The Source of Gridlock:

Divided Government or Preference Conflict?[1]

Michael C. Herron[2]

PRELIMINARY DRAFT – COMMENTS WELCOME

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[2]Center for Basic Research in the Social Sciences, Harvard University, and Department of Political Science, Northwestern University. Address: 34 Kirkland Street, Cambridge, MA 02138. Email: mherron@latte.harvard.edu.

Abstract

This paper evaluates two competing explanations for the source of government gridlock. The first explanation posits that gridlock is caused by divided government, and the second claims that gridlock occurs when the individual–level policy preferences of key members of Congress are opposed. The *party versus preferences* dichotomy evident in these competing explanations lies at the foundation of contemporary legislative research, and to address it the paper studies how interest rate volatility reacts to changes in the composition of the federal government. Time series analysis shows that interest rates are less volatile when the government gridlock interval as defined in Krehbiel (1996) is large, and from this it follows that the federal government is gridlocked when the policy preferences of key Congressional figures are opposed. Moreover, the paper's empirical analysis uncovers essentially no evidence that the government's party composition influences the extent to which it is gridlocked.

1 Introduction

This paper considers two explanations that have competing predictions as to when the lawmaking organs of the federal government, in particular Congress and the president, will be restricted in their ability to produce substantial pieces of legislation. In other words, the paper assesses two alternative explanations for the source of federal government gridlock. The first such explanation – which is based on what can be called *strong party theories* of Congressional organization – draws attention to the government's unified or divided nature in terms of its political party composition. Unified governments are those in which a single political party controls the presidency and both chambers of Congress, divided governments are those that are not unified, and according to strong party theories these two types of governments are fundamentally different. For reasons described below, strong party theories predict that the federal government will be gridlocked when divided and not gridlocked otherwise.

In contrast, a second explanation as to the source of gridlock and restrictions on the federal government's legislative productivity is motivated by *preference–based theories* of legislator behavior. These theories focus on the individual–level policy preferences of the president and significant Congressional figures, and they claim that the distribution of ideology levels across members of the government, independent of these members' party affiliations, is the key factor which determines whether the federal government is capable of being productive. In particular, preference–based theories disregard issues of party membership and predict that the federal government will be gridlocked only when its key members have widely divergent preferences. When the policy preferences of such members are sufficiently aligned, though, then these theories predict that the government will be capable of generating substantial policies regardless of whether it is unified or divided.

The two explanations and their corresponding predictions for the source of government gridlock are inconsistent with one another. Namely, the first explanation (strong party theories) says that the party composition and the unified or divided nature of the government matter insofar as causing gridlock. In contrast, the second (preference–based theories) argues that

party affiliations are not important and that divided governments can be as productive as unified governments. In light of this fundamental incompatibility, this paper offers an empirical test aimed at determining which explanation of the two has greater validity.

This objective is motivated by the well–known *party versus preferences* dichotomy that lies at the foundation of a significant portion of contemporary Congressional research. Supporters of the first half of the dichotomy – the half based on strong party theories of Congressional organization – argue that party membership is an important aspect of legislator identity and that, *ceteris paribus*, Republican (Democratic) lawmakers will in general prefer legislation that is supported by key figures in the Republican (Democratic) party (e.g. Sundquist 1988, Rohde 1991, Cox and McCubbins 1993, Sinclair 1995, McKenzie and Thornton 1996, Binder, Lawrence and Maltzman 1999). Given the putative connection between party affiliation and roll call voting, it follows from strong party theories, albeit sometimes implicitly, that the party composition of the federal government is a key variable insofar as understanding legislative productivity. In other words, strong party theories imply that the divided or unified nature of a given government is a key summary of it.

The second half of the party versus preference dichotomy – that which is associated with preference–based theories – discounts the role of party affiliations insofar as being an independent factor which influences legislator roll call voting and the willingness of a president to veto a piece of legislation. Rather, preference–based theories imply that underlying policy preferences, presumably based on constituency characteristics and core beliefs, are the key factors that determine the attitudes and interests of members of Congress and the president. According to the preference–based perspective (e.g. Krehbiel 1993, Brady and Volden 1998, Snyder 1991, Groseclose 1996, Krehbiel 1996, Krehbiel 2000), a chamber of Congress is best summarized by the ideology levels of its median member and of veto and filibuster pivots, not by whether it contains a majority of Democrats or Republicans. Furthermore, preference–based theories imply that the degree of conflict between a chamber of Congress and the president can measured by the distance between the ideal points of the chamber's median and the president. Supporters of preference–based theories recognize, of

course, that Democratic (Republican) members of Congress tend to have liberal (conservative) preferences and that there is a clear correlation between party affiliation and underlying legislator ideal points. Nonetheless, preference–based theories posit that party affiliations of government figures are essentially irrelevant once individual–level policy preferences are taken into consideration.

Thus, the paper's focus on the source of government gridlock and the incompatibility between strong party and preference–based theories is ultimately about the larger issue of the party versus preferences dichotomy and sorting between two alternative conceptualizations of Congress. To study the dichotomy the paper first develops an indicator which describes the extent to which an observed federal government is gridlocked. Then, it analyzes how trends in this indicator vary in accordance with the composition of the federal government. For instance, the paper asks whether periods of government gridlock are also periods of divided government.

Notably, a key aspect of the paper's indicator of government gridlock is that the indicator is independent of both strong party and preference–based theories. Obviously, if one were to assume that restrictions on government productivity, and hence gridlock, were a result of divided government, then developing an indicator for gridlock would be trivial; one would simply check if a given government were divided. However, this is not useful if one wants to test whether gridlock is indeed caused by divided government.

As explained in detail in the body of the paper, periods of low floating interest rate volatility are used here to identify time spans when the federal government is gridlocked. The intuition here is twofold. First, according to standard economic theory, when new information regarding future economic conditions is regularly forthcoming then floating interest rates will be relatively volatile. For example, when the future regulatory climate is uncertain and new information on it suddenly appears, then interest rates will quickly adjust; repeated flows of new information will therefore lead to multiple rate adjustments and, consequently, rate volatility.

Second, gridlock in the federal government will lead to predictability and a dearth of new information about regulatory policy, fiscal policy, and so forth. Put simply, gridlocked governments cannot accomplish very much and this leads immediately to the recognition that

such governments are predictable. Stating that a given government is predictable is equivalent to stating that the uncertainty surrounding the government's future policymaking ventures is low and that the government will not produce much new information relevant to its future policy developments. Prior to installation, for instance, it is straightforward to estimate the number of new regulations produced by a gridlocked government: relatively few. Similarly, throughout the tenure of a gridlocked government there will be few policy pronouncements that lead to bursts of new information. Since, *ceteris paribus*, interest rate volatility will be low during periods of high policy predictability and low information flows regarding the direction of future government policy, it follows that it is possible to track in an indirect fashion government gridlock through trends in the volatility of short and long term interest rates.

