Defending Anti-Inflation Stance
 [chi-square values]

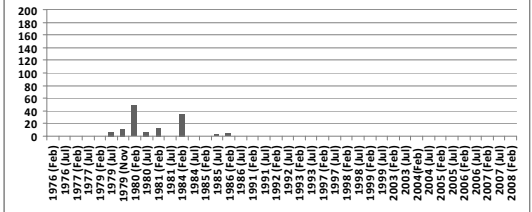


Figure A3: House Hearings 1976-2008
Class 3 Fiscal Policy
 [chi-square values]

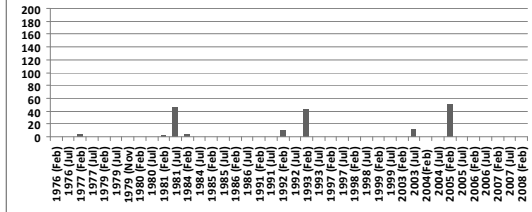


Figure A4: House Hearings 1976-2008
Class 4 Fed's Regulatory Activity
 [chi-square values]

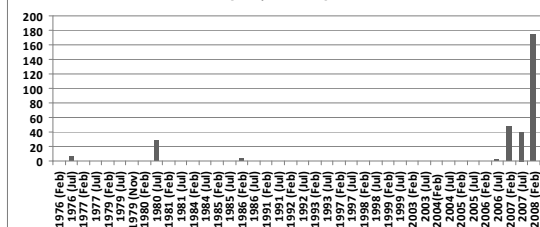


Figure A5: House Hearings 1976-2008
Class 5 Q & A Format (Process) Mixed substance
 [chi-square values]

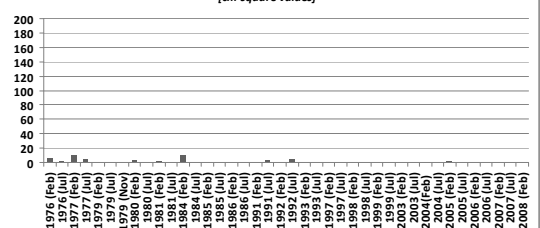


Figure A6: House Hearings 1976-2008
Class 6 Monetary Aggregates
 [chi-square values]

