Monetary Policy Oversight in Comparative Perspective: Britain and America During the Financial Crisis

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/

This study examines deliberation on monetary policy oversight in the US and UK between 2006 and 2009. It employs *reciprocity* as the key criterion for judging the quality of monetary policy oversight deliberation (i.e., committee participants are expected to engage with one another, taking up and responding to the reasons offered by other participants). Using automated content analysis, the empirical finding is that reciprocity is clearly evident in the parliamentary oversight committee, but much less so in the two congressional committees. The two country cases represent very different approaches to legislative oversight, with the UK demonstrating a committee approach both in terms of the testimony of the monetary policy body and of the behaviour of the legislative committee, while the US demonstrates a focus on a series of individual contributions both from the Fed chairman and Members of Congress. In the US, this appears to allow greater scope to divert discussion away from the primary focus of hearings (i.e., monetary policy).

I.   Introduction

In normal economic times, clashes between politicians and central bankers in legislative oversight hearings on monetary policy are not typically considered worthy of headline news coverage. In times of financial crisis, however, these hearings can take center stage. Whether in normalcy or in crisis, monetary policy oversight hearings are critical to democracy, as they constitute the formal venue for central bank accountability. Officials of *independent* central banks—who are themselves not elected but appointed—are held accountable for their decisions in respect of their objectives towards monetary policy and financial stability to elected representatives in legislative bodies. Importantly, both sets of actors are fully aware that the publicised hearings are further scrutinized by audiences outside the committee meeting rooms. And, ostensibly, reasoned argument is central to the purpose and focus of the hearings—that is, they are intended as a deliberative forum.

This paper contributes to the growing empirical work on deliberation by focusing on monetary policy oversight in two country cases—the US and the UK—during the period of the recent financial crisis. Both cases are similar in many respects, particularly in experiencing many of the same conditions of, and effects from the financial crisis. Yet the two country cases also embody fundamental differences in their approaches to legislative oversight of monetary policy—in part, the product of their presidential and parliamentary systems. While these similarities and differences are important, the focus of this paper is on the quality of deliberation found in the monetary policy oversight committees of the US Congress and British Parliament.

Scholars of deliberative democracy lack a clear consensus on how best to conceptualize "deliberation" (Bächtiger, Niemeyer et al. 2010: 35); however, most would agree that deliberative discourse contains *reasoned argument.* Measuring empirically the existence, the extent and the quality of such reasoned argument in real world settings remains a formidable task. Nonetheless recent studies have sought to gain traction on the empirics of deliberation by isolating and then measuring one or two critical dimensions (e.g., "information" (Mucciaroni and Quirk 2006); or "open-mindedness" (Barabas 2004)). This paper adopts this same focused approach to deliberation,

but with the intent being to measure what is arguably the core feature of central bank accountability—that is, the provision of explanations for objectives held and decisions taken. Specifically, legislators are expected to challenge central bank officials on their policy decisions and these officials are, in turn, expected to provide *reasons* for their decisions. Effective deliberation among elected politicians and unelected experts who are being held to account is thus one of engagement and reciprocity (i.e., participants talk to one another and take up others' points).

Inasmuch as the focus of this paper is the committee hearings, the data consist of the verbatim transcripts from these oversight hearings, beginning in later 2006 and extending through early 2009. Textual analysis software is then employed to analyse these data in their entirety.

To summarize in advance, this study provides empirical evidence, using monetary policy as the case study, that the legislative setting certainly does shape the degree of reciprocity in deliberation between politicians and central bank officials. The two country cases are seen to represent two very different approaches to legislative oversight. The UK demonstrates a committee approach both in terms of the testimony of the monetary policy body and of the behaviour of the legislative committee, which gives rise to clear evidence of interaction and engagement between legislators and central bankers on the major themes of discourse. In contrast, the US demonstrates a focus on a series of individual contributions both from the Fed chairman and members of Congress, which together exhibit little in the way of reciprocal dialogue. In the case of the US, this appears to allow greater scope to divert discussion away from the primary focus of hearings (i.e., monetary policy).

The next section of the paper explains the importance of reciprocity in legislative deliberations. Section III outlines the data and methodology of the paper and Section IV then presents the results of the textual analysis of the hearing transcripts. Section V concludes.

II.   Deliberation in Legislative Settings

A number of strands in the legislative politics literature touch on deliberation in oversight hearings, but as yet none have examined the oversight of monetary policy in comparative perspective. For instance, comparative studies of deliberation in national legislatures have identified key

institutional features that shape deliberative quality (Steiner, Bächtiger et al. 2004; Bächtiger and Hangartner 2010), of which one is highly relevant to this paper: deliberation is argued to be of higher quality in presidential than in parliamentary systems. Although the empirical evidence for this purported difference in deliberative quality is mixed (Steiner, Bächtiger et al. 2004: 123), the logic is that critical deliberation by government MPs in parliamentary systems may impede government stability, and is therefore implicitly or explicitly discouraged. Furthermore, party discipline—which is typically greater in parliamentary systems—is understood to constrain free flowing deliberation, since in parliamentary settings, "argumentative lines have been fixed before the debate" (Steiner, Bächtiger et al. 2004: 85). As this study compares deliberation in both system types, the expectation of the comparative literature would be that monetary policy oversight in the US would exhibit higher quality deliberation than in the UK. That is not, however, the finding of the present study.

A second departure from previous empirical studies of deliberation in legislatures (Steiner, Bächtiger et al. 2004; Quirk 2005; Mucciaroni and Quirk 2006; Bächtiger and Hangartner 2010)— where the analysis is primarily on floor debates, with legislators deliberating the merits of legislation—is that here (a) the focus is on the dialogue between elected legislators *and unelected experts* (central bank officials); (b) the deliberation itself occurs in *committees*; and (c) the purpose is to *hold the independent central bank to account*, thereby providing a link between monetary policy decision making and the will of the voting public. This study thus constitutes a specific type of legislative deliberation.

A third novelty of the approach here is that it does not examine the ex-ante controls that legislators might seek to devise over agencies (i.e., as in principal agent theories (Bawn 1995; Huber and Shipan 2000; Huber and Shipan 2002)), but rather focuses on monetary policy *hearings*. These hearings are an ex-post form of oversight and as such are less well understood by political scientists (McGrath 2013: 349).

In a related vein, because these hearings rely upon the expertise of central bank officials, scholars of deliberative democracy have raised the critical question of whether the balance of political

authority has veered too far in deferring to experts (Jasanoff 2003; Esterling 2004). Writing before the onset of the financial crisis, Schudson is prescient in questioning: "Have we made an error, as far as preserving democracy is concerned, to cede so much authority to Alan Greenspan (or his successor as Federal Reserve chair, Ben Bernanke)? Should Greenspan have been required to make a case to a jury to raise or lower interest rates?" (Schudson 2006: 497). The key question—and one that is central to accountability—is how much discretion can be given to experts without compromising democracy? This issue lies at the heart of the deliberative process in monetary policy oversight hearings. Schudson argues that expertise is compatible with democracy, but only insofar as accountability includes "robust public discussion in which the work of experts can be criticized" (Schudson 2006: 505) and where their expertise is distributed widely: "(t)hat distribution does not turn everyone into an expert but it does empower people beyond the established circle of expertise" (Schudson 2006: 506-07).

This comparative study therefore brings together strands from a number of literatures by focusing on a specific form of deliberation between legislators and unelected experts, where the accountability of the latter requires a critical and robust exchange of views between the two sets of participants. And, to be effective, the reciprocal dialogue must allow for a distribution of expertise across the major themes pertaining to monetary policy decisions. In short, deliberation must entail a critical review of the decisions of the central bankers across all relevant issues.

a. Reciprocity in Deliberation

A key criterion for judging the quality of monetary policy oversight, therefore, is its degree of reciprocity. As Pedrini, et al explain, reciprocity in deliberation entails "both interactivity and respect. It involves an effort to listen to and engage with people with whom we disagree …" (Pedrini, Bächtiger et al. 2013). Reciprocity therefore requires participants to "engage with one another" so that "they do not only give reasons *but listen and take up the reasons of other participants*" (italics added) (Pedrini, Bächtiger et al. 2013: 488). But why is reciprocity essential to monetary policy deliberations? The simple answer is that without reciprocity, without evidence that participants are talking *to* rather than *past* one other, we have no evidence that the expertise of central bankers is being distributed to legislators sufficiently to enable them to hold these experts to account.

Reciprocity in deliberation is both conceptual and empirical. Conceptually, true deliberation requires that participants ratify or acknowledge the arguments of others. As Goodin notes: "(t)here must … be uptake and engagement—other people must hear or read, internalize and respond—for that public-sphere activity to count as remotely deliberative" (Goodin 2000: 92). This internalization, in turn, requires a degree of shared meaning:

> In real conversations between real people, there is a constant cross-checking and renegotiation of meanings. That facilitates interlocutors' understanding of one another. People who are merely overhearing a conversation sometimes find it hard to understand what is going on, precisely because they cannot interject into the conversation to cross-check their own understandings of what others mean to be saying. … In real conversations, a code of dyadically shared meanings emerges. (Goodin 2000: 101)

Goodin contrasts this form of communication as one in which people are essentially *talking to one another* with other practices, such as posting material on the internet or pontificating from a soapbox, where people are essentially "posting notices for all to read"—notices which may or may not be read or internalized. The latter, in his view, does not constitute deliberation for the simple reason that it is not reciprocal (Goodin 2000: 91-92). And finally, reciprocity in deliberation assumes that in conversing, "people characteristically talk more or less 'loosely'. They make more or less cryptic allusions to more full-blown arguments" (Goodin 2000: 93) In essence, the full-blown arguments are not generally articulated as such, but rather exist in the form of *conceptual clouds.* Others then acknowledge the implied meaning as a form of "catching one's drift"—for example, by completing the syllogism and applying the reasoning to some more specific instance.

So, we begin our analysis with the important assumption that in legislative committee hearings, individuals talk in conceptually coherent ways ("conceptual clouds") which others may share (by agreeing or disagreeing). This implies, therefore, that any empirical investigation of text emanating from such hearings should be able to capture these shared concepts, or themes—and should, moreover, also be able to gauge the extent to which individual members participate in these shared themes. *In short, the empirical task is not simply one of capturing text as a form of notice-posting, but rather as a reciprocal and interactive form of communication.*

b. Institutions and Deliberation

Committee systems invariably reflect the political systems in which they function, so it is no surprise that institutional structures will to some extent dictate the practice of monetary policy oversight in each country case. Unfortunately, space does not permit a full discussion of these contrasts here; however, these are explained in detail in the on-line Appendix 3. To inform the analysis, however, a short description of five key differences and their potential impact on committee deliberations is required. First, given the formal separation of legislative and executive branches in the US (as well as the expectation of previous comparative studies of deliberation in legislatures), we might expect a more strident challenge from congressional committees relative to that of the parliamentary committee. Second, because the parliamentary select committee system adheres to an explicit cross-party ethos, we might expect partisanship to be less evident in the UK than in the US. Third, it might be expected that greater staffing resources—combined with larger committee memberships—in the US would yield superior monetary policy oversight than in the UK, where staffing resources and committee membership size are both considerably smaller. A less well-understood phenomenon is that the same larger numbers in terms of staff and committee members may conversely create the potential for free riding that is absent in the UK. In short, fewer staff and smaller committee membership in Parliament means that there is less scope for MPs being ill-prepared or lacking in knowledge. Hence, numbers of staff and committee members may either enhance *or* detract from deliberation. Fourth, congressional norms allowing a perfunctory reading of statements, a constantly revolving flow of members in and out of committee rooms, may all work to compromise deliberative quality in the US relative to the UK. Finally, whereas the Fed chairman is the single spokesperson before Congress on the Fed's Monetary Policy Report, the presence of multiple members of the Bank's Monetary Policy Committee before the parliamentary committee necessarily changes the dynamics of the deliberation; however the precise nature of how this "one versus many" contrast might affect deliberation is unclear *a priori*.

III. Data and Methodology

a. Data

Both the Federal Open Market Committee (FOMC) of the Federal Reserve and the Monetary Policy Committee (MPC) of the Bank of England meet regularly to deliberate on their respective country's monetary policy. Within the House Financial Services Committee (HFSC) and the Senate Banking Committee (SBC), American legislators use the hearings on the semi-annual Monetary Policy Report of the Federal Reserve to hold the Fed chairman to account on the performance of monetary policy, as decided by the FOMC. In the UK, the House of Commons Treasury Select Committee (TSC) holds hearings with MPC members on the Bank of England's Quarterly Inflation Report. [1]

Both in the US and the UK, then, representatives of the central bank's policy committee regularly testify before the legislative oversight committee(s) on their monetary policy decisions,[2] although for the US this consists of just one witness—the Fed chairman—while in the UK a rotating sub-set of MPC members provide testimony (details of these are given in the on-line Appendix 1). In both the US and the UK legislative committee members do not vote on or produce a subsequent report following these oversight hearings—hence, from a research perspective, the only systematic data from these hearings are the transcripts themselves.

The data for this study are the transcripts from the semi-annual Monetary Policy Report hearings of the HFSC and the SBC. These are taken from the period of mid-2006 to early 2009, thus comprising twelve hearings in total.[3] Two of the twelve hearings (in both chambers in 2006) were chaired by Republicans (Representative Mike Oxley and Senator Richard Shelby) while the remaining ten hearings were chaired by Democrats (Representative Barney Frank and Senator Christopher Dodd, 2007-2009). During the same time period of mid-2006 to early 2009, the Treasury Select Committee held ten oversight hearings on the Bank's Quarterly Inflation Report.[4] As the party in government for the entire period, Labour's John McFall held the chair.