Thus, economic theory asserts that volatility in financial economic time series is positively related to flows of new information, and this is ultimately the key to this paper's analysis. When markets are efficient and expectations rational, then changes in economic variables such as interest rates will reflect either random shocks or the arrival of new information. Gridlocked governments produce little information on future policy changes since, by definition, what they accomplish can be readily anticipated at the time of government installation. On the other hand, when a government is not gridlocked, it can produce new, policy–relevant information on a regular basis. This contrast between gridlocked and non–gridlocked governments illustrates how the information generated by a political institution will reflect institutional features, and it follows that such features can be studied by examining or measuring information flows.

Based on the linkage between government gridlock and interest rate volatility, the paper estimates a collection of time series regressions which seek to explain interest rate volatility with a variety of political variables that measure, among other things, divided government and the extent to which the individual–level preferences of key government figures are opposed. These regressions and the coefficient estimates produced by them foster straightforward hypothesis tests which can be used to determine the political sources of interest rate volatility. As described above, identifying the political sources of rate volatility fosters discrimination between the two sets of competing theories with alternative implications for the source of federal government

gridlock.

In this light, one perspective of the present paper is that it aims to study the importance of political institutions. The reason for this is because the party versus preferences dichotomy itself reflects a debate over institutions: the "party matters" aspect of the dichotomy is essentially institution–free and its supporting arguments do not in general draw on institutional features of Congress and the presidency. In contrast, the "preferences matter" side of the dichotomy is explicitly rooted in the institutional rules that prescribe how Congress and the President interact. Hence, by studying the the party versus preferences dichotomy this paper is indirectly assessing the role and importance of American political institutions as opposed to the importance of individual–level affiliations that are not explicitly institutional.

The remainder of this paper is organized as follows. Section 2 provides additional intuition on gridlock and argues why floating interest rates are useful tools in the study of divided government and, more broadly, the study of the party versus preferences dichotomy. Then, Section 3 describes the time series models used here to study interest rate volatility as a function of political variables. Section 4 details how the degree of preference conflict across members of the federal government is measured using concepts developed in Krehbiel (1996), and Section 5 describes additional political variables used in this paper's empirical analysis. Section 6 presents results, and Section 7 concludes.

2 Gridlock, Government Predictability, and Interest Rates

As briefly reviewed in the introduction, understanding the causes of federal government gridlock is important for the following reason. If we knew the cause, either divided government or preference–based conflict between key government members, then the party versus preferences debate could, to a reasonable extent, be settled. This is because the debate over the consequences of divided government is primarily a debate over whether the party composition of the federal government is a useful summary of it.[1] Evidence, say, indicating that the

[1]There are other facets of the debate over the consequences of divided government. For example, Fiorina (1996) argues that divided government reduces accountability and the collective responsibility of the government.

presence of government gridlock is not related to whether the federal government is divided would cast doubt on the explanatory capabilities of strong party theories of Congressional organization.

Nonetheless, determining the causes and sources of government gridlock has turned out to be a complicated problem. The main reason for this appears to be the difficulty inherent in generating a measure, one that depends on neither strong party nor preference–based theories, of the extent to which an observed government is gridlocked. To illustrate this difficulty, consider Mayhew's (1992) empirical results which show, broadly speaking, that the policy output of the federal government is unrelated to its unified or divided nature. This finding, while seemingly very compelling and supportive of preference–based theories of legislator behavior as opposed to strong party theories, has as a weakness the fact that it describes only government policy supply as opposed to policy demand (Fiorina 1996, p. 89). In other words, the observation that policy output does not appear to vary as a function of divided government does not by itself imply that the level of gridlock also does not vary in accordance with divided government. If periods of divided government were also periods of high policy demand, for instance, then Mayhew's findings could be interpreted as concluding that divided governments do indeed produce legislation at a lower rate than do unified governments.

In particular, Fiorina argues that one must articulate a theory of policy demand in order to clarify the import of Mayhew's results and to determine whether they support the claim that divided governments are substantively distinct from unified governments (i.e. strong party theories are valid) or that they are not (preference–based theories are valid). Krehbiel (1998, ch. 3) addresses this point and offers evidence that, controlling for policy demand, the divided or unified nature of a government has little to do with its legislative productivity. Rather, concludes Krehbiel, what matters is preference–level conflict across key government members. Somewhat in contrast, though, Cameron (2000) asserts that the content of laws produced by divided governments differs from the content associated with unified governments, and Cameron claims that legislative–presidential bargaining over vetoes is responsible for this.[2]

[2]Studies of legislator voting report mixed results in terms of the extent to which party membership impacts legislator voting. For instance, Brady and Volden (1998) argue that preference–level and institutional variables

This paper focuses implicitly on policy demand and Fiorina's critique of Mayhew by working with the notion of federal government predictability. At a given moment in time, it is said that a given government is predictable if, from the perspective of that moment, the extent of federal laws in the immediate future is relatively certain. When Congress is not in session, for instance, the government is predictable and there is practically no uncertainty as to new developments in federal legislation. On the other hand, the government is unpredictable if there is uncertainty as to the future policies it will pursue.

The notion of government predictability is highly relevant to the debate on the sources and consequences of government gridlock and, most importantly, the party versus preferences debate. As noted in the introduction, gridlocked governments are by definition very predictable since they accomplish relatively little. Roughly speaking, the status quo prior to a gridlocked government's taking office will be more or less equivalent to the status quo after the government is superseded. This is not to say that an equivalence between the status quo ex ante and the status quo ex post is necessarily detrimental to a given federal government. Indeed, there may be situations where the best government policy is one of inaction, and in this situation a gridlocked government might be welfare maximizing.

Therefore, a feature of gridlocked governments is that they are associated with high levels of predictability and, conversely, unrestricted or non–gridlocked governments are inherently less predictable than their gridlocked counterparts. This is because the status quo ex ante, that is, prior to a non–gridlocked government's installation, may be quite different than the status quo ex post. The latter might be worse in some welfare maximizing sense, of course. What matters here, though, is that the status quo ex post is conceivably different than the status quo ex ante.

Based on this logic, it is henceforth assumed that gridlocked governments are synonymous with predictable governments. Hence, if we knew the types of governments that were most predictable then we could link gridlock to government characteristics. For example, if we knew

do a better job of explaining legislator voting behavior than do party membership variables. However, Snyder and Groseclose (2000) conclude that party affiliations have an independent effect on how legislators cast roll call ballots. See also Krehbiel (1995) and its followups, Binder, Lawrence and Maltzman (1999) and Krehbiel (1999).

that divided governments were relatively predictable, then we could infer that gridlock was caused by divided government. And, this linkage motivates the paper's analysis of whether measures of the nature (unified or divided) of the federal government or measures of preference conflict across it are most associated with periods of high and low government predictability. If, say, this paper's empirical analysis were to find that periods of high predictability were associated, *ceteris paribus*, with periods of divided government, then it would follow that divided government itself leads to gridlock. Using logic detailed previously, this would constitute evidence in favor of strong party theories.