The data are structured into three text files, comprised of the above hearings for each committee (the two congressional and one parliamentary). The text files are structured so that each speech or remark constitutes a "case", and each is identified (or "tagged") with identifying

characteristics—the name of the speaker, his or her party affiliation (or "no party" for central bank officials), the speaker's role (committee chair, committee member, Fed chairman, MPC internal member [the Governor, two deputy governors, the Bank's Chief Economist and the Bank's Executive Director for Markets], MPC external member [four individuals]), and the date of the hearing. All the hearing transcripts are analysed in their entirety, with the exception of written questions and answers submitted after the hearing. The congressional committees permit the inclusion of this correspondence in the transcripts, while the TSC does not adhere to this practice. Because the focus here is on deliberation, the post-hearing correspondence is excluded from the congressional text files.

b. Methodology: Computer-Assisted Content Analysis

While the use of computer-assisted content analysis in political science has proliferated in recent years, very little empirical work has been done comparing legislative deliberations in committees. As noted above, the goal of this study is to gauge a key indicator of quality in committee deliberations between legislators and unelected experts—namely, the degree to which both sets of actors engage in a *reciprocal and interactive* fashion, the degree to which they talk *to* one another on all relevant issues pertaining to the oversight of monetary policy. A topic model (Blei and Lafferty 2006; Blei and Lafferty 2009) is one approach used elsewhere to capture the content of political texts (Grimmer 2010; Quinn, Monroe et al. 2010), where the task is automatically to classify the contents of documents into "topics". These models do not conceptualize the text under investigation as inherently deliberative—and particularly not in a way that would require a reciprocal and interactive mode of communication among the participants. Rather, these models conceptualize the textual data more as what Goodin describes as "notice posting"—that is, more as a one-way flow of communication. So, for these models, the order of words[5] and the order of phrases in a document do not inform the analysis; rather, the text is viewed as a "bag of words." These models further simplify the vocabulary by reducing words to a single root ("stemming")—where, for example, *institution, institutions, institutional* all conform to *institution.* As one review of this approach notes (Grimmer and Stewart 2013: 272), stemming is a "cruder" but "faster" form of "lemmatization", with the latter

employing word and sentence context (including punctuation) and dictionaries for a richer, more nuanced mapping of the text.

The approach here is quite different. First, because we seek to measure the *reasons* offered by experts for their decisions, a topic model's focus on simply extracting "the general meaning of a text" (Grimmer and Stewart 2013: 272) is not sufficient; word order is vitally important to capturing the logic and meaning of these reasons. Second, as the task is to gauge reciprocity in deliberation, conceptualizing the text as a form of "notice posting" is not sufficient; the method must be able to capture the extent to which participants engage in a shared concept cloud, or thematic discourse. Finally, lemmatization is preferred over stemming, since the exposition of reasoned argument relies on word order, implied meanings, punctuation, capitalization and so on.

The approach taken here further assumes that speakers of textual data convey meaning in a distinctly thematic fashion, so that 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 a univariate distributional pattern (e.g., as in topic modelling), a thematic approach examines the bivariate associations between words and phrases in order to map out concept clouds (specifically, the existence of words and phrases that tend to *co-occur* in a statistically significant way), and the relationships between concept clouds within a single corpus. Moreover, this thematic approach is particularly useful in settings where the corpus under investigation exhibits an internal cohesion—such as a focus on monetary policy—and where the investigation is concerned not simply with whether or not speakers talk about the central bank or monetary policy but how they relate that to other parts of the world. For instance, "monetary policy" could be used in a sentence or paragraph that is mostly comprised of pleasantries, but linking monetary policy to a word like "risk" could indicate that the speaker is talking about how central bank policies might have contributed to risk. And, moreover, knowing that this occurs in the context of, say, managing risk in terms of inflation expectations as opposed to risk in terms of risk to the solvency of commercial banks matters a great deal to interpreting the reasons offered by central bank officials for their policy decisions. Hence, the methodology adopted here allows us to capture the context and meaning of themes because it does not simply classify the contents of documents into

"topics" based upon a univariate distributional pattern. Here the assumption is that speakers 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.

The software (*Alceste*—also R-based, as *Iramuteq*) considers the text as a large matrix of co-occurrences between lexical forms, and processes it with multivariate techniques. The software has been used widely both in European and American social sciences ((Brugidou 1998; Brugidou 2003; Noel-Jorand, Reinert et al. 2004; Bara, Weale et al. 2007; Mata and Lemercier 2011), and in medical education (Osman, Schonhardt-Bailey et al. 2014 (in press)). A key 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., in political texts—the name of speaker, party affiliation, constituency characteristics and so on).

The algorithms and their rationale are presented elsewhere (Schonhardt-Bailey, Yager et al. 2012; Schonhardt-Bailey 2013), providing an in-depth analysis of its internal robustness and validation (Schonhardt-Bailey 2012). In brief, 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 produces 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 and phi coefficients, 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.[6] Both are ranked in order of statistical significance, to allow a clearer understanding of the terms and phrases which predominate in each class.

Key terms for these hearings (e.g., the Fed, GDP, interest rate, and so on) are identified and controlled through the lemmatization process, in order to improve the robustness of the results. The

on-line Appendix 2 details the specific list of terms that required lemmatization supervision prior to analysis.

IV. Analysis

a. Identifying the Themes

[Table 1, about here]

Table 1 provides summaries of the basic statistics from Alceste for each of the three sets of hearings. The size of each of these three text files is roughly similar.[7] The passive variables[8] (or tags) define characteristics of each speech or "case", and these include the speaker's name, role, and so on, as outlined above. Each speech within each corpus constitutes a sampling unit and is designated an Initial Context Unit (ICU) by the software. These ICUs are cut into Elementary Context Units (ECUs), which are the basic elements of the classification process. As a measure of goodness-of-fit, we observe that the TSC, HFSC and SBC obtain a classification rate of 81%, 76% and 82%, respectively.

The bottom two rows indicate the number of classes identified and the size of each class (as measured by the percentage of the total ECUs classified within each). While the assigned class labels may seem straightforward, it is important to clarify that these are not automatically given by the program. The output provides the researcher with a number of different tools for conceptualizing the content of classes. Two of these tools are particularly useful—characteristic words and characteristic ECUs. The most characteristic function words for each class (ranked in order by phi coefficient and χ^2 statistical significance, with the minimum χ^2 of 12.28 for the TSC corpus, with one df[9]) provide an indication of the theme or frame of argument that unifies a class. As an example, the top ten words (and χ^2 values) for Class 1 from the TSC hearings are: bank (542), lend (291), liquid (181), sheet (155), fund (147), market (142), financial (130), banking-system (124), scheme (116), and system (96). Furthermore, the top two representative phrases (ECUs) provide the context surrounding the characteristic words:

The provision of the SLS [Special Liquidity Scheme] does not provide funding for mortgage lending but it does provide liquidity insurance to give the banks time to sort their balance sheets out. (Governor King)

For those particular kinds of operation—commercial paper and corporate bonds—the criterion for success is not the amount of purchases that we engage in, it is the leverage that such purchases might have on the credit spreads in markets and the private sector issuance of that paper, and it is only two or three weeks into the scheme but I think we are mildly encouraged by what we are seeing so far. (Governor King)

The lists of characteristic words and phrases for each class provide an understanding of the thematic content for each class. For this class, the label *Bank Lending and Central Bank Liquidity Assistance (during the crisis)* is assigned; the remaining class labels are similarly assigned.[10]

b. Thematic Contrasts between the Congressional and Parliamentary Committees

Four important observations can be drawn from Table 1. First, across all the committees, four themes are consistently prominent: (a) labour market (including unemployment and jobs); (b) the financial crisis itself (including the stability, solvency and liquidity of banks and the role of the central bank); (c) assessments of economic activity and growth; and (d) inflation.

Second, financial regulation and/or stability of banks emerge as distinct classes for both congressional committees, but not for the TSC. While *both* the congressional and parliamentary committees held *other* hearings on financial regulation and other aspects of the financial crisis, we are nonetheless capturing here the extent to which financial regulation spilled over into the discussion of monetary policy oversight. It is also worth noting that British select committees differ from American congressional committees in that they do not explicitly consider legislation, but rather focus more predominantly on their oversight function (see on-line Appendix 3). This more specialist function may give rise to the relatively large weight given to discussion of inflation and monetary policy in the TSC—that is, 29% of the classified ECUs fall into this class, compared to weights of 15% in the HFSC and 13% in the SBC.

Third, the HFSC hearings exhibit two classes that do not appear in either the SBC or the TSC. In Class 4, the committee focuses on financial regulation that covers consumer related aspects of

banking—i.e., the conduct of business (credit cards, deceptive lending practices, consumer debt). In contrast, the SBC appears to focus more on financial stability in terms of bank failures, liquidity in the system and systemic risk. In Class 6 the HFSC also discusses issues surrounding international trade and the current account (oil prices/demand/supply, foreign purchase of US debt, exchange rates and currency manipulations). While significant, it should be noted however that together, these two unique classes comprise just 15% of the classified ECUs for the House committee.

A fourth observation is that for both the House and Senate, discourse relating to the committees' *process, procedures and pleasantries* comprises a large share of the classified ECUs— 25% for the HFSC and 31% for the SBC. These included words like "I, thank, you, committee, question, talk, comment, today, ask, hearing" and phrases like "Thank you. I appreciate you sharing that with us." In contrast, the parliamentary committee does not exhibit any such class that is primarily comprised of process language. This tends to indicate that the style of oversight in the UK involves a more direct form of questioning. One interpretation for these findings is that for the congressional hearings, the committee process (time allocation, and so on) and pleasantries intrude upon the more "meaty" issues, whereas these aspects of the discourse do not appear to have the same influence in the parliamentary committee.

We will now delve deeper into the characteristics of individuals speaking to each of these themes.

c. Partisanship and Personalities

[Table 2, about here]

Table 2 presents the statistically significant tagged indicators for each thematic class in each committee corpus (all at 1% or better).[11] To begin, the first row indicates the size of each committee, as well as the actual numbers attending the hearings—with the exception of the SBC, which does not provide a list of attending senators.

The remaining rows list each of the thematic classes for each of the three corpora, prefaced in brackets by the percentage weight of the class. Each cell then lists the significant tags, in rank order by χ^2 value (with highly robust tags ($\chi^2 > 100$) in italics).

Table 2 reveals two features. First, partisanship does not seem to create conspicuous cleavages by thematic class (i.e., Democrats do not converge on one theme and Republicans on another). This is not to say that committee members of different partisan orientation do not tend to stress different topics (as we will see below), but rather that across the overall classification structure, there do not appear to be overt contrasts between party members. The one important exception is the Democrat tag in the House committee for the Labour Market theme, where Democratic committee members and Chairman Barney Frank are significant.

Second, in the parliamentary committee, very few MPs (by name, party or role) are significant for any of the classes. This is not to say that they do not speak to the classes, but rather that no specific MP tag dominates a particular thematic class. In contrast, individual members of the Monetary Policy Committee are significant for each of the classes: both Mervyn King and Paul Tucker speak to the theme of bank lending, particularly in the context of the Bank of England's liquidity assistance during the crisis. As one would expect, the significant dates for this class are focused around the heart of the crisis—i.e., autumn of 2008 and early 2009. This is consistent with the attention given to whether the Bank of England acted promptly to provide liquidity insurance to the UK banking system, an issue that continues to attract intense debate. Prior to this period (i.e., in 2006-07), Chief Economist Charlie Bean is the dominant tag for the theme of economic activity and growth, though with significant contributions from other MPC members. Hence, while Ben Bernanke, as the single representative of the Fed, was expected to cover all the themes raised in the hearing, MPC members appear to have followed more of a division of topics in the parliamentary committee. While this may be stating the obvious, it is worth noting that this specialization has a bearing on the overall nature of deliberation in the respective committees—a point that we will return to below.

[Tables 3, 4, and 5 - about here]

d. Cross-Data Analysis (*Tri-Croisé*)

The *Tri-Croisé* or Cross-Data analysis in Alceste allows us to delve deeper into the co-occurrence between variables and themes. This analysis crosses a tag (name of speaker, etc.) or a single word with the entire corpus and identifies the strongest statistical associations between the specified tag or word, and other words and phrases in the text.[12] (Simply put, this holds constant the specified tag or term, allowing all else to vary.) The resulting words and phrases that are statistically significant for each variable do not necessarily cohere or form a distinct thematic class, although some cohesion is usually observed.

i. *Timeline of Discourse*

We first cross each of the meeting dates with the remaining corpus for that committee, in order to obtain something of a time line of significant topics or issues from 2006 to 2009 and to verify its correspondence to the known timeline of events. The results are informative and confirmative, and are reported in the on-line Appendix 4A.

ii. *Partisan Discourse*

In Tables 3, 4 and 5 the significant topics are indicated in bold. These are interpreted from both the words *most likely* and *least likely* to occur for each value,[13] as well as the list of representative ECUs for each variable.