On the other hand, suppose that the analysis discovered that periods of low predictability were independent of the divided or unified nature of the government and instead were associated with periods of across–government preference conflict. From this it would follow that matters of party composition and whether the government was divided or unified were not important features once key individual–level preferences were controlled for. This would be evidence in favor of preference–based theories.

As explained below, government predictability is measured here using interest rate volatility, and this depends on a set of key assumptions. In particular, throughout this paper it is assumed that financial markets are efficient, i.e. that prices at a date t incorporate all publicly known information and reflect rational expectations. Note that interest rates are prices; they reflect the amount an investor must pay at one time to receive a specified amount in the future.

Among other things, the twin assumptions of market efficiency and rational expectations mean that a political event, such as the installation of a divided government, expected to occur on date $t+k$ where k is a positive integer will be reflected in financial market prices on date t. We should not expect, therefore, to see trends in interest rate *levels* as a function of political events. This is because elections, the most important such events, are often anticipated and hence capitalized into prices and interest rates well before they actually occur. Thus, only unexpected political events will have contemporaneous shocks on interest rates.

Roughly speaking, efficient markets theory says that an unbiased predictor of an interest rate on date (week) $t+1$ is the rate at date (week) t. This is a statement about interest

rate forecast error: efficient markets theory implies that the forecast error regarding $t+1$'s rate when t's rate is used as the forecast will be mean zero. Importantly, whereas efficient markets theory implies that predictable sources of political interference on interest rates will not affect forecast bias, it does does not rule out the existence of politically–based trends in forecast error *variance*. In particular, forecast errors will tend to be greater in magnitude, even though mean zero, when new pieces of forecast–relevant information are regularly forthcoming. Therefore, interest rates will be relatively more volatile in such a situation. In contrast, when new information is relatively sparse, then interest rate forecast errors will tend to be of low variance and rate volatility will be low (e.g. Leblang and Bernhard 2000).

Volatility in the interest rates used in this paper's analysis – short, medium, and long term rates on American treasury instruments – summarizes, among other things, the arrival of new information associated with economic investments in the United States. Importantly, the rate at which information is produced is affected by changes in the American regulatory environment, the federal tax code, and so forth. For example, when there are significant regulatory changes, then new information will be produced. Therefore, the information that must be internalized by an individual or a firm contemplating an investment in the United States has a component that is influenced by the political institutions of the federal government. It thus follows that an unpredictable political environment – one that might be associated, for instance, with the potential for large regulatory changes and significant new economic policies – will be one associated, *ceteris paribus*, with high interest rate volatility. Conversely, a political environment that has little risk dye to the political institutions of the federal government – because, say, the government is gridlocked – will be associated, *ceteris paribus*, with relatively low rate volatility.

The existence of both short and long term interest rates is useful because the effect of political institutions on rate volatility should be most pronounced for short term rates. A new Congress is elected every two years, the laws passed by one Congress can be overturned by it successor, and, loosely speaking, political shocks will tend to cancel themselves out in the long run. These three facts justify the claim that the information produced by political institutions

will be most important for short terms interest rates, and they suggest a specification test for this paper's empirical analysis of interest rate volatility.

Namely, suppose that the analysis were to find that the the composition of the federal government – either its party configuration or the distribution of individual–level policy preferences across it – affected long term but not short term rate volatility. In light of the claim noted above, this should raise a cautionary warning regarding the validity of the said results. In particular, such a finding would cast doubt on whether a peculiar feature in the paper's econometrics artificially generated the results. On the other hand, of course, finding evidence that the composition of the federal government had a significant effect on short term rate volatility but not on long term volatility would be in line with prior expectations.

One of the drawbacks of using interest rate volatility to make inferences about the flow of information from political institutions is that such rates reflect many different sources of information. For instance, interest rates in the United States are a reflection of information about the policies and stability of neighboring governments. When the Mexican government is unstable, then new information on its stature will flow rapidly; moreover, the greater then instability in Mexico, the greater the risk to American institutions which might have to respond in a drastic and unpredictable way to a Mexican collapse. Similarly, the information incorporated in American interest rates reflects the possibility of a war in the Middle East; such a war might result in economic dislocations in the American economy and this would presumably affect investment returns. These two examples highlight the fact that the information reflected in American floating interest rates induced by specifically American political institutions will only constitute a single component, one that may be rather small, which affects overall interest rate volatility.

Beyond gridlock and restrictions on government policymaking, there exist other reasons that a government could be very predictable. For instance, a given federal government could be unrestricted in its legislative capabilities yet face an easily predictable external political environment about which there is a broad national consensus regarding public policy. In this case, interest rates surrounding the unrestricted government would tend to lack excessive

volatility, since government policy is predictable, even though the government is relatively unrestricted. Notably, this combination – unrestricted government and low volatility – will occur only when there is a broad consensus on national policy. Given the general lack of such a consensus in the postwar United States, this seems like a relatively unlikely scenario.

Thus, the paper's empirical examination of the party versus preferences matter ultimately consists of times series analyses of short, medium, and long term interest rates. Specifically, the paper seeks to explain trends in interest rate volatility as a function of political variables where the latter are based on measures of the nature, unified or divided, or the government and measures of government preference conflict. It follows that, from a methodological standpoint, the paper is located within the literature that uses financial variables to make statements about political events (e.g. Gilligan and Krehbiel 1988, Bueno De Mesquita 1990, Roberts 1990, Brander 1991, Herron, Lavin, Cram and Silver 1999, Herron 2000).

3 An Empirical Model of Interest Rates

The time series regressions used in this paper to study the relationship between interest rate volatility and, among other indicators, political variables are versions of the autoregressive conditional heteroskedasticity (ARCH) model developed in Engle (1982). ARCH models were produced within the field of empirical financial economics, and they are based on the recognition that the heteroskedasticity in financial time series tends to have serially–correlated components. See Leblang and Bernhard (2000) for another application of ARCH models to political analysis.

The ARCH model employed here is of the following form. Let s_t denote the level of an interest rate on date t and define r_t as the associated return: $r_t = 100 \times (\log(s_t) - \log(s_{t-1}))$. In other words, r_t is a scaled forecast error, and a positive value of r_t implies that the rate was greater at time t than at time $t-1$. Let LEVEL_t denote a vector of exogenous variables that is plausibly related to the level of r_t, and let VOL_t denote a vector of exogenous variables thought to affect its volatility (as described later, some elements of LEVEL_t are also elements of VOL_t). The interest rates studied in this paper have weekly observations based on public

auctions, and thus there are seven days between t and $t+1$. This paper's ARCH model of r_t consists of the following three components:

$$
\begin{aligned}
r_t &= \beta_0 + \sum_{j=1}^{l} \beta_j \, r_{t-j} + \gamma' \mathrm{LEVEL}_t + \epsilon_t && (1) \\
\epsilon_t &\sim N\left(0, h_t\right) && (2) \\
h_t &= \alpha_0 + \sum_{i=1}^{p} \alpha_i \, \epsilon_{t-i}^2 + \phi' \mathrm{VOL}_t. && (3)
\end{aligned}
$$

As in a standard time series model, β_0 is an intercept and the various β_i, $i = 1, \ldots, l$, coefficients in equation (1) multiply lagged dependent variables. The presence of these lags – up to l of them – will account for correlation in interest rate returns. The γ coefficients multiply the exogenous variables in LEVEL_t that have a one–time level effect on r_t; as described below, all variables in LEVEL_t are of the indicator or dummy type.

Beyond level effects on interest rate returns, the key feature of the ARCH model and this paper's application of it to interest rates is that h_t, the variance of the disturbance ϵ_t, is modeled as depending on p lagged values of ϵ_t^2 and on the exogenous covariate vector VOL_t. Consequently, the components of the vector ϕ describe how elements of the VOL_t vector affect the volatility of the return on a given interest rate r_t. If, say, the first slope coefficient in the ϕ vector is positive, then increases in the first element of the exogenous covariate vector VOL_t will, *ceteris paribus*, lead to increases in the variance of r_t. In other words, when this coefficient is positive then the first elements of VOL_t is associated with high volatility of interest rate returns.

4 Measuring Divided Government and Government Preference Conflict

As noted in equations (1) and (3), this paper's empirical analysis depends on estimates of the vector γ (level effects on r_t) and the vector ϕ (volatility effects). Estimates of these two parameter vectors are based on exogenous covariate vectors LEVEL_t and VOL_t, respectively. In accordance with the party versus preferences debate which motivates this paper's study of

interest rate volatility, the present section describes two key political components of VOL_t.

The first consists of an indicator variable that describes whether the government is divided or unified at date t. Namely, let DIVIDED_t equal one if and only if a single party controls the presidency and both houses of Congress; otherwise, DIVIDED_t is zero. This variable is included in VOL_t in light of strong party theories of Congressional organization and what such theories say implicitly about rate volatility; namely, strong party theories suggest that divided governments will depress interest rate volatility since they generate relatively little new information on policy developments. In particular, strong party theories predict that the slope coefficient on DIVIDED_t should be negative.

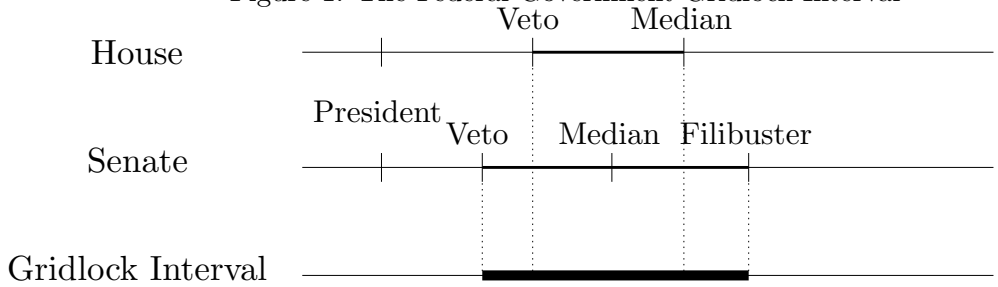
The variable DIVIDED_t is not included in the exogenous covariate vector LEVEL_t because of this paper's adoption of efficient markets theory. This theory, recall, implies that predictable political events – such as the installation of a divided government – will be capitalized into prices and hence into floating interest rates before the events take place.

The second key variable in VOL_t is motivated by preference–based theories of Congressional organization, and it is intended to measure government preference conflict via the gridlock interval introduced in Krehbiel (1996) and employed in a number of fashions in Krehbiel (1998). The gridlock interval is based on spatial voting theory, and it works as follows. Suppose that the president and all members of Congress have unidimensional ideal points that can be placed on the real line, and furthermore suppose that the president is left–leaning and liberal, i.e. he has an ideal point represented by a relatively small number. The argument is symmetric for a conservative president with a correspondingly large–valued ideal point.

The collection of House member ideal points defines a median legislator and also a veto pivot in accordance with the Constitution's supermajoritarian (two–thirds) veto override provision. Similarly, for the Senate there exists a median member, a veto pivot analogous to the House veto pivot, and furthermore a filibuster pivot based on the Senate's three–fifths cloture rule. These five key members, as well as the president, can be placed on two lines, one for the House and one for the Senate, as in Figure 1.

Consider the House line in the figure and suppose that the members of this chamber are

Figure 1: The Federal Government Gridlock Interval



playing a Romer and Rosenthal (1978) type proposer game with the president as detailed in Krehbiel (1996). According to the subgame perfect equilibrium in Krehbiel's game, if the status quo ex ante lies between the House veto pivot and the House median (see the lightly shaded region of the House line) then the policy outcome produced by the game will be equivalent to the status quo which preceded it. That is, the status quo ex post will simply be the status quo ex ante. This is because the House median will want to propose a policy to the right of the status quo ex ante – recall that this policy lies to the left of the House median – but the president will oppose such a move. Indeed, so will the House veto pivot, and this will prevent the House median from moving the status quo in her preferred direction.

On the other hand, if the status quo ex ante lies between the House veto pivot and the president, then the median can offer a policy to the right of the status quo, the president will veto it, but the House will override the veto since the House veto pivot, like the House median, prefers a rightward policy shift. The distance that the House median can pull the status quo rightward depends on its precise location between the president and the House veto pivot. Finally, a status quo policy to the right of the House median will result in a new policy or a status quo ex post that coincides precisely with the median member's ideal point. This is because the median and the president will both desire leftward movement when the status quo is extreme and on the right hand side of the political spectrum, and in this situation the House median can use its proposal power to ensure that the final policy outcome is in fact its ideal point.

A similar argument can be made for the Senate, but the existence of this chamber's filibuster

provision adds another interval of status quo points that are unmovable. Consider, for instance, a status quo ex ante that lies between the Senate median and the Senate filibuster pivot. In this case, the Senate median will want to move the status quo to the left, as will both the Senate veto pivot and the president. However, the filibuster pivot will prevent such movement. Status quo points between the Senate veto pivot and the Senate median will be unmovable as well, and the logic is analogous to that in the House example.

In Figure 1, the House and Senate gridlock intervals overlap, and therefore the overall government gridlock interval is depicted with dark shading on the bottommost line. This latter interval thus captures the status quo points that be moved by neither the House nor the Senate.[3] It is clear that, the greater the length of the federal government gridlock interval, the larger the set of unmovable status quo points. Importantly, when a status quo point lies in the gridlock interval, then the government's actions on it (i.e. none) will yield no new information on policy. This is a key point as it is precisely policy–relevant information that drives interest rate volatility. Therefore, when GRID_t, the length of the government's gridlock interval, is large, there is a significant preference conflict across key members of Congress and, according to preference–based theories, this will result in low information flows emanating from the federal government. Slope coefficients for GRID_t, therefore, will be negative if preference–based theories are correct.