Table 3 indicates the characteristic topics for committee members by party affiliation, as well as the percentage weight of each party group. Conspicuously, the weights of committee discourse of the "No Party" group (consisting of MPC members for the TSC and Fed Chairman Bernanke for the congressional hearings) are considerably larger for the parliamentary committee: 72% of the classified text is by MPC members, while in the HFSC, Bernanke's discourse accounts for 43% of the total classified text, and in the SBC, it is 47%. Conversely, the weights of congressional parties (summing to 57% in the House and 53% in the Senate) far exceed that of the parliamentary parties, which is just 28%. In short, members of the congressional committees talk relatively more than their counterparts in the parliamentary committee, at least relative to representatives from the central bank. Recalling the

committee norm in the US which allows both the Fed chairman and committee members to read out prepared statements (see on-line Appendix 3), it may be that these statements of the committee members inflate their relative levels of discourse participation. Or, it may be that simply having more central bank officials appear to testify before the committee shifts the overall weight of discourse to these officials. We will return to this below.

Turning to the substantive content of each party group, when we effectively hold party constant for the TSC, the *Process and Pleasantries [P & P]* discourse emerges for Labour, the party that held the chair and comprised the majority of members for the entire period. In contrast, this does not appear to be specific to either party in the congressional committees. The TSC therefore does not entirely escape the presence of process language in its hearings, but controlling for party, this language is largely confined to the chairman of the committee (John McFall). An examination of the ECUs shows that this process language comprised primarily the initial introductions at the beginning of the hearing, after which it is rare. In contrast, the congressional committees tend to repeat the use of process language throughout the hearing, often in the form of time management or on-going process (e.g., "May I have one more minute?", "I know that I am out of time, but…"). So, for the congressional committees, process and pleasantries is not unique to either party—it is a shared trait.

With respect to the left-leaning parties, we see a marked concern for labour markets and this is particularly prominent in the US. Strikingly, HFSC Democrats tend to focus on more populist issues, such as income/wealth inequality, stagnant wages (particularly in juxtaposition to corporate profits), and unemployment. A top ECU from Rep. Maxine Waters is typical: "… I found myself feeling a little bit uncomfortable because as we talk about income equality, and we all know and feel that something is going on here, and that the gap is growing, what I don't find is any real steps or answers to deal with it."

Senate Democrats similarly target income inequality and the general sense of economic insecurity, but add to this concerns about America's international competitiveness, especially vis-à-vis China. The following ECU (from Debbie Stabenow) is indicative: "More concerning is the fact that

one-third of that deficit is with one country, China. On Monday, I had an opportunity to go to a hearing that I was pleased to testify at in Michigan, in Dearborn ….”

In the TSC, this tendency to grandstand or send a message to one's constituents (particularly on partisan issues) is not absent but is certainly far less prominent and far less frequent than in the congressional committees.

Turning to the right-of-centre parties, in the TSC, Conservatives tend to focus more on consumer debt, personal insolvency and mortgage lending, and *less* on the broader economy and labour market. Meanwhile, Republicans in the HFSC express concerns about the burden of America's national debt as well as legislative reform of GSEs. Rep. Ron Paul's anti-Federal Reserve stance comprises a significant portion of the Republican-specific discourse in the HFSC (e.g., “And we are inflating the money at a 10 percent rate, their standard of living is going down and that is what is happening today. The middle class is being wiped out and nobody is understanding that it has to do with the value of money, prices are going up.”) Senate Republicans cover a range of topics concerning monetary policy decision making in the Fed itself, as well as various aspects of the financial crisis (sub-prime lending, housing market). Sen. Jim Bunning's discourse is particularly significant among the Republican ECUs, as his remarks are unusually critical of Bernanke and the Fed (e.g., in the top ECU, Bunning remarks, “When are you going to tell the public who is borrowing from the Federal Reserve and what they have pledged as collateral? When are we going to get the transparency from the Federal Reserve?”). One conclusion from these findings is that—in contrast with Democrats—income and wealth inequality are not typically Republican concerns in hearings with the Fed chairman. A second conclusion is that Republicans are no less willing to exploit the televised hearings to grandstand to constituents (particularly in shifting blame, where possible, to the Federal Reserve).

iii.   *Committee Discourse, by Role of Member*

A final cross-data analysis controls for the particular role of each committee member and witnesses, as reported in Tables 4 and 5. For the TSC, this includes the committee chairman (McFall),

committee members, Gov. Mervyn King, other Internal MPC members (Rachel Lomax, John Gieve, Paul Tucker[14] and Charlie Bean[15]) and External MPC members (David Blanchflower, Tim Besley, Andrew Sentence and Kate Barker). For the congressional committees, the roles are much simpler: committee chairman (Mike Oxley, Richard Shelby in 2006; Barney Frank, Christopher Dodd, 2007-09), committee members and Ben Bernanke.

The focus here is on the distinct language of the committee chairman, committee members, and the central bank official(s). Across the three committees, *Process and Pleasantries* is prominent for the chairman, which is no surprise. Setting that aside, Barney Frank's language is significant, with the highest ranking characteristic word being "anger", with other top words including "social", "blame" and "fair". High ranking ECUs from Frank include:

> You do note, and I appreciate this, that historically profits greatly increase, greatly exceed wages. Let me read the exact [reference], and I give myself an extra minute to read this. (July 2007)

> …that is inherent in the nature of our society; and it is a good thing, not a bad thing, the fact that we bring to these deliberations the concerns of the people we represent, their angers, their fears, their optimism, whatever. (February 2009)

Overall, Frank's focus is on inequalities between haves and have-nots, and particularly stagnant or declining wages, and his stance towards the Fed is overtly critical.

In the Senate committee, the discourse by the chairman is less critical and less populist. The particularly unique characteristic of Christopher Dodd's language is its more international focus—on America's relative global position (particularly vis-à-vis China):

> …but there is an issue of China's manipulation of their currency. What would you recommend, if anything at all? I accept the fact that they are getting better. (February 2007)

> …and the Federal Reserve's own monetary report details an alarming fact. Foreign entities have not only stopped purchasing United States securities; they have actually been selling them because they have lost, it appears, confidence in their value. (February 2008)

In the TSC, Chairman McFall's representative words and phrases are devoted mostly to introductions and process-language—a sharp contrast to the chairs of the congressional committees. His substantive remarks are mostly benign comments of clarification, focusing on aspects of the Inflation Report.

Turning to members of each committee, again we see a populist orientation in the HFSC, with significant emphasis on "money", the plight of "Americans" in their "districts", the "millions" and "trillions" of debt, and so on. Two of the top ECUs are illustrative:

Certainly we in Congress, we get a cola every year, so our pay increase has gone up 2 point something. But I have to tell you, my fuel costs—and I have gas at my home, and even though it was a mild winter, I ended up paying almost $1,800 more this past winter because of the surcharge. (Rep. Carolyn McCarthy)

I have seven grandchildren, and I am very concerned that we are accumulating a debt in this country that presently stands at $8.7 trillion. I understand it has gone up approximately $3 trillion in the past 6 years, and I was at the White House about 6 weeks ago, and I had a chance to talk with the President. (Rep. Dennis Moore)

Members of the SBC are not dissimilar in their language, with top words indicative of their concerns for the "impact" of the financial crisis on middle "class" "families", job losses accruing to automobile plants ("Chrysler") (e.g., the top ECU, from Sen. Robert Menendez: "So it seems to me that we have to look at the underpinnings of this in terms of middle-class families increasingly being squeezed. And we talk about inflation. If all of these prices are going up and yet your incomes remaining relatively flat is not inflationary to the average family, it seems to me they are pretty inflationary.").

While members of the TSC are not dismissive of hardships incurred by the British population, they are less likely to speak in the sort of sound bite vocabulary typical of their American counterparts and their remarks are more focused on the Inflation Report itself:

I am not looking at blame. I am interested in the evidence base on which you are writing this report. Am I right in thinking that there is a labour market analysis on statistics that are not there and there is a presumption in it that may, therefore, be wrong? (John Mann, MP)

Members of the TSC also tend to direct their questions to the known areas of specialization of MPC members—for example among the external members, asking Kate Barker about housing concerns, David Blanchflower about the labour market, and Andrew Sentence about issues of business economics. TSC members also exploit the presence of multiple MPC members to tease out differences of opinion or conflicts between internal members of the MPC as well as between internals and externals—for instance, asking Charlie Bean for his view on Governor King's remarks concerning the effect of the housing market conditions on consumer spending, or asking Blanchflower whether he agreed with the Governor that the decisions of the MPC will be implemented by the money markets, or in this ECU from Jim Cousins, bringing the Treasury into differences between Internals and Externals: e.g., "…the Chancellor takes the same view and took the same view when he was in front of us, but your colleague, Professor Besley, appears to take a slightly different view and, in a very interesting presentation in the Bank's quarterly report…". In sharp contrast, the presence of just the Fed chairman before the congressional committees means that Bernanke must cover all the ground, but also that differences of opinion among members of the FOMC cannot be made transparent and cannot be explored during the process of legislative oversight.

The final category is that of the central bank officials. What is striking about Bernanke's language is what is *absent* rather than what is present. The words in italics show that the Fed chairman is *least* likely to employ the more populist language of members of Congress—i.e., Americans and America, dollars, wages, country, middle class families, and so on. Perhaps of greater interest is the tri-partite division of topics among the Governor, the remaining Internal MPC members and the External MPC members. Governor King's predominant focus in the hearings hinges on the judgment and decisions of the BoE with respect to its liquidity assistance given to the financial institutions during the crisis, along with implications of the crisis for monetary policy. His typical words ("central" bank, "banks" "assets", "liquidity", and "judgment") are indicative, as is his top ECU: "It

does raise big question about the consequences for the rest of us about the nature of risks that are taken by large financial institutions. I think all regulatory and central bank authorities around the world are thinking through these questions and there is no simple answer."

With respect to the Internal and External MPC members, the simple story is that Chief Economist Charlie Bean comments predominantly on the state of the economy; and Executive Director for Markets Paul Tucker speaks to issues concerning financial markets. To a lesser extent, we also find that Rachel Lomax addresses monetary policy framework, operation and interest rates, and David Blanchflower talks almost exclusively about labour market conditions and prospects. There is a clear division of discourse by area of specialization, which is implicitly followed and endorsed by members of the parliamentary committee. Taking these findings together, there appears to be a natural split in the discourse between the external and internal MPC members, with the former speaking more to labour market issues and the latter focusing more on the monetary policy framework, operations of the central bank during the financial crisis, and prudential regulation. The lack of attention to these latter two subjects for the internal members is consistent, however, with the external MPC members having no role in the Bank's activities beyond monetary policy.

e. Correspondence Analysis

[Figures 1 through 3, about here]

The analysis thus far has not considered the relationships between the thematic classes identified in each of the hearings. Our approach facilitates this by cross-tabulating classes and words in their root form in order to create a matrix that can then be subjected to factor correspondence analysis.[16] In this way, we obtain a spatial representation of the relations between the classes. The positions of the points is contingent on correlations rather than coordinates (Reinert 1998: 45),[17] where distance reflects the degree of co-occurrence.[18] With respect to the axes, correspondence analysis aims to account for a maximum amount of association[19] 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. 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.[20]

Figures 1 through 3 are maps of the correspondence analysis of the classes as well as the tags (name, role, date) for each of the oversight hearings, where distance between a class and a tag (or between two classes) reflects the degree of association.

Beneath the correspondence maps are the percentage associations for each factor, along with the cumulative for the two. Hence, a two-dimensional correspondence space accounts for 75.2% of the total variation in the TSC corpus, 55.3% and 76.7% of the same in each of the HFSC and SBC corpora.[21] Notably, the more heterogeneous, constituency-based nature of the House contributes to a more disparate discourse which is less easily captured in two dimensions. Importantly, however, dimensionality in this context requires careful dissection and analysis before a coherent picture may be obtained.

In all three correspondence graphs, classes relating to monetary policy and the economy fall in the left quadrants while other thematic classes (e.g., process, financial regulation, etc.) appear in the right quadrants. We can thus see a cleavage between discourse relating to the economy—and specifically monetary policy—comprising a distinct grouping on the first (horizontal) dimension. For the TSC (Figure 1), core features of the monetary policy discourse (i.e., relating to inflation—Class 2) are further distinguished from other topics on the economy by appearing at the extreme top of the second (vertical) dimension. A further unique feature of the spatial representation of the TSC discourse is that both legislators and central bankers are situated throughout the graph, with members of each institutional affiliation in close proximity to each of the thematic classes. For instance, MPC members King and Tucker are the nearest situated individuals to discourse on central bank lending (Class 1), *but* legislators Tyrie and Mudie are also closely associated with this class. The same applies to the remaining three classes for the TSC. There is, in short, evidence of a *reciprocal* dialogue between legislators and MPC members for each of the thematic classes.

The picture is very different for the two congressional committees. In Figures 2 and 3, the second (vertical) dimension clearly pits the discourse of legislators (at the bottom) against that of the Fed chairman (at the top). (For convenience only, Factor 2 is labelled "Fed Chairman" and "Congress"; this is short-hand for the contrasting discourse along this axis.) Bernanke's position in both graphs is situated midway between thematic classes on inflation and financial stability/regulation (thereby reflecting his contributions to both themes) and is *furthest* away from the process and pleasantries theme (Class 1 for both figures). As such (and by virtue of the Fed chairman testifying alone) there is no dispersion of central bankers around other thematic classes. For both congressional committees, the marginal gap in distance between the Republican and Democratic party tags is dwarfed by the distance between the party tags and Bernanke, a distance that situates them at polar opposites. Thus, Bernanke's discourse has little in common with that of legislators. The Fed chairman and congressional members do not appear to engage verbally with one another; rather, they talk past each other.