Under the assumption that preference–based theories of Congress are valid, the relationship between the gridlock interval and interest rate volatility can also be motivated as follows. Recall that the key factor linking interest rate volatility and government policy is new information. Consider, then, a House–only version of Figure 1, and suppose that the associated House line consists of the unit interval. Let s denote the status quo, and suppose that the president is located at the far left end of the line (ideal point is zero), that the House median's ideal point is $\alpha \in (1/2, 1)$, and that the veto pivot's ideal point is $1 - \alpha$.[4] The gridlock interval is thus

[3]For an application of the government gridlock interval to budget politics of the Reagan Administration, see Brady and Volden (1998, ch. 3).

[4]The use of α and $1 - \alpha$ reflects one parameter being employed to describe two ideal points. This parsimony reduces clutter in variance calculations, and the arguments described here do not depend explicitly on this parameterization.

$(1-\alpha, \alpha)$, and the equilibrium results in Krehbiel (1996) imply that

$$p(s) = \begin{cases} \alpha & s \in (0, 2-3\alpha) \\ 2-2\alpha-s & s \in (2-3\alpha, 1-\alpha) \\ s & s \in (1-\alpha, \alpha) \\ \alpha & s \in (\alpha, 1) \end{cases} \tag{4}$$

where $p(s)$ is the policy produced when the House and president operate on a status quo s. From equation (4), $p(s) = s$ when $s \in (1-\alpha, \alpha)$, and this reflects gridlock. Furthermore, the dynamics used to explain Figure 1 are evident in this equation. For instance, when the status quo s is very large ($s > \alpha$), then the resulting policy $p(s)$ is the House median's ideal point α. When, though, the status quo lies between the House veto pivot and the president ($s < 1-\alpha$), government policy $p(s)$ is to the right of the status quo s by an amount that depends on the value of s.

Given a status quo s in place when a government is installed, the difference $s - p(s)$ can be thought of as the policy–relevant information generated by the government. Now, suppose that a newly installed government receives a random status quo that is uniformly distributed on the unit interval $(0, 1)$ and then produces a new policy based on this status quo. In this simple framework, the variance of $s - p(s)$ reflects the volatility of the new information provided by the government. If, say, the variance of $s - p(s)$ is low, then the policy–relevant information will in general not be very substantial. On the other hand, when the variance is large, then it follows the import of the information can be meaningful.

Suppose that $\alpha \in (1/2, 2/3)$.[5] Then, straightforward calculations based on equation (4) show that the variance of $s - p(s)$ is $6\alpha - 20\alpha^2 + 88/3\,\alpha^3 - 16\alpha^4 - 7/12$. Importantly, this variance is decreasing in α: the derivative of the variance with respect to α is $2(2\alpha-1)^2(3-8\alpha)$, which is negative. In other words, as α increases – which elongates the gridlock interval – the variance of $s - p(s)$ decreases. This shows that, when the government has a large gridlock interval,

[5]The range of $\alpha \in (1/2, 1)$ is broken into two cases – $\alpha < 2/3$ and $\alpha > 2/3$ because the interval $(0, 2-3\alpha)$ only exists when $\alpha < 2/3$.

the information it provides by implementing a new policy is of low variance. This is because, of course, governments with large gridlock intervals will often provide no new information on policy, i.e. it is often true that $p(s) = s$.

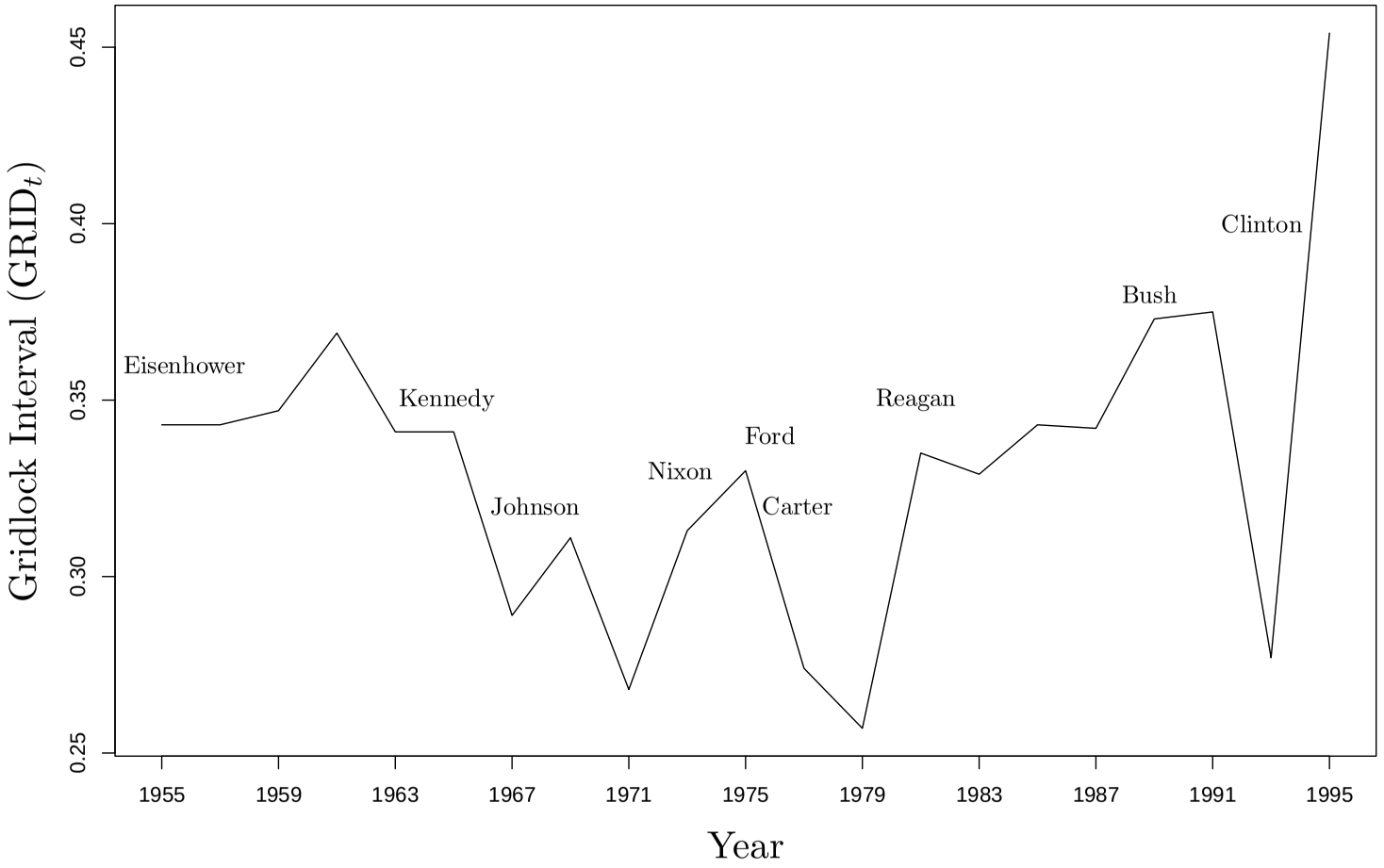
Similarly, for $\alpha \in (2/3, 1)$, the variance of $s - p(s)$ is $-1/12\ (3\alpha + 17)(\alpha - 1)^3$. The derivative of this variance with respect to α is $-(\alpha - 1)^2(4 + \alpha)$, which is negative. The implication of this result is the same as that noted above, namely, new policy–relevant information generated by gridlock governments will have low volatility.

Thus, this paper's linkage between the government gridlock interval and interest rate volatility has both intuitive support and support based on a simple mathematical formalization. The key to operationalizing the gridlock interval in empirical analysis lies in locating the ideal points of members of Congress and the president on a single policy space. To do this, the paper uses Poole's (1998) common space coordinates, based on NOMINATE scores (Poole and Rosenthal 1997), as estimates of ideal points. Then, given legislator and president common space scores for a given government, the logic used to explain Figure 1 can be employed to specify the values of two chamber medians, the two veto pivots, and the Senate filibuster pivot. Finally, the union of House and Senate intervals can be easily calculated and the length of the this union constitutes the length of the gridlock interval for the given government.[6] Let GRID_t be defined as the length of the federal government gridlock interval at time t. In general, the gridlock interval changes every two years, and Figure 2 plots GRID_t from Eisenhower through the first Clinton term.

There are several noteworthy features of Figure 2. First, there are hints of a "U" in the figure, where the gridlock interval was relatively large for Eisenhower, lower in the late 1960s and early 1970s, and then higher afterwards. Second, the Clinton Administration faced the largest gridlock interval since the World War II, and this probably accounts for the vicious budget fighting and federal government shutdowns that characterized this administration. Third, Johnson had a very small gridlock interval, and this might explain why he was able to push

[6] Common space NOMINATE scores exist only for the Eisenhower Administration onward. In this period the House and Senate gridlock intervals overlap. This is not a surprising finding, but it is not one that is guaranteed.

Figure 2: Trends in the Federal Government Gridlock Interval



through his Great Society programs.[7]

5 Additional Control Variables

Along with the indicator variable (DIVIDED_t) which describe whether a government is divided and the measure of government gridlock (GRID_t), this section specifies other variables that are included in the two exogenous vectors LEVEL_t and VOL_t. These other variables are included because there are certainly numerous factors, some explicitly political, some not, that influence American interest rates and, in particular, rate volatility.

- **Federal Reserve Chairman Indicators** An important political and economic institution in the United States is the Federal Reserve system and in particular the Federal Open Markets Committee (FOMC). The FOMC is composed of the chairman of the Federal Reserve along with various other individuals, and this organization sets a number of key American interest rates. For instance, the FOMC sets the level of the federal funds rate, the overnight rate that banks charge each other for lending. The chairman of the Federal Reserve is appointed by the president, subject to confirmation by the Senate, and both LEVEL_t and VOL_t include four indicator variables which denote the identity of the chairman at time t. These variables are as follows:
  - FED.MARTIN_t (William Martin, Jr.), set to one when t is a date prior to January 31, 1970 (Martin's term began on April 2, 1951)
  - FED.BURNS_t (Arthur Burns), set to one when t lies between February 1, 1970 and March 7, 1978.[8]
  - FED.MILLER_t (G. William Miller), set to one when t lies between March 8, 1978 and August 5, 1979.

[7] The reason that Poole's common space coordinates are used in this paper is because the legislator and president ideal points used to calculate the gridlock interval must be comparable across both chambers of Congress and across time. Standard DNOMINATE and WDNOMINATE scores are comparable across time in a given chamber but cannot be compared across chambers.

[8] Technically, Burns's last day as FOMC chairman was January 31, 1978. However, there was no successor until March 8, 1978, the date assumed by this paper to designate the end of the Burns era.

– FED.VOLCKER$_t$ (Paul Volcker), set to one when t lies between August 6, 1979 and August 10, 1987.

– The reference category with respect to the four Federal Reserve chairman indicator variables is Chairman Alan Greenspan who, at the time of this writing, is still the chairman of the FOMC.[9]

It is extremely important that Federal Reserve Chairman indicators are included in the ARCH models used here to study interest rate volatility. It is possible that government influence on interest rate volatility may be exclusively through appointments to the Federal Reserve. If, on the other hand, it is found that the gridlock variable GRID$_t$ has an influence on interest rate volatility – an influence even controlling for Federal Reserve appointments – then this will imply that the institutions that make up the American federal government are themselves important insofar as influencing the flow of new economic information.

Inclusion of the Fed Chairman indicator variables in LEVEL$_t$ reflects the possibility that interest rates may undergo regime shifts when important economic policymakers change are replaced. This does not violate market efficiency.

- **FOMC Meeting Indicator** FOMC meetings can result in changes to the interest rates managed by the Federal Reserve, and it follows that new information relevant to floating rates may be plentiful in periods surrounding FOMC meetings. This information may have volatility effects on interest rates, and therefore let FOMC.MEETING$_t$ have a value of one if and only if there was an FOMC meeting within three days of date t.

- **Session Indicator** Let SESSION$_t$ equal one if and only if both the House and Senate are in session on date t. This variable is included in VOL$_t$ for two reasons. First, it is logical that policy uncertainty might be related to SESSION$_t$ since, as noted earlier, governments not in session cannot pass new legislation. Second, Michelson (1993) and

[9]The source for the FOMC chairman dates is p. 784 of the November, 1999 issue of the *Federal Reserve Bulletin*.

Lamb, Ma, Pace and Kennedy (1997) find evidence that aggregate equity indices tend to increase when Congress is out of session. The explanation offered is that risk averse investors prefer a stable political environment.[10]

- **Election Indicator** There is conceivably an election effect in interest rate volatility since new information about expected future economic policies is produced when an election cycle completes. Thus, the period before an election may be one of unusually high volatility – since new and relevant information is produced on a daily bases – or possibly stability – as investors collectively ignore new information and wait until after an election before making key economic decisions. Define ELECTION_t, an element of the vector VOL_t, as one when t is a date relatively close to an election. In this case, t is said to be close to an election if, one, t occurs in a national election year, and, two, t is in the months of September, October, or November prior to the election.

6 Results

The paper now analyzes volatility patterns in a collection of constant maturity interest rates. These rates – one year, three years, five years, seven years, and ten years – are comparable across time because each rate observation assumes a fixed time until maturity.[11] Moreover, as noted earlier the advantage of considering a collection of multiple constant maturity rates is that the effects of political institutions on interest rates should diminish in time to maturity. In other words, the effects of contemporaneous political factors on the one year interest rate should be greater than the effects on longer term rates.[12]

Given a suitably long history for an interest rate, estimating the ARCH model of equations (1)–(3) requires specifying the number of lags p which affect the error process. A standard way to estimate p is as follows: first, estimate equation (1) with least squares, which will produce

[10]Nonetheless, this finding appears to contradict market efficiency as Congressional session dates are almost perfectly predictable.