The fundamental conclusion to be drawn from these spatial graphs is that oversight hearings on monetary policy in the US reflect a bifurcation in discourse between legislators and the Fed chairman. This finding is not particularly unique to the financial crisis but rather is one that defines monetary policy oversight in the US over at least the past three decades (Schonhardt-Bailey 2013). In the UK, no such bifurcation of discourse emerges. Rather, members of the MPC speak to each of the thematic classes, as do members of the parliamentary committee. There is, as discussed earlier, a specialization of discourse by the MPC members, with internal members speaking to core functions of the BoE during the crisis (King, Tucker) or to their defined roles in the Bank (Bean, as Chief Economist), and external members speaking to topics reflecting their areas of expertise.

The split in discourse between the central bank and legislators that is evident in the US and absent in the UK suggests that members of the MPC and TSC are relatively more engaged with each other on each of the thematic classes during the monetary policy oversight process than are their American counterparts—which supports the reciprocal measure for deliberative quality.

The very different forms of monetary policy oversight suggest that the UK conducts accountability by committee whereas the US conducts it by individuals. That is, members of the TSC hold the BoE accountable by questioning MPC members across a variety of topics and then teasing out shades of differences in opinion among the MPC members, thereby making the decision making process *by a committee* (and therefore subject to varieties of opinion) more transparent. In the US case, legislators question only the Fed chairman, who (as an individual) is presumed to represent a decision by the FOMC that is more consensual than the more individualistic nature of the MPC. And yet, by virtue of speaking alone, testimony by the Fed chair prevents legislators from directly challenging or exploring variations of opinion among FOMC members. Congressional committee members are also inclined (by electoral concerns) to shift discourse to areas where they can gain individual recognition—e.g., jobs, income inequality, haves versus have-nots. Notwithstanding the Fed's dual mandate for pursuing both price stability and maximum employment, members of Congress appear to pay more attention to employment and its variants than the price stability half of the mandate. Hence, the *one versus many* nature of the oversight process then appears to exacerbate an overall discourse which pits the Fed chairman against Congress, with the former speaking more directly to monetary policy and the latter speaking to committee process, jobs, inequality and so on. Furthermore, the norms of the congressional committees (the revolving door practice, reading of statements) encourage repetition and duplication, while large committee sizes diverts focus away from substantive topics and towards timekeeping and its allocation.

V.   Conclusions

We began with *reciprocity* as the key criterion for judging the quality of monetary policy oversight deliberation; that is, committee participants are expected to engage with one another, taking up and responding to the reasons offered by other participants. The rationale for this as essential to monetary policy deliberations is that absent evidence that participants talk to one another rather than past one another, central bankers cannot be said to be "distributing expertise" to legislators, and as a consequence, legislators are limited in their ability to hold these central bank experts to account for

their monetary policy decisions. The empirical finding is that reciprocity is clearly evident in the parliamentary oversight committee, but much less so in the two congressional committees.

This finding can be placed in a broader perspective. Among the institutional contrasts outlined earlier—i.e., *deliberation in parliamentary versus presidential systems, partisanship, committee staff resources and numbers of committee members, committee norms,* and the *one versus many* feature—the first and last appear to render the most conspicuous results. In contrast to expectations, the parliamentary committee better appears to deliver a reciprocal and interactive deliberative forum than the congressional committees. Relative to the discourse on monetary policy oversight in the UK, congressional committees devote more attention to process and less to substance; and, particularly in the HFSC, they also tend toward populist rhetoric. Previous work provides strong evidence that members of the HFSC and SBC "grandstand" or direct their comments to audiences outside the hearings (constituents, interest groups, public opinion more generally) (Schonhardt-Bailey 2013). Here, the evidence shows a clear contrast between this tendency in congressional committees and the absence of it in the parliamentary committee. Finally, the TSC members focus predominantly on monetary policy and the policy of the central bank in the oversight hearing, as opposed to introducing other issues areas (income inequality, international competitiveness, healthcare, and so on).

The *one versus many* witnesses appearing before the committees also appears to have a significant bearing on oversight, as it invariably changes the dynamic of the dialogue by allowing TSC members the opportunity to probe apparent differences in areas of specialization among the members of the MPC. In the aggregate, members of the TSC and members of the Bank's MPC engage one another directly across *all* significant themes in the hearings. In stark contrast, the representation of the Fed in the single individual of the chairman appears to create a "discourse divide" in the congressional committees. The correspondence graphs provide a spatial representation of this discourse, which brings into focus the sharp divide between the Fed chairman and congressional committee members—and this is evident in both the House and Senate. The structure of monetary policy oversight deliberation in the House and Senate suggests that members of Congress and

Bernanke tend to talk past one another rather than to one another. Bernanke focuses more exclusively on issues relating to monetary policy and financial regulation/stability while legislators devote a large amount of discourse to time management, labor market issues (jobs), economic inequality, international competitiveness and so on. Within this structure it is evident that House members use more populist rhetoric and focus on domestic issues (labor markets, inequality) while senators devote attention to foreign economic relations. In contrast the deliberative process in the TSC does not show a simple divide between the sets of committee members and instead is characterized by multiple points of focus and specialisms amongst the MPC members. In short, British oversight of monetary policy appears to engage central bank officials *as a committee* of experts with potentially differing views, while American oversight of monetary policy accepts a priori the Fed chairman as the single representative of the committee's decisions, thereby implicitly endorsing the chairman's role as the focal point of more consensual decision making in the FOMC than the MPC. The implication of these different approaches is that the sole representation of the Fed chairman before the congressional committees not only constrains the ability to explore the differing views of FOMC members but also tends to pit the discourse of Congress against that of the Fed chairman.

As a final caution, it is important to recognize that reciprocity as a measure of deliberative quality should not be confused with the effectiveness of legislative oversight of monetary policy. Quality of deliberation in oversight hearings might constitute one avenue towards overall effectiveness, but this is not to say that the two are at all synonymous. A study of effectiveness of monetary policy oversight extends well beyond the focus here; however it might be said that this paper does move one step in the direction of gauging one prerequisite of such effectiveness.

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[1] The Bank of England publishes the Inflation Report quarterly (February, May, August and November). The Treasury Select Committee does not necessarily hold hearings on each of the reports (for example, in 2006 and 2007, hearings were held on three of the four Reports).

[2] To be clear, the Fed presents its formal report to Congress (a statutory obligation), whereas the Bank of England publishes its report, after which the TSC discusses this report in its hearing.

[3] For the House committee, these are the hearings of: 20 July 2006; 15-16 February 2007; 17-18 July 2007; 26-27 February 2008; 16 July 2008; and 25 February 2009. For the Senate committee, these are the hearings of: 19 July 2006; 14 February 2007; 19 July 2007; 28 February 2008; 15 July 2008; and 24 February 2009.

[4] The TSC held hearings on most, though not all, of the Bank's Quarterly Inflation Reports. The ten hearings were on the following dates: 29 June 2006; 30 November 2006; 27 March 2007; 28 June 2007; 29 November 2007; 26 March 2008; 26 June 2008; 11 September 2008; 25 November 2008; and 24 March 2009. The House of Lords does not conduct formal oversight of monetary policy, although it does have an investigative select committee (the Economic Affairs Committee), which does conduct "occasional" hearings on monetary policy. During the time period of this study, this Lords committee held one such hearing.

[5] Beyond, possibly, bigrams or trigrams.

[6] See (Lahlou 1995b) for a detailed description of the interpretation procedure and its theoretical basis.

[7] 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.

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

[9] 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. 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).

[10] The complete lists of words and phrases may be obtained from the author.

[11] Specifically,

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

Very high values (e.g., over 50) are, on the other hand, highly robust. Interpretation does not 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 designation of highly robust values (e.g., $\chi^2 \geq 50$).

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

[13] Alceste provides two measures for association--the chi square value and the phi coefficient. The former is used to obtain statistical significance, but the positive and negative values of phi allow us to ascertain words and tags that are both *most likely* and *least likely* to occur in each thematic class.

[14] Deputy Governor in March 2009.

[15] Deputy Governor in July 2008.

[16] (Greenacre and Hastie 1987: 437-447) (Greenacre 1993) . 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) 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.

[17] Reinert, ALCESTE users' manuel, 4.0 Pro, p. 45.

[18] 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: 34-36).

[19] 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.

[20] 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.

[21] In total, three factors are identified in the correspondence analysis for the TSC (with the remaining factor obtaining a percentage association of 24.8). For Figure 2, five factors are identified, and the remaining percentage associations are 17.4, 14.5 and 12.8; for Figure 3, there are three factors, with

the third factor accounting for 23.3%. (Usually, the dimensionality of the system is one less than the number of classes in the profile (Greenacre 1993: 14).)

Table 1: Basic Statistics for US and UK Legislative Oversight Hearings on Monetary Policy, 2006-09

	UK Treasury Select Committee (Commons)	US House Financial Services Committee	US Senate Banking Committee
Total Word Count	154,813	159,764	147,163
Minimum Frequency of a Word Included in Analysis (Minimum χ^2 for word selection)	4 (12.28)	4 (11.63)	4 (11.78)
Passive Variables (Tagged Indicators)	52	78	42
I.C.U.s (= number of speeches / comments)	1642	1319	1311
Classified E.C.U.s	81% (= 3685)	76% (= 3490)	82% (= 3533)
Stable Classes	4	6	4
Distribution of Classes (%)	1 **(35)** *Bank Lending & Central Bank Liquidity Assistance [during crisis]* 2 **(29)** *Inflation & Monetary Policy* 3 **(22)** *Economic Activity & Growth* 4 **(14)** *Labor Market & Real Wages*	1 **(25)** *Process & Pleasantries* 2 **(15)** *Bernanke's Description of Real Economy & Inflation (incl. Labor Market)* 3 **(25)** *Financial Crisis: Causes & Responses* 4 **(8)** *Financial Regulation-Conduct (espec. Re: Consumers)* 5 **(20)** *Labor Market (Wages & Incomes)* 6 **(7)** *Trade & Current Account*	1 **(31)** *Process & Pleasantries* 2 **(38)** *Financial Stability (Banks & Bank Failures)* 3 **(18)** *Economic Activity/Growth (incl. Labor Market) [pre-crisis]* 4 **(13)** *Inflation*

Table 2: Significant Tags for Thematic Classes in Committee Hearings*

TSC (N= 11 to 13; attending = 7 to 13)@	HFSC (N =69 to 70; attending = 39 to 50)	SBC (N=21 to 24; no attendance list)
1 (35) Bank Lending & Central Bank Liquidity Assistance [during crisis] *March 2009 (107)* November 2008 (75); Governor Mervyn King (56); September 2008 (50); Exec. Director Paul Tucker^ (46); Committee Chairman John McFall (38); George Mudie (34)	**1 (25)** Process & Pleasantries *Committee member (213); Democrat (160); Committee chair (123); Barney Frank (117)* Paul Kanjorski (64); Scott Garrett (61); July 2008 (45); Michael Castle (34); Michael Capuano; Jeb Hensarling (29); Emanuel Cleaver (27); February 2009 (22); Chris Shays (11)	**1 (31)** Process & Pleasantries *Democrat (377); Chris Dodd (290); Committee chair (261); Committee member (146)* Thomas Carper (81); Bob Corker (39); February 2007 (33); Republican (30); Mel Martinez (20); Robert Casey (19); Charles Schumer (17); Evan Bayh (15)
2 (29) Inflation & Monetary Policy June 2008 (84); March 2007 (29); David Gauke (21); External MPC (21); June 2007 (21); MPC Ext. Tim Besley (13); Dep. Governor Rachel Lomax (13)	**2 (15)** Bernanke's Description of Real Economy & Inflation *Ben Bernanke (293)* July 2006 (45)	**2 (38)** Financial Stability (Banks & Bank Failures) *Ben Bernanke (249); February 2009 (208)* July 2007 (30)
3 (22) Economic Activity & Growth *Chief Economist Charlie Bean ^(111)* November 2006 (47); November 2007 (46); June 2006 (34); March 2008 (26); MPC Ext. David Blanchflower (25); Internal MPC (24); MPC Ext. Andrew Sentance (22); External MPC (20); Andrew Love (17)	**3 (25)** Financial Crisis: Causes & Responses *February 2009 (264)* *Ben Bernanke (186)*	**3 (18)** Economic Activity/Growth (incl. Labor Market) *July 2006 (124)* Michael Bennet (54); Robert Menendez (47); Paul Sarbanes (39); February 2007 (36); Wayne Allard (36); Committee member (33)
4 (15) Labor Market & Real Wages External MPC (29); MPC Ext. Kate Barker (24); Exec. Director Spencer Dale (17); June 2006 (16); November 2006 (12); March 2007 (12); June 2008 (12)	**4 (8)** Financial Regulation-Conduct (espec. Re: Consumers) Judith Biggert (65); February 2008 (64); Ben Bernanke (57); Melvin Watt (46) Brad Miller (16); July 2007 (15)	**4 (13)** Inflation *Ben Bernanke (121); July 2006 (109)* February 2008 (41)
	5 (20) Labor Market (Wages & Incomes) *July 2006 (162); Democrat (105); Committee member (104)* July 2007 (70); Barney Frank (63); Joe Baca (51); Paul Hodes (45); Gwen Moore (42); Brad Miller (38); Chris Murphy (33); Ron Paul (26); Committee Chair (25); Republican (16); [Oxley, 18; Sires, 15; McCarthy, 15; Bachus, 15; Bachmann, 14; Clay 14; Maloney, 12]	
	6 (7) Trade & Current Account David Scott (29); Ron Paul (18); Tom Price (16); Chris Shays (14); Dennis Moore (11)	