[11]Source for the interest rate data is the Federal Reserve Bank of St. Louis, namely, http://www.stls.frb.org.

[12]Unfortunately, three month and six month constant maturity interest rates are available from only 1982. This short period of data availability prevents their being considered here.

consistent intercept and slope estimates; second, calculate residuals $\hat{\epsilon}_t$ in the usual fashion; and, third, examine the partial autocorrelations of $\hat{\epsilon}_t^2$. Namely, statistically significant slope coefficients (at the 0.05 level, for instance) in a regression of $\hat{\epsilon}_t^2$ on lagged squared residuals indicate the presence of ARCH effects. Assuming that $l = 12$ (three months), Table 1 contains estimates of parameters for the various constant maturity interest rates. All standard errors in the table are computed using the Huber–White estimator that Fiorentini, Calzolari and Panattoni (1996) show is robust to non–normal disturbances.[13]

In terms of ARCH specification tests, the models for the five rates in Table 1 have insignificant Ljung–Box Q statistics (at lag p, which varies by rate) for adjusted residuals and adjusted squared residuals. In addition, the Lagrange multiplier tests for ARCH effects, applied to adjusted residuals, is insignificant in all five cases. These results suggest that the five ARCH models control for serial correlation and heteroskedasticity in the various interest rates.[14]

Consider first the level effects estimates found at the top of the table. None of the estimated constant terms is significantly different from zero at the 0.05 level, and this is appropriate in light of this paper's adopting efficient markets theory. In addition, across the five interest rates the signs of the estimates for each Federal Reserve chairman should be identical. That is, we should expect that a given chairman will have similar effects, if he has any at all, on interest rates of all maturities. This pattern is indeed evident in Table 1 and it constitutes a plausible, albeit weak, specification test of the paper's empirical models.

Chairman William Martin appears to be associated with higher than average interest rates, and a similar statement applies to Chairman William Miller. The fact that the various Federal Reserve chairman indicators are all positive implies that the chairman associated with the reference category, Alan Greenspan, has presided over a period of relatively low interest rates. This is hardly surprising intuitive as the latter few years of the century have witnessed extremely low floating rates.

Turning next to the more important volatility effects, the two key rows of Table 1 are

[13] All ARCH estimates were produced with TSP version 4.5. Coefficient estimates on lagged dependent variables and lagged squared residuals are available from the author.

[14] In addition, the qualitative results in Table 1 – namely, the findings related to GRID_t and DIVIDED_t – are robust to inclusion of a mean term (ARCH–M).

Table 1: Parameter Estimates for Constant Maturity Interest Rates

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	Parameter	One Year	Three Year	Five Year	Seven Year	Ten Year
Level Effects	Constant	-0.104	-0.0935	-0.106	-0.0886	-0.0943
		(0.0978)	(.0937)	(0.0856)	(0.0747)	(0.0696)
	FED.MARTIN$_t$	0.217†	0.240*	0.195*	0.111	0.164*
		(0.119)	(0.106)	(0.0955)	(0.464)	(0.0787)
	FED.BURNS$_t$	0.125	0.113	0.108	0.111	0.187*
		(0.155)	(0.125)	(0.110)	(.0965)	(0.088)
	FED.MILLER$_t$	0.342†	0.260†	0.215	0.250*	0.210†
		(0.175)	(0.157)	(0.142)	(.124)	(0.126)
	FED.VOLCKER$_t$	0.0578	0.0639	0.0800	0.0731	.0693
		(0.152)	(0.138)	(0.130)	(0.122)	(0.114)
Volatility Effects	GRID$_t$	-8.00*	-6.40*	-4.86*	-0.208	-1.83
		(2.57)	(2.29)	(1.89)	(3.19)	(1.24)
	DIVIDED$_t$	0.028	0.323	0.274	-0.105	0.234
		(0.540)	(0.380)	(0.252)	(0.535)	(0.136)
	SESSION$_t$	-0.0891	-0.457*	-0.450*	-0.153	-0.200*
		(0.631)	(0.219)	(0.160)	(0.184)	(0.0879)
	ELECTION$_t$	-0.601	-0.149	-0.0736	-0.308	0.0251
		(0.682)	(0.148)	(0.0963)	(0.274)	(0.0580)
	FOMC.MEETING$_t$	0.681	0.173	0.0978	0.0899	.0550
		(0.489)	(0.178)	(0.135)	(0.239)	(0.0612)
	FED.MARTIN$_t$	-1.37*	-1.32*	-1.09*	-0.202	-0.647
		(.603)	(0.409)	(0.315)	(1.09)	(0.194)
	FED.BURNS$_t$	0.863	-0.620	-0.667*	-0.388	-0.668*
		(0.748)	(0.432)	(0.318)	(0.333)	(0.209)
	FED.MILLER$_t$	-1.40	-1.48*	-1.36*	-1.07*	-0.610*
		(1.14)	(0.567)	(0.406)	(0.452)	(0.266)
	FED.VOLCKER$_t$	0.788	0.112	0.421	0.907*	0.483
		(0.752)	(0.504)	(0.468)	(0.434)	(0.333)
ARCH Statistics	p	8	8	8	8	11
	Q(p)	3.67	3.18	3.09	3.42	2.37
	Q^2 (p)	2.37	2.71	3.09	1.50	2.83
	LM Test	2.48	2.76	3.01	1.43	2.83

Note: standard errors in parentheses; * denotes $p < 0.05$, two–tailed;
† denotes $p < 0.10$, two–tailed

those associated with the measure of the federal government gridlock interval GRID$_t$ and the divided government indicator DIVIDED$_t$. Notably, the table uncovers no evidence that divided government influences interest rate volatility. In particular, the five slope estimates associated

with DIVIDED_t are statistically insignificant at ordinary confidence levels. Even if this finding were ignored, it is nonetheless the case that four of the five estimates for DIVIDED_t are positive, and this would be highly illogical if divided government were truly associated with gridlock and predictability.

On the other hand, the estimates for the gridlock interval slope coefficients illustrate that government preference conflict has a key impact on interest rate volatility, and, importantly, this influence decreases with time until maturity. For instance, GRID_t has a statistically significantly negative impact on the volatility of the ones year interest rate ($p \approx 0.002$). This impact exists, moreover, even controlling for government influence on floating interest rates through Federal Reserve chairman appointments. The negative slope estimate on GRID_t implies that there is less uncertainty about the economic environment when the federal government has a large gridlock interval.

A similar statement – but one weaker in both magnitude and statistical significance – applies to the three year interest rate ($p = 0.013$). Moreover, the gridlock slope estimate for the five year rate is statistically significant, and it continues the downward trend in magnitude: $(|-8.00| > |-6.40| > |-4.86|)$. Beyond the five year interest rate, though, there is no evidence that the length of the government gridlock interval influences rate volatility. Namely, the slope estimates on GRID_t are statistically insignificant for the seven and ten years rates. The decreasing (in magnitude) trend in slope estimates is broken by the seven year rate, however. Nonetheless, this does not detract from the fact that the government gridlock interval appears to have volatility effects on relatively short term interest rates yet no such effects for relatively long term rates.