* Tags are listed in rank order of statistical significance (χ^2 value in bracket); @ List of committee hearing attendees given in Appendix; ^Later became Deputy Governor

Table 3: Characteristic Discourse (and % Weight) of Committee Members, by Party

Treasury Select Committee	House Financial Services Committee	Senate Banking Committee
NO PARTY (MPC) (72%)	**NO PARTY (BERNANKE) (43%)**	**NO PARTY (BERNANKE) (47%)**
LABOUR (17%) **[Process & Pleasantries], Impact of the Financial Crisis, Labour Markets** MPC, pessimism, immigration, transparency, Inflation Report, foreign+, fuel, optimistic, Britain, protection+ *[target, inflation+, demand+, price+, sheet+, banking system, consumer spending, borrower+, output, activity+]*	**DEMOCRAT (31%)** **Wages, Wage Inequality, Jobs & Unemployment** wages+, American+, unemployment, immigration, jobs+, district+, inequality, college+, vote+, bankruptcy *[price+, credit+, market+, risk+, energy, capital, develop+, firm+, demand+, financial]*	**DEMOCRAT (35%)** **Income Inequality, Jobs, Home Foreclosures, Chinese Currency Manipulation, International Competitiveness** country+, families+, class, Americans+, dollar+, deficit+, nation+, Chrysler, debt, currency+ *[bank+, inflation+, price+, risk+, market+, forecast+, capital+, liquid+, unemployment rate, credit+]*
CONSERVATIVE (8%) **Consumer Debt and Personal Insolvency, Mortgage Lending and House Prices** insolvencies+, pounds+, globalization+, over-valued+, vulnerable, personal+, tax, ECB, equity, Inflation Report *[economy+, invest+, business+, financial, demand+, risk+, activity+, labour market, cost+, lend+]*	**REPUBLICAN (26%)** **Burden of National Debt, Reform of GSEs, & Ron Paul's Critique of Monetary Policy** dollar+, GSEs, marketplace, tax, bubble+, nation+, nuclear (power), legislation+, monetary, mal-investment *[import+, construct+, asset+, bank+, rule+, supervisor+, financial, labor market+, work+, monetary policy]*	**REPUBLICAN (18%)** **Monetary Policy, Housing Market & Sub-Prime Lending, Impact of Taxes on Economic Growth, TARP** Federal Reserve+, derivatives, poor+, bubble+, insolvent, industrial+, transparency, trust+, housing, educated+ *[import+, price+, commodity+, income, protect+, oil, demand+, investor+, financial, household+]*
LIBERAL DEMOCRAT (3%) **Pensions, Housing Costs, Costs in Manufacturing Industry, Banking Problems** deposits, Banking Bill, income+, Lehman Brothers, food, customers, energy, saving+, consumption, government *[rate+, asset+, world, economy+, spend+, borrow+, invest+, liquid+, output, supply]*		

- Summary of topics in bold, followed by top substantive words (excluding process & pleasantries language). Words in italics are those *least* likely to appear in each category. (The sign + indicates lemmatization, where most frequent lemma is listed.)

Table 4: Characteristic Discourse of Treasury Select Committee Members and MPC Members (and % Weight), by Role

| Role (% weight)	Treasury Select Committee
Chairman John McFall (6%)	**Process & Pleasantries Dominate** [First ten substantive words pertain to process—e.g., morning, Governor, colleague, etc. The following are the top ten non-process substantive words, interspersed with more process words.] million+, transparency, Inflation Report, customers+, Fannie Mae/ Freddie Mac, MPC, Libor, newspapers+, technical, moral *[impact+, price+, economy+, invest+, data, world, demand, expect+, target, fall]*
Member (22%)	**State of the Economy; Labor Markets, Consumer Debt, Bank Lending** pounds+, Inflation Report, danger+, country, knock, obligations+, spike, assist+, workforce, vulnerable *[central, number+, demand, target, judgment, activity, banking system, world, financial, risk]*
Governor Mervyn King (50%)	**Financial System & Lending by Banks; Bank of England Liquidity Assistance; Economy & Monetary Policy** world, central, order, target, banks+, judgment+, sheet+, judge+, asset+, liquidity+ *[labor market, decline+, consumption, wage+, Inflation Report, global, workers, vote, danger, RPI]*
Internal MPC Member (10%) (in rank order of statistical significance: Bean, Tucker, Gieve, Lomax, Dale)	**Charlie Bean discusses state of the economy; Paul Tucker discusses financial markets** Western, households+, tighter+, covenants, subdued, sterling, gradual+, slowdown, consumption, information *[people, target, cost+, state, judgment+, Chancellor, buy, open, value, action+]*
External MPC Member (12%) (in rank order of statistical significance: Blanchflower, Besley, Sentence, Barker)	**Blanchflower is dominant contributor & talks almost exclusively about the labor market; others talk about monetary policy decision & broader state of the economy** wage+, labor market, decline+, unemployment, loosen+, strong, slack, flexible+, factors+, workers+ *[bank+, world, lend+, asset+, sheet, liquid+, financial, banking system, money, order]*

- Summary of topics in bold, followed by top substantive words (excluding process & pleasantries). Words in italics are those *least* likely to appear in the given role.
  (The sign + indicates lemmatization, where most frequent lemma is listed.)

Table 5: Characteristic Discourse of Congressional Committee Members and Fed Chairman (and % Weight), by Role

Role (% weight)	House Financial Services	Senate Banking
Chairman (9% in House; 13% in Senate) July 2006: Mike Oxley (House); Richard Shelby (Senate) February 2007-February 2009: Barney Frank (House); Christopher Dodd (Senate)	**Process & Pleasantries; Inequality, Wages and State of the Economy** [First twenty substantive words pertain to process—e.g., Gentleman, vote, members, etc. The following are the top ten non-process substantive words.] anger, social+, predict+, fact, unemployment, chance+, deal+, blame+, report+, fair+ *[bank+, market+, term+, mortgage+, dollar+, home+, asset+, credit+, account+, invest+]*	**Regulation (in Light of Financial Crisis), Chinese Currency Manipulation, State of the Economy** [Of top words, only a handful pertain to process, and we ignore these] nations+, million+, American+, subsidy, re-investment, foreclosure+, gasoline, predatory, Federal Reserve, historically *[inflation+, expect+, bank+, product+, real, risk+, price+, project+, labor, fiscal]*
Member (48% in House; 40% in Senate)	**State of the Economy & Inequality, National Debt** dollar+, money, American+, nation+, impact+, opinion+, trillion+, debt, million+, district+ *[expect+, import+, condition+, pace, improve+, construct+, FOMC, outlook, inform+, quarter]*	**Inequality in the US, Taxes, Bank Recapitalization** impact+, families, class, country+, tax, trillion, debt, mess+, Chrysler, prime *[price+, expect+, import+, commodity+, pace, develop+, decline+, outlook, firm+, stability]*
Fed Chairman Ben Bernanke (43% in House; 47% in Senate)	**Financial Crisis Topics (Impact of Federal Reserve Interventions in the Banking System, and Consumer Protection in Mortgage Mis-selling)** conditions+, expect+, pace, important+, prices+, financial+, information+, construction+, term+, outlook *[First ten words refer to process; after which, substantive absences include: American+, dollar+, wage+, impact+, money, nation+, America, million+, yield, country+]*	**Monetary Policy & State of the Economy; Consumer Protection in Mortgage Mis-Selling** expectations+, prices+, inflation+, risk+, outlook, firms+, developments+, disclosures+, forecast+, demand *[First five words refer to process; after which, substantive absences include: country+, American+, million+, family+, nation+, dollar+, class, raise, impact+, Federal Reserve]*

- Summary of topics in bold, followed by top substantive words (excluding process & pleasantries). Words in italics are those *least* likely to appear in the given role. (The sign + indicates lemmatization, where most frequent lemma is listed.)
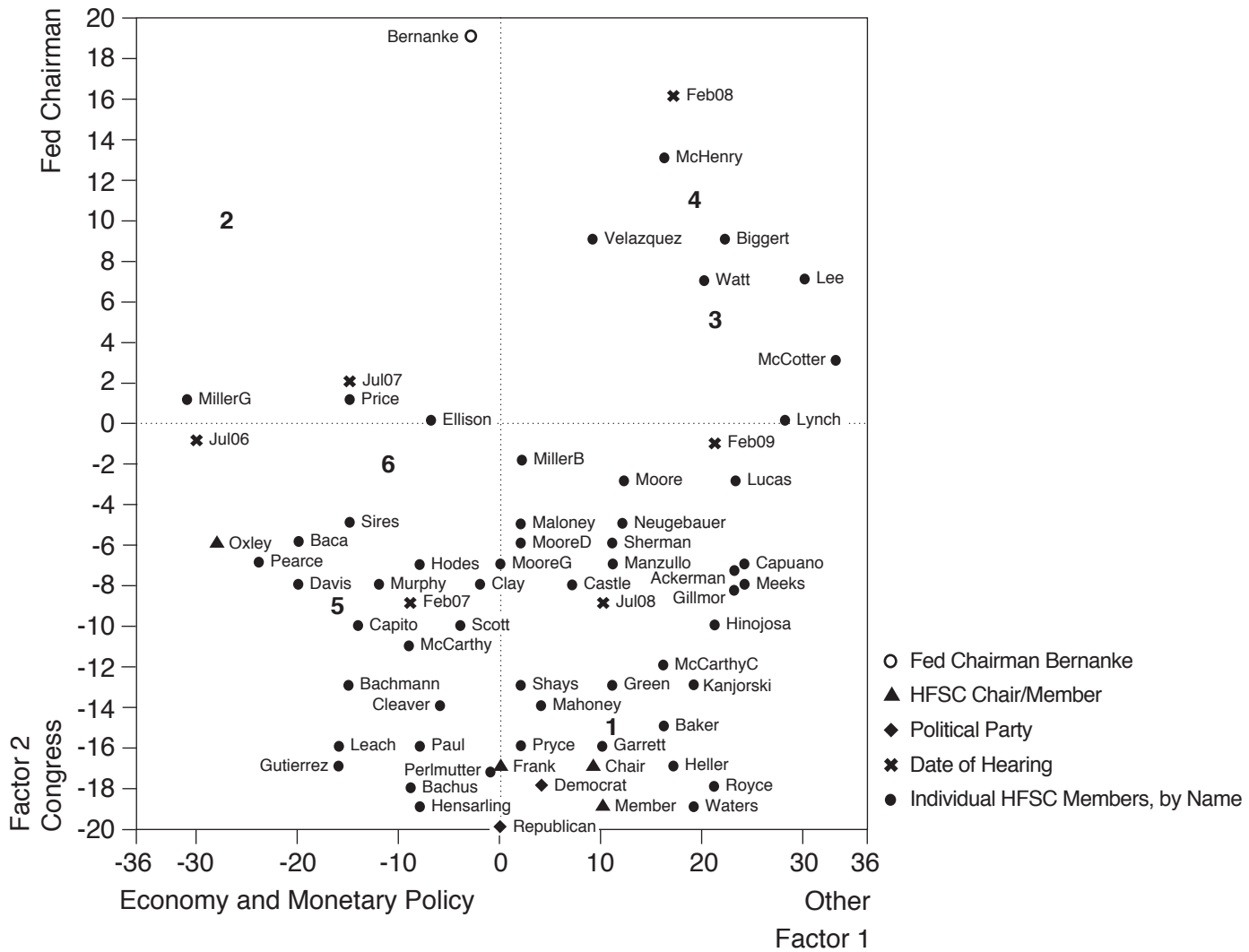
Figure 1:
Correspondence Analysis of Treasury Select
Committee Hearings on Monetary Policy Oversight
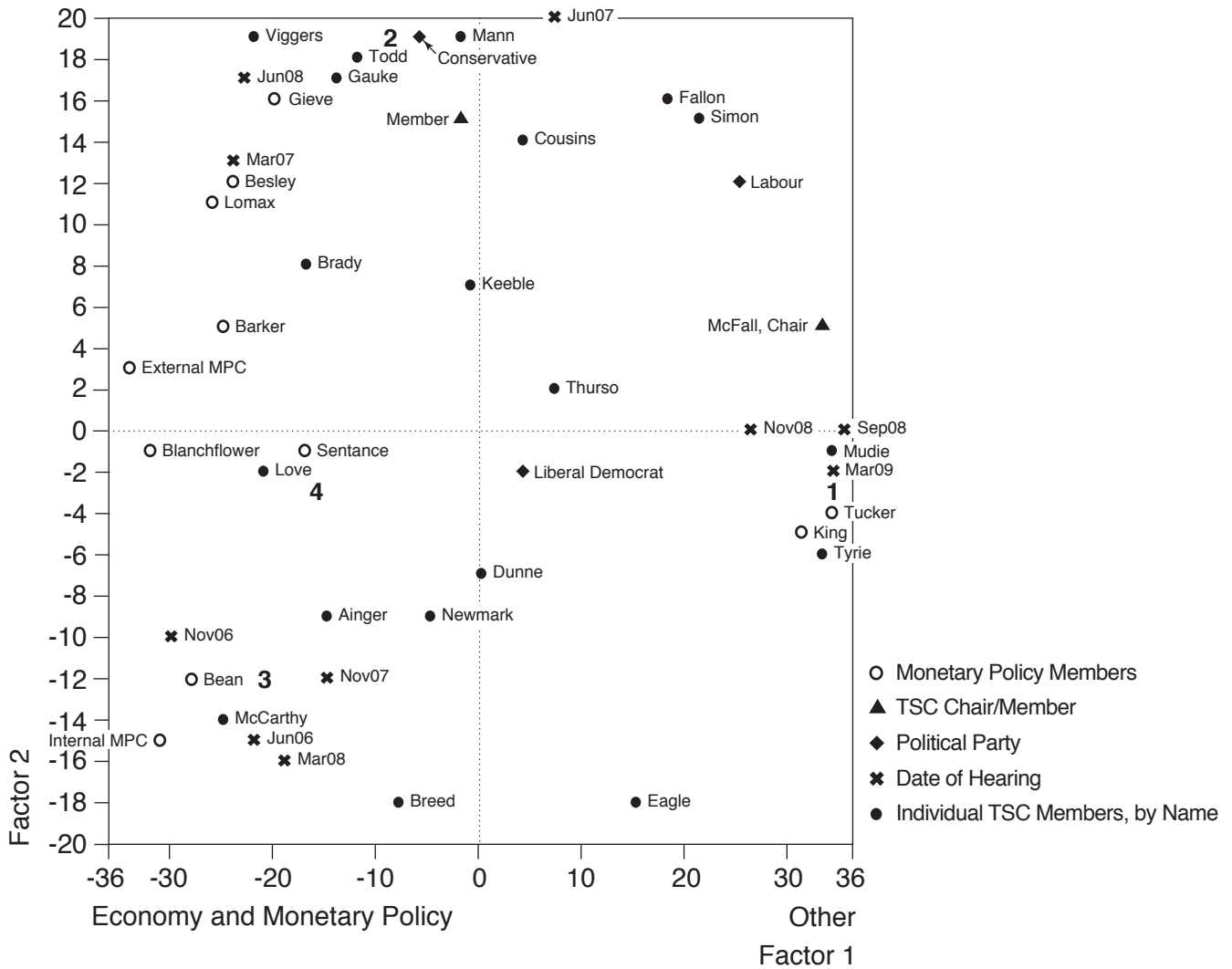
	% Association	% Cumulative
Factor 1	44.7	44.7
Factor 2	30.5	75.2

1 Bank Lending and Central Bank Liquidity (During Crisis)
2 Inflation and Monetary Policy
3 Economic Activity and Growth
**4** Labor Market and Real Wages

Figure 2:
Correspondence Analysis of House Financial Services Committee Hearings on Monetary Policy Oversight

	% Association	% Cumulative
Factor 1	31.9	31.9
Factor 2	23.4	55.3

1 Process and Pleasantries
2 Bernanke's Description of Real Economy and Inflation
3 Financial Crisis: Causes and Consequences
4 Financial Regulation: Conduct
5 Labor Market
6 Trade and Current Account

Figure 3:
Correspondence Analysis of Senate Banking
Committee Hearings on Monetary Policy Oversight
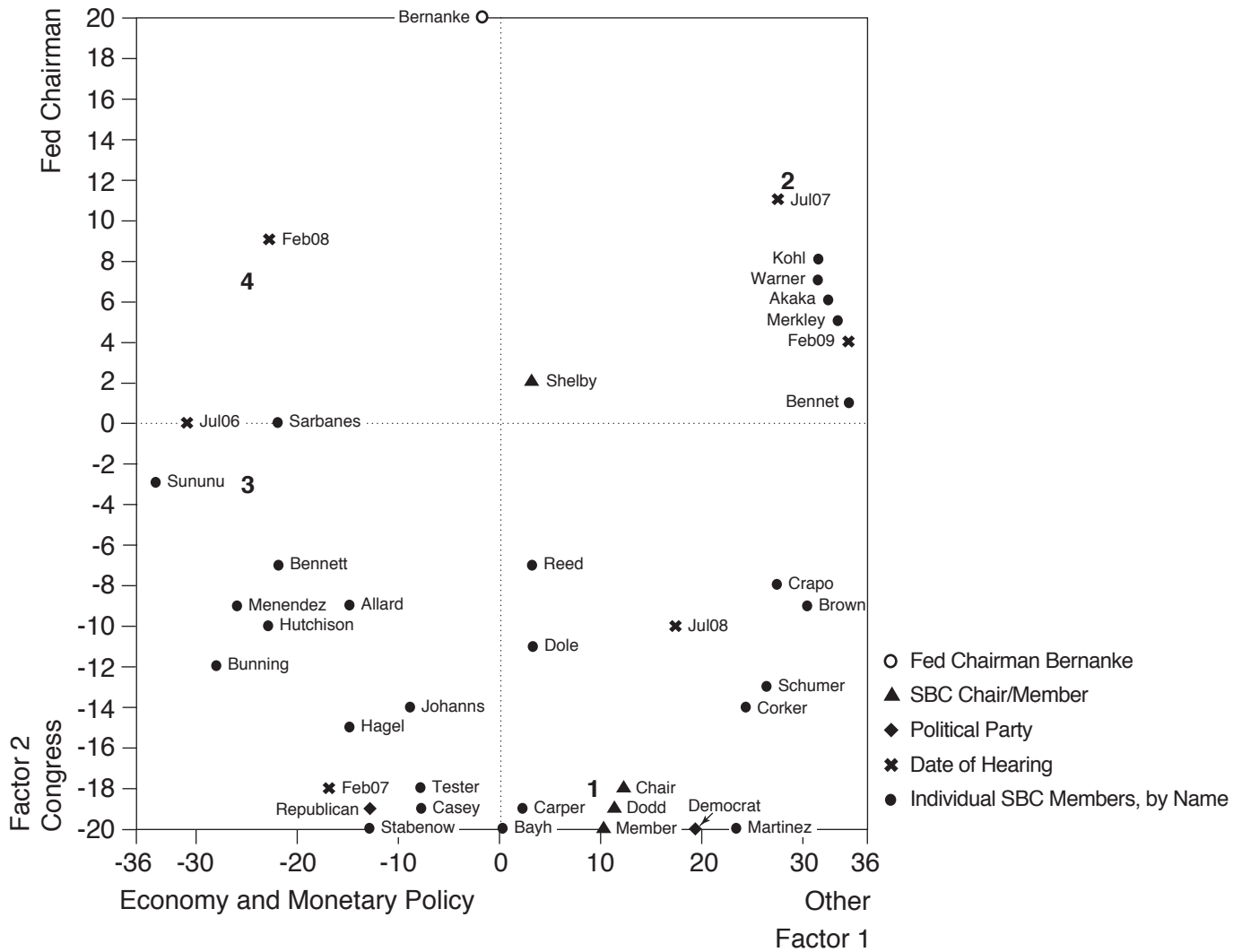
	% Association	% Cumulative
Factor 1	47.0	47.0
Factor 2	29.7	76.7

1 Process and Pleasantries
2 Financial Stability (Banks and Bank Failures)
3 Economic Activity and Growth (Pre-crisis)
4 Inflation

ON-LINE APPENDICES

Appendix 1: Details and personnel attending

Parliamentary hearings

<u>House of Commons, 29 June 2006</u>

John McFall (Chairman): *Labour*
Angela Eagle: *Labour*
Michael Fallon: *Conservative*
David Gauke: *Conservative*
Sally Keeble: *Labour*
Andrew Love: *Labour*
Kerry McCarthy: *Labour*
Brooks Newmark: *Conservative*
John Thurso: *Liberal Democrat*
Mark Todd: *Labour*
Peter Viggers: *Conservative*

Witnesses
Mr Mervyn King, *Governor of the Bank of England and MPC member*
Mr Paul Tucker, *Executive Director (Markets), Bank of England, and MPC member*
Mr Charles Bean, *Executive Director, Bank of England, and MPC member*
Ms Kate Barker, *external member of the MPC*

<u>House of Commons, Treasury Committee, 30 November 2006</u>

John McFall (Chairman): *Labour*
Colin Breed: *Liberal Democrat*
Jim Cousins: *Labour*
Angela Eagle : *Labour*
Michael Fallon: *Conservative*
David Gauke : *Conservative*
Andrew Love: *Labour*
Kerry McCarthy: *Labour*
Mark Todd: *Labour*
Peter Viggers: *Conservative*

Mr Mervyn King, *Governor of the Bank of England*
Sir John Gieve, *Deputy Governor of the Bank of England and member of the Monetary Policy Committee*
Mr Charlie Bean, *Chief Economist and Executive Director of the Bank of England and member of the Monetary Policy Committee*
Professor Tim Besley, *External member of the Monetary Policy Committee*
Professor David Blanchflower, *External member of the Monetary Policy Committee*

House of Commons, Treasury Committee, 27 March 2007

John McFall (Chairman): *Labour*
Colin Breed: *Liberal Democrat*
Michael Fallon: *Conservative*
David Gauke: *Conservative*
Andrew Love: *Labour*
Brooks Newmark: *Conservative*
John Thurso: *Liberal Democrat*

Mr Mervyn King, *Governor of the Bank of England*
Ms Rachael Lomax, *Deputy Governor responsible for monetary policy*
Sir John Gieve, *Deputy Governor responsible for financial stability*
Ms Kate Barker, *External member of the Monetary Policy Committee*
Dr Andrew Sentance, *External member of the Monetary Policy Committee*

House of Commons, Treasury Committee, 28 June 2007

John McFall (Chairman): *Labour*
Jim Cousins: *Labour*
Angela Eagle: *Labour*
Michael Fallon: *Conservative*
Sally Keeble: *Labour*
Andrew Love: *Labour*
Sion Simon: *Labour*
John Thurso: *Liberal Democrat*
Mark Todd: *Labour*
Peter Viggers: *Conservative*

Mr Mervyn King, *Governor of the Bank of England*
Ms Rachel Lomax, *Deputy Governor of the Bank of England*
Mr Paul Tucker, *Executive Director for Markets, Bank of England*
Professor Tim Besley, *External Member of the Monetary Policy Committee*
Professor David Blanchflower, *External Member of the Monetary Policy Committee*

House of Commons, Treasury Committee, 29 November 2007

John McFall (Chairman): *Labour*
Nick Ainger: *Labour*
Graham Brady: *Conservative*
Colin Breed: *Liberal Democrat*
Jim Cousins: *Labour*
Philip Dunne: *Conservative*
Michael Fallon: *Conservative*
Andrew Love: *Labour*

Mark Todd: *Labour*
Peter Viggers: *Conservative*

Mr Mervyn King, *Governor of the Bank of England*
Ms Rachel Lomax, *Deputy Governor of the Bank of England (Monetary Analysis)*
Mr Charles Bean, *Executive Director and Chief Economist*
Professor Tim Besley and Professor David Blanchflower, *External Members of the Monetary Policy Committee*

House of Commons, Treasury Committee, 26 March 2008

John McFall (Chairman): *Labour*
Nick Ainger: *Labour*
Graham Brady: *Conservative*
Colin Breed: *Liberal Democrat*
Jim Cousins: *Labour*
Philip Dunne: *Conservative*
Michael Fallon: *Conservative*
Sally Keeble: *Labour*
Andrew Love: *Labour*
John Thurso: *Liberal Democrat*
Mark Todd: *Labour*
Peter Viggers: *Conservative*

Mr Mervyn King, *Governor of the Bank of England*
Ms Rachel Lomax, *Deputy Governor of the Bank of England (Monetary analysis)*
Professor Charles Bean, *Chief Economist, Bank of England*
Dr Andrew Sentance, *External Member of the Monetary Policy Committee*
Professor David Blanchflower, *External Member of the Monetary Policy Committee*

House of Commons, Treasury Committee, 26 June 2008

John McFall (Chairman): *Labour*
Graham Brady: Conservative
Jim Cousins: *Labour*
Philip Dunne: Conservative
Michael Fallon: *Conservative*
Andrew Love: *Labour*
Mark Todd: *Labour*
John Thurso: *Liberal Democrat*

Mr Mervyn King, *Governor, Bank of England*
Sir John Gieve, *Deputy Governor, Bank of England*
Mr Paul Tucker, *Executive Director, Bank of England*
Professor Tim Besley, *External Member, Monetary Policy Committee*
Ms Kate Barker, *External Member, Monetary Policy Committee*

House of Commons, Treasury Committee, 11 September 2008

John McFall (Chairman): *Labour*
Graham Brady: *Conservative*
Jim Cousins: *Labour*
Philip Dunne: *Conservative*
Michael Fallon: *Conservative*
Sally Keeble: *Labour*
Andrew Love: *Labour*
George Mudie: *Labour*
Sion Simon: *Labour*
Mark Todd: *Labour*
Peter Viggers: *Conservative*

Mr Mervyn King, *Governor of the Bank of England*
Mr Charlie Bean, *Deputy Governor of the Bank of England*
Mr Paul Tucker, *Executive Director of the Bank of England*
Professor David Blanchflower, *External Member of the Monetary Policy Committee*
Dr Andrew Sentance, *External Member of the Monetary Policy Committee*

House of Commons, Treasury Committee, 25 November 2008

John McFall (Chairman): *Labour*
Nick Ainger: *Labour*
Graham Brady: *Conservative*
Colin Breed: *Liberal Democrat*
Michael Fallon: *Conservative*
Andrew Love: *Labour*
John Thurso: *Liberal Democrat*
Mark Todd: *Labour*
Peter Viggers: *Conservative*

Mr Mervyn King, *Governor of the Bank of England*
Mr Charles Bean, *Deputy Governor of the Bank of England (Monetary Policy)*
Sir John Gieve KGB, *Deputy Governor of the Bank of England (Financial Stability)*
Dr Andrew Sentance, *External Member of the Monetary Policy Committee*
Ms Kate Barker, *External Member of the Monetary Policy Committee*

House of Commons, Treasury Committee, 24 March 2009

John McFall (Chairman): *Labour*
Nick Ainger: *Labour*
Graham Brady: *Conservative*
Jim Cousins: *Labour*
Michael Fallon: *Conservative*
Sally Keeble: *Labour*
Andrew Love: *Labour*
John Mann: *Labour*
George Mudie: *Labour*
John Thurso: *Liberal Democrat*

Mark Todd: *Labour*
Andrew Tyrie: *Conservative*
Peter Viggers: *Conservative*

Mr Mervyn King, *Governor*
Mr Paul Tucker, *Deputy Governor*
Mr Spencer Dale, *Executive Director*
Professor Tim Besley and Professor David Blanchflower, *External Members of the Monetary Policy Committee, Bank of England*

Appendix 2: Supervised Lemmatization

In Alceste, a capital letter followed by a lower case letter is automatically changed to a lower case letter; however, a word constituted by capital letters only (as an acronym) remains unchanged. So, for instance, the word "Fed" (as in Federal Reserve) would be changed to "fed" and thus read by the software as the past tense of "feed". (Aside from the obvious distortion of its meaning, the word would be treated as a verb rather than a noun.) To avoid this and other potential distortions in the lemmatization process, it is necessary to make the necessary substitutions prior to analysis (e.g., "Fed" would become "Federal Reserve").

Moreover, a hyphen is not recognised as a liaison link by the software, so for instance "Y-2-K" would be read as the separate letters "Y 2 K" rather than as a single phrase. In these cases, the hyphen is replaced with an underscore ("Y_2_K").

Hence, as a means to avoid distortions from the lemmatization process, the congressional hearing transcripts are edited as follows:

- All names are joined with hyphens ("Christopher_Dodd").

- Countries, regions, states are similarly joined, as needed (Southeast_Asia, United_Kingdom).

- Key institutions and phrases are changed as follows:

New York Federal Reserve (New_York_Federal_Reserve)
Fed or Federal Reserve (Federal_Reserve)
Bank of Japan (Bank_of_Japan)
Domestic Open Market Operations (Domestic_Open_Market_Operations)
Fannie Mae (changed to Fannie_Mae)
Freddie Mac (Freddie_Mac)
G5 (G_5)
G7 (G_7)
Capital investment (capital_investment)
M1 (M_1)
M2 (M_2)
M3 (M_3)
Home Loan Bank/s (Home_Loan_Banks/s)
Federal Open Market Committee/FOMC (F_O_M_C)
Consumer Price Index/CPI (C_P_I)
European Central Bank/ECB (E_C_B)
Y-2-K (Y_2_K)
GDP (G_D_P)

Latin America/Latin American (Latin_America/n)
UK/United Kingdom/Britain (United_Kingdom)
Bank of England (Bank_of_England)
Brazilian Central Bank (Brazilian_Central_Bank)
NASDAQ (N_A_S_D_A_Q)
European Union (European_Union)
Exchange rate/s (exchange_rate; or exchange_rates)
Interest rate/s (interest_rate; interest_rates)
Inflation/inflation rate (inflation_rate; inflation_rates)
Monetary policy (monetary_policy)
Unemployment/unemployment rate (unemployment_rate; unemployment_rates)
Labor market (labor_market)
Manufacturing sector (manufacturing_sector)
Bond market (bond_market)
NAIRU (N_A_I_R_U)
Federal funds rate (Fed_Funds_Rate)
Federal Reserve Act (Federal_Reserve_Act)
Oil prices (oil_prices)
OPEC (O_P_E_C)
Philips curve (Philips_curve)
Taylor rule (Taylor_rule)
Humphrey-Hawkins (Humphrey_Hawkins)
Salomon Brothers (Salomon_Brothers)
Foreign Currency Operations (Foreign_Currency_Operations)
National economy (national_economy)
Financial markets (financial_markets)
Hong Kong Shanghai Bank (Hong_Kong_Shanghai_Bank)
Senate Banking Committee (Senate_Banking_Committee)
House Banking Committee (House_Banking_Committee)
System Open Market Account (System_Open Market_Account)
Budget deficit/s (budget_deficit)
Federal deficit/s (federal_deficit)
Federal spending (federal_spending)
sub-prime mortgage (sub_prime_mortgate)
sub-prime lending (sub_prime_lending)
sub-prime market (sub_prime_market)
credit crunch (credit_crunch)
Northern Rock (Northern_Rock)
Sarbanes-Oxley (Sarbanes_Oxley)
Lehman Brothers (Lehman_Brothers)
Quantitative easing (quantitative_easing)
Bear Stearn (Bear_Stearns)
Bond market (bond_market)
Consumer spending (consumer_spending)

Lemmas Imposed on parliamentary hearings

Same as for congressional hearings, with the addition of the following: Bank of England,
CBI, Eastern Europe, Energy costs, Euro area, Energy prices, ECB, ERM, European
Union/EU, Fiscal deficit/deficits, FTSE, Housing market, HSBC, IMF/International

Monetary Fund, Inflation Report, Labour market, LIBOR, Migrant workers, Monetary Policy Committee, National income, Northern Rock, ONS, Private sector, Public expenditure, Public sector, RPI/retail price index, TUC

Appendix 3: Institutional Norms and Practices for Conducting Oversight of Monetary Policy in the UK and US

a. Similarities

Both the Federal Open Market Committee (FOMC) of the Federal Reserve and the Monetary Policy Committee (MPC) of the Bank of England are subject to formal legislative oversight. Within the House Financial Services Committee (HFSC) and the Senate Banking Committee (SBC), American legislators use the hearings on the semi-annual Monetary Policy Report of the Federal Reserve to hold the Fed chairman to account on the performance of monetary policy. In the UK, it is the House of Commons Treasury Select Committee (TSC) that pursues deliberation in hearings on the Bank of England's Quarterly Inflation Report.[1]

Both in the US and the UK, then, representatives of the central bank's policy committee regularly testify before the legislative oversight committee(s) on their monetary policy decisions.[2] The country cases are also similar in that both the US and the UK legislative committee members do not vote on or produce a subsequent report following these oversight hearings.

Both the Federal Reserve and the Bank of England are "independent" with respect to monetary policy. To be clear, no central bank is independent of the will of the people and thus elected representatives. The objective of monetary policy at a high level is laid down in statute. In the US, the relevant statue is the 1978 Balanced Growth and Full Employment Act, while in the UK it is the 1998 Bank of England Act. As suggested by the title of the US legislation, price stability and high employment are on an equal footing, while in the case of the Bank of England, the priority is price stability and "subject to that", the legislation mandates the Bank to support growth and employment. The Bank pursues an inflation target (currently 2%) which is set by the government, while the Fed has no target defined in legislation. Both the Fed and the Bank are independent with respect to the instruments chosen to achieve the objective of low inflation, without direct interference from political actors. That is, both central banks may set the level of whatever variable they deem necessary to achieve their objective(s) (usually a short-term interest rate, but recently quantitative easing via asset purchases).

One further parallel between the cases is the recent financial crisis. Both the US and the UK have faced a number of similarities—severe stress in their banking sectors; closure of funding markets; and a requirement for public authorities to take large and unusual actions with respect to the financial system.

These similarities may suggest something of a common approach to monetary policy oversight between the UK and US.

b. Differences

i.   System-wide

There are important *institutional* differences. The first pertains to the role and purpose of committees in each legislative system. In Congress, committees are purported to enhance the electoral prospects of members (Fenno 1973; Adler and Lapinski 1997), enable members to exploit informational advantages (Krehbiel 1991), and/or pursue partisan objectives (Cox and McCubbins 1993). In Parliament, the theory and evidence is less advanced, in part owing to the recent creation of the modern select committee system. While select committees may be traced to the nineteenth century,[3] the present departmental system was created in 1979 and was designed to be more comprehensive in its scrutiny of government policy and performance. The newer system covers all government departments, agencies and public bodies, and is intended to be non-partisan—that is, enabling MPs an institutional forum through which they "might exercise their parliamentary, rather than party, muscles by engaging in scrutiny activity geared towards better holding government to account"(Kelso 2012: 5). Since its establishment, the select committee system has acquired widespread regard and respect (Russell and Benton 2011), and its hearings acquire the largest share of parliamentary newspaper coverage (Kubala 2011: 703, 708). But even so, committee members struggle to be recognized for their efforts within the larger House of Commons (Tyrie 2004). Apart from gaining a reputation for policy expertise, their motivation for committee service is not well-documented.

A second difference is the role of partisanship within each set of hearings. With respect to the partisan composition of select committees, the membership reflects the proportional partisan balance in the House of Commons, so that a government majority will translate into a majority of members on each of the select committees. Unlike the congressional system (where all committees of a chamber are chaired by a member of the majority party), the committee chairmanships are allocated among the three main parties (Conservative, Labour, Liberal Democrat), in proportion to the partisan balance in the House (though reforms in 2010 introduced an election of the whole membership of the House of Commons for committee chairs).[4] Moreover, since the cross-party ethos of the system yields the general view among participants that the party affiliation of the committee chair makes "little difference to the functioning of the committees"(Russell and Benton 2011: 41). In contrast, Congress exhibits no such cross-party ethos across its committees, though scholars have struggled to gauge the nature or extent of partisanship in US macroeconomic policy (Grier 1991; Havrilesky 1993; Woolley 1994; Grier 1996). In short, we might anticipate more partisan rhetoric in congressional oversight committees relative to the TSC, but its form is difficult to specify.

A third difference between US congressional committees and British select committees is that the latter do not explicitly consider legislation. Whereas congressional committees scrutinize legislation *and* conduct oversight, select committees perform only the latter activity, leaving the normal committee stage of the legislative process to temporary and non-specialist "public bill committees" (Russell and Benton 2011: 11). Thus select committees do not scrutinize

government legislation but they do oversee independent bodies like the MPC whose members are appointed by the government. In order to effect this oversight, frontbench ministers and opposition spokespersons are usually not members of select committees. Reforms enacted from 2010 onwards have further solidified this independence of select committees (Russell and Benton 2011; Gordon and Street 2012; Kelso 2012).

A fourth difference pertains to the opportunities afforded to members of Congress and MPs to serve on committees. Members of Congress generally serve on multiple committees (fewer in the House; more in the Senate) whereas not all MPs serve on select committees, even after allowing for the exclusion of ministers, other frontbench spokesmen and party whips.[5] Hence, legislators in Congress may aspire to serve on one committee as opposed to another, but committee membership itself is not in question; for MPs, this is not a given.

ii.   Monetary Policy Oversight Committees

Turning specifically to contrasts between the US House Financial Services Committee (HFSC) and the Senate Banking Committee (SBC), and the UK Treasury Select Committee (TSC), there are three that deal with the practical operations of the committees and two that are based on differences in norms.

First, in terms of practicalities, most British MPs are highly cognizant of their meagre committee staff resources relative to their American counterparts. To exemplify, in 2008, the HFSC and SBC had, respectively, 75 and 55 paid staffers.[6] Even with the Cook Reforms of 2002, which expanded committee staffing for select committees to eight in the TSC, the TSC is under-resourced relative to the two congressional committees.[7]

Second, there is a big difference in the size of committees: the HFSC and SBC have, respectively, about 70 and between 21-24 members, while the TSC has thirteen members.[8]

A third practical difference is that in the US hearings, *only* the Fed chairman testifies on the Monetary Policy Report, while in the UK, a rotation of members of the Monetary Policy Committee to testify on the Inflation Report. The MPC consists of both internal and external members, with the former comprised of the Governor, two Deputy Governors, the Executive Director for Markets and the Chief Economist. There are four external members and apart from their position on the MPC these individuals hold no other position at the BoE. MPC members rotate before the TSC (as listed in Appendix 1), but the delegation always includes the Governor.

Fourth, aside from staff and committee numbers, the actual norms that prevail in the congressional committees and the TSC vary considerably. There is, for instance, a long-established practice in the US oversight hearings that both the committee members and the Fed chairman read out (or have entered into the Record) prepared statements. In the UK, members of the Bank's Monetary Policy Committee are strongly discouraged from reading out statements and committee members virtually never read prepared statements.[9] Another contrasting norm is that members arrive and leave at their own discretion in congressional committees, so that it is rare for a member (other than the chair and perhaps ranking member) to stay for the entirety of the hearing. In select committees, members are expected to arrive

on time and remain for the duration of the hearing. (Part of the 2010 reform package includes penalties for non-attendance by MPs (2009).) This is not to say that no attendance problems exist for the TSC (Brazier and Fox 2011: 366), but the incentives to attend are greater in Parliament than they are in Congress. A more subtle contrasting norm is that in both the HFSC and SBC, the Fed chairman is seated below the raised platform of committee members, whereas in the TSC both witnesses and members are on a level. Anecdotally, one individual[10] who has testified in both settings observes that the levelling of the TSC creates more of an atmosphere of an "academic seminar".

Key differences and expectations for their effect on committee deliberations may be summarized as follows:

- *Committee independence*: Even though there is a separation of frontbench from backbench MPs in the UK system, we might anticipate a more strident challenge from congressional committees, given the formal separation of legislative and executive branches in the US.

- *Partisanship*: In both countries, the lack of clear distributive consequences from monetary policy (in part, the product of the cross-national low inflation consensus (Bean 2007; Goodfriend 2007)) will likely mitigate the effect of partisanship, although the explicit cross-partisan ethos of the parliamentary select committee should be reflected in TSC deliberations and should thus distinguish these from deliberations in the HFSC and SBC.

- *Committee staff resources and numbers of members*: Congressional committees have more staff resources and so are presumably better able to conduct research and carry out their oversight activities than select committees in the UK. And yet, members of the HFSC and SBC face considerable constraints on their time (campaign finance activities, multiple committee assignments, constituency service), and so few are willing and/or able to invest the time in acquiring the technical expertise in the area of monetary policy (Schonhardt-Bailey 2013). Consequently, they rely heavily on committee staff for their questions to the Fed chairman.[11] Moreover, the large membership size of the congressional banking committees relative to the TSC means that there is an implicit free rider problem: far fewer members in the TSC means that there is less scope for being ill-prepared or lacking in knowledge. Indeed, this onus of responsibility on the TSC has created something of an interrogative culture among committee members.[12] The implication of both staff resources and committee membership on deliberation is that—contrary to the assumption of many parliamentarians—members of the TSC are predicted to exhibit more detailed knowledge of and expertise in monetary policy than their American counterparts (with the exception of congressional committee chairs).

- *Committee norms*: In the HFSC and the SBC, the norms allowing the reading of statements, the "revolving door" approach to committee hearings (with members coming and going throughout the hearing), and even the seating arrangement all

lead us to expect more continuity and by implication a more challenging line of questioning in the UK.

- *One versus many*: Whereas the Fed chairman is the single spokesperson before Congress on the Fed's Monetary Policy Report, the presence of multiple members of the Bank's Monetary Policy Committee before the TSC necessarily changes the dynamics of the deliberation. The precise nature of how the "one versus many" contrast may affect committee deliberations is not clear *a priori* but is open to empirical investigation.

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[1] The Bank of England publishes the Inflation Report quarterly (February, May, August and November). The Treasury Select Committee does not necessarily hold hearings on each of the reports (for example, in 2006 and 2007, hearings were held on three of the four Reports).

[2] To be clear, the Fed presents its formal report to Congress (a statutory obligation), whereas the Bank of England publishes its report, after which the TSC discusses this report in its hearing.

[3] Maer et al provide a brief history of select committees in the 19th century (Maer, Gay et al. 2009).

[4] By convention, the Public Accounts Committee is chaired by the opposition party while the Treasury Committee is chaired by the party in government.

[5] The 2007-08 sessional returns show that 326 MPs served on select committees while 361 did so in the 2008-09 session. By the 2010-12 session, however, the number had increased to 415 (about 64%).

[6] As noted in the database of congressional staff salaries from Legistorm.com.

[7] The TSC typically employs 8 staff, but can also appoint occasional specialist advisors, as required (Maer, Gay et al. 2009: 25-26).

[8] Appendix 1 gives more precise figures both for committee members and for those attending.

[9] An anecdote from Don Kohn to the author is of relevance here. Kohn was vice chairman of the FOMC and is currently a member of the Bank of England's Financial Stability Committee. His appointments for each position required confirmation hearings before the Senate Banking Committee and the Treasury Select Committee. For the former, he read out a lengthy prepared statement, which in his view, tended to dull the subsequent discourse. For the TSC, he similarly prepared a statement to read at the beginning of the hearing, but was halted from doing so, as the committee intended to begin its questioning with immediate effect.

[10] Donald Kohn (see above footnote).

[11] One conspicuous effect of this reliance that requires no analysis other than watching a few hearings is the frequent inability of members of Congress to offer follow-up questions in any given line of inquiry.

[12] As an example, a BBC compilation of "Who's Who?" of TSC committee members includes somewhat intimidating profiles of current members: for Pat McFadden ("he is least likely to be baffled by the intricate technicalities of City trading"); John Mann ("a Labour maverick who once asked a witness at the Treasury Committee to explain why it was easier for a camel to pass through the eye of a needle than for a rich man to enter the kingdom of heaven. He specialises trying to destabilise witnesses with completely unexpected lines of questioning, often delivered with aggression or derision, or both."); Michael Fallon ("one of the committee's toughest interrogators"); Andrea Leadsom (whose experience in the City includes 10 years at an investment bank subsidiary and work with the former Bank of England Governor, Eddie George, gives her "detailed expertise"); and other members with extensive work experience in the City (Jesse Norman and Mark Garnier) (D'Arcy 2012).

APPENDIX 4a: Timeline of Themes in the Treasury Select Committee, House Financial Services Committee and Senate Banking Committee (June 2006-March 2009)

June 2006 TSC	July 2006 HOUSE & SENATE	November 2006 TSC	February 2007 HOUSE & SENATE	March 2007 TSC	June 2007 TSC	July 2007 HOUSE & SENATE	November 2007 TSC
Employment, Pension Costs, Productivity pension+, insolvency+, firms, costs+, participate+, appointment+, contribution+, imbalance+, trend, productivity *[bank+, lend, term+, risk+, credit, condition+, fiscal, mortgage+, confidence, food]*	**HOUSE: Pre-Crisis Emphasis on Macroeconomy** wage+, inflation+, nominal, rent+, chart+, terror+, industrial+, cooling+, rise+, gas *[credit+, bank+, rule+, system, lend+, asset+, regulator, card+, step+, lender+]* **SENATE: Jobs, Wages & Productivity; Monetary Policy** inflation+, increase+, energy, pause+, job+, product+, compensation, hike+, glut, interest rate+ *[bank+, financial, credit, loan+, institution+, capital, private, lend, investor+, lender+]*	Economic Activity, Labor Market and Migration passenger, manufacturing+, globalization+, burden+, investment+, pay+, heavy, average, million, survey+ *[bank+, financial, credit, liquid+, lend+, sheet+, market+, condition+, banking system, money]*	**HOUSE: Domestic Economic Welfare & the Impact of Developments Abroad** retire(ment)+, healthcare, Chinese, statistic+, portfolio+, entitlement+, trade+, age, CEOs, district+ *[credit, loan+, institution+, financial, down, energy+, lend+, price+, market+, confidence]* **SENATE: Employment, Growth, Wages, Corporate Ethics** inequality, motor+, technology+, union+, Chrysler, education+, tax, policy+, Sarbanes-Oxley, yield *[bank+, price+, credit, mortgage+, financial, institution+, loan+, asset+, authority+, confidence]*	**Inflationary Pressures** RPI, settlements+, over-valued, gas, electricity, gap, aggregate+, price+, inflation+, seasonal *[bank+, world, credit, scheme+, banking system, oil, cost+, confidence, food, crisis]*	**Monetary Policy, Process of MPC Decision making & Vote** vote+, pricing, leverage+, covenants, solved, exercise+, complex+, lenders, trigger+, puzzle *[economy+, bank+, world, United States, oil, lend+, real, fiscal, impact+, scheme+]*	**HOUSE: Aspects of Macroeconomy (Income Inequality, Energy/Food Prices, Healthcare, Jobs)** trend+, food, inequality, energy, income+, registration+, abusive, care, health, class *[act+, asset+, crisis, GSEs, interest rate+, bank+, dollar+, trillion, firm+, sheet+]* **SENATE: Sub-prime problems & Regulating Lending Standards** sub-prime mortgage+, hedge, HOEPA (=homeownership Act), disclosure+, equity+, protect+, re-sets, fund+, agencies, safe+ *[market+, Treasury, price+, cut+, stimulus, wage+, sheet+, prices+, fiscal, program+]*	Economic Activity & Initial Impact of Financial Crisis ONS, corporate, monetary policy, reserves+, estimate+, revisions, conditions, fear+, credit, spread+ *[think+, inflation+, problem+, need, house+, feel, asset+, fiscal, scheme+, adjustment+]*

- Summary of topics in bold, followed by top (substantive) words, as designated by the greatest likelihood of their presence in each given year. Words in italics are those *least* likely to appear in the given year. (The sign + indicates lemmatization, where, where most frequent lemma is listed.)

February 2008 HOUSE & SENATE	March 2008 TSC	June 2008 TSC	July 2008 HOUSE & SENATE	September 2008 TSC	November 2008 TSC	February 2009 HOUSE & SENATE	March 2009 TSC
HOUSE: Sub-prime Mortgates & Mis-selling Practices credit+, regulation+, mortgage+, card+, sovereign, voluntary, bankruptcy, sub-prime, stimulus, code *[wage, energy+, national, labor, income+, feel, trend+, rise, compensation+, inflation+]* **SENATE: Inflation & Monetary Policy** price+, food+, sovereign, servicers, problem+, commodities+, inflation+, house+, risk+, watch+ *[saving+, product+, bank+, treasury, labor, education+, income+, capital, recover+, job+]*	**Impact of the Financial Crisis on Monetary Policy** fragility, availability, financial markets, resilient, financial, confidence, property, slowing+, conditions, hours *[judgment, debt+, scheme+, oil, output, government, ONS, money, raise+, sheet+]*	**Inflation & MPC Hitting the Inflation Target (incl. letters from Governor to Chancellor)** living, letter+, food, write+, pause, standard+, inflation+, oil, remuneration, price+ *[lend+, money, output, United States, Inflation Report, work+, labour market+, bank+, fund+, ONS]*	**HOUSE: GSEs (Fannie, Freddie), Energy Prices & Inflation** Fannie Mae, Freddie Mac, oil, GSEs, window, discount, confidence, CFTC, speculation+, sub-prime *[percent+, core, income+, program+, asset+, low, rate+, inequality, GDP, deficit]* **SENATE: Financial Condition of GSEs, Financial Market Speculation & Oil Prices** speculation+, GSEs, Bear Stearns, Fannie Mae, Freddie Mac, oil, CFTC, uncertainty+, window, SEC *[inflation+, rate+, percent+, labor, interest rate+, policy+, economy, deficit+, asset+, industry+]*	**Financial Crisis: Impact on Bank Lending & Bank of England Liquidity Scheme** funding+, sheets+, taxpayer, adjustment+, mortgage+, provide+, scheme+, insurance, liquidity+, window *[investment+, rate+, survey+, demand, supply, cost+, increase+, data, money, press]*	**Financial Crisis: Impact on Monetary Policy; Bank Lending & Financial Reform Legislation** bank+, stimulus, VAT, Lehman Brothers, re-capitalization+, lending+, package+, banking bill, extraordinary, individual+ *[inflation+, expect+, data, growth, concern+, cost+, wage+, people, target+, slow]*	**HOUSE: Official Govt. Support Measures—TARP (capital) & TALF (liquidity)** asset+, bank+, mark+, TARP, TALF, program+, common, treasury, institution+, September *[wage+, year+, price+, increase+, energy+, inflation+, product+, growth, cost+, oil]* **Senate: Financial Crisis (Bank Failures & Public Assistance to Banks)** bank+, program+, institution+, capital+, stress, private, Treasury, TARP, fail+, sheet + *[inflation+, growth, price+, increase+, energy, economy+, cost+, oil, product+, jobs+]*	**Bank of England Market Operations & Quantitative Easing** purchase+, paper, money, car, engage+, exit+, agreements+, corporate, unconventional, lending+ *[price+, rise+, year+, slow, growth, inflation+, house+, term+, interest rate+]*

Appendix 4b: Timeline of Events of Particular Relevance to Monetary Policy Oversight Hearings in the UK and US

Date		United Kingdom	United States
2007	July		Bear Sterns Hedge Funds Collapse
	August		Countrywide Bank Run
	September	Northern Rock Bank Run	Fed Cuts 50 Basis
	December		Fed Creates Term Auction Facility (TAF) to Support Banks
2008	February	Northern Rock Nationalized	
	March		Bear Stearns Fails
	April	Bank of England Special Liquidity Scheme introduced	
	July	Alliance & Leicester is bought by Santander	IndyMac Bank fails (4th largest bank failure in US history)
	September	(17) Lloyds TSB to buy HBOS (29) Bradford & Bingley nationalized; branch system & deposits sold to Banco Santander	(7) Takeover of Fannie Mae & Freddie Mac (14) Bank of America to buy Merrill Lynch (15) Lehman Files for Bankruptcy (16) AIG Bailout (16) Reserve Management Company Money Market fund "breaks the buck" (valued at a discount) (19) Paulson lays out bailout plan (TARP) (21) Goldman Sachs & Morgan Stanley to become BHCs (25) FDIC resolves Washington Mutual, sells assets to JP Morgan Chase (29) Citigroup to buy Wachovia (29) Treasury bailout plan is voted down in the House
	October	(3) UK deposit insurance increased to £50K (8) Credit Guarantee Scheme announced to guarantee debt to short maturity; major financial institutions must raise Tier 1 capital by £25bn combined (9) Icesave fails; deposits in UK taken by Treasury (13) RBS, HBOS and Lloyds TSB to receive government capital (£37 bn); Barclays commits to raise capital in the market	(3) Wells Fargo now to buy Wachovia (3) Emergency Economic Stabilization Act passes the House, along with new clauses raising FDIC insurance limits to $250K (8) Central banks in UK, US, China, Canada, Sweden, Switzerland & ECB cut interest rates (6-10) Worst Stock Market week in 75 years (14) Bank bailout under TARP announced (29) Fed Funds rate cut 50 bp to 1%
	November		Auto Industry lobbies for government bailout (12) Treasury changes form of TARP to equity injections (23) Citigroup receives government assistance from Fed, FDIC, & Treasury
2009	Spring		US bank stress tests
	March	Dunfermline Building Society taken over by Bank of England and Nationwide Bank of England (and ECB) cut rates to record 10 year lows	IndyMac sold to OneWest Bank