This pattern – GRID_t influence in the short term combined with no such influence in the long term – is intuitive. Furthermore, not only are the five DIVIDED_t estimates from Table 1 statistically insignificant and positive, but their magnitudes do not follow the pattern observed in the GRID_t estimates. Broadly speaking, this constitutes evidence in favor of preference–based theories of Congressional organization and opposed to strong party theories.

In terms of other volatility findings, the slope estimates on SESSION_t are somewhat puz-

zling. All five are negative – indicating that, *ceteris paribus*, there is less rate volatility when Congress is in session – and three are significantly so. One would have thought that there should be less rate volatility when the government is out of session. Rather, it appears that the House and Senate both being in session exerts has some sort of a steadying effect on interest rate volatility. Perhaps this is because economic shocks during times when the government is out of session dissipate relatively slowly due to the fact that the government in such an instance cannot accomplish much. This is speculative, of course.

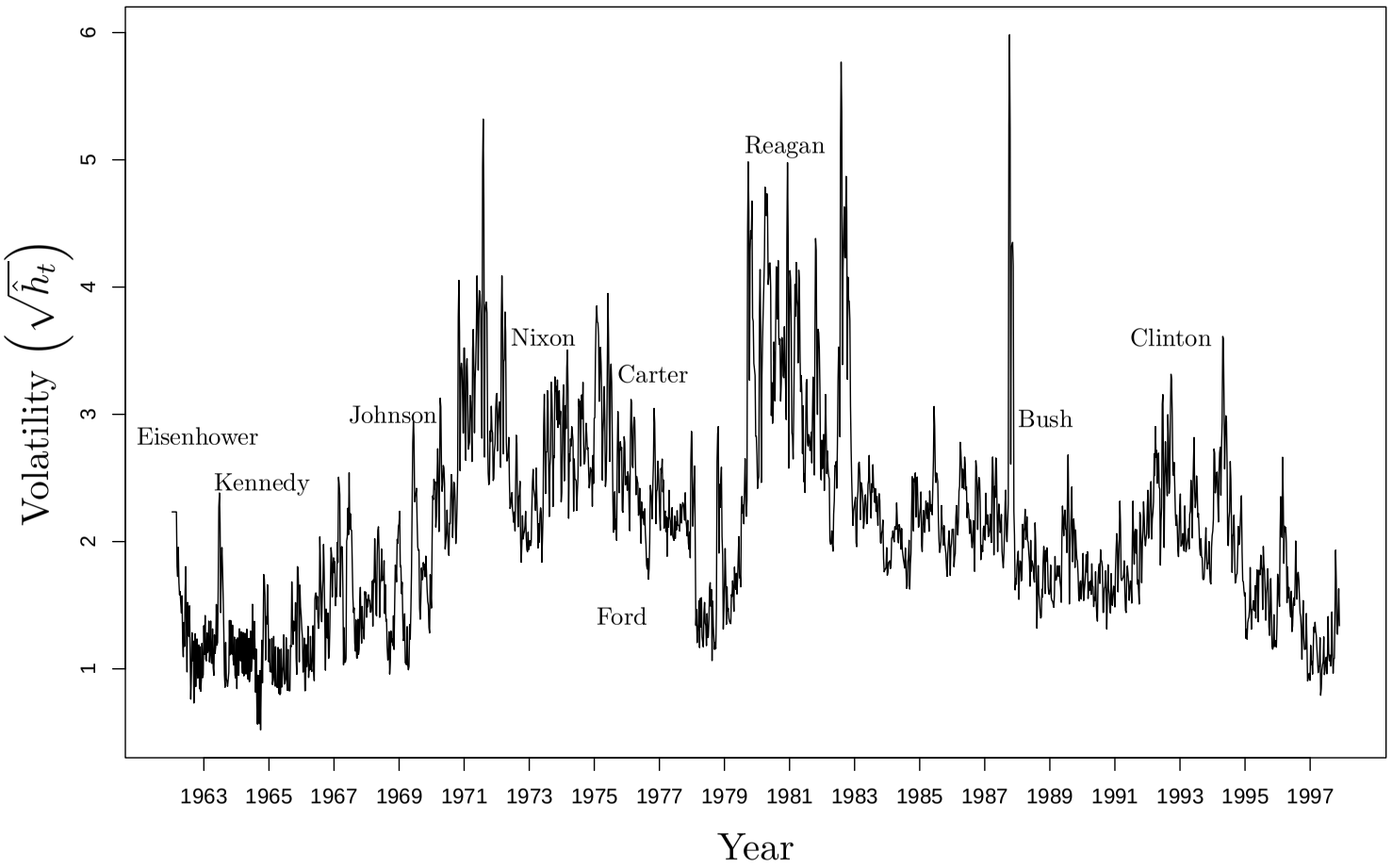
The findings for the FOMC meeting indicators are all statistically insignificant, although they are uniformly positive. Finally, there appears to have been less volatility with Chairmen Martin and Miller then with the other Federal Reserve Chairmen.

Estimates of the parameters that appear in equation (1) can be used in the standard way to solve for the residuals $\hat{\epsilon}_t$. Then, these residuals can be plugged into equation (3) and, along with α estimates and estimates of ϕ, they jointly specify the variance sequence $\hat{h}_t$. Finally, the estimated volatility of r_t is $\sqrt{\hat{h}_t}$, and Figure 3 plots $\sqrt{\hat{h}_t}$ for the one year interest rate against time. In addition, the figure contains president labels that show how volatility varied with presidential administration.[15]

Figure 3 shows that, for instance, rate volatility was unusually high during first Reagan Administration and relatively low during Eisenhower's and Kennedy's governments. This volatility cannot necessarily be associated with political institutions, though, as this source of information is only one component of overall rate volatility. Indeed, this is the point of the ARCH model in which volatility is assumed to be a function of both past residuals and exogenous variables. Consequently, Figure 4 plots the ratio of two volatilities. The numerator of the ratio is $\hat{h}_t$ calculated assuming that $\text{GRID}_t = 0$; in other words, the numerator is the volatility of $\hat{h}_t$ assuming that there are no gridlock effects on interest rates. And, the denominator of the volatility ratio the estimated volatility shown in the previous Figure 3. Since the one year interest rate slope coefficient estimate on GRID_t is negative – meaning that the political institutions of the American federal governments exert a downward force on rate

[15]So that the labels fit with the volatility trends, placement of presidents in Figure 3 is only approximate.

Figure 3: Estimated One Year Rate Volatility $\sqrt{\hat{h}_t}$



volatility – this ratio will always be greater than one. This result supports the claim that political institutions can attenuate the effect of uncertainty (Garrett and Lange 1995), and it coincides with the findings in Hays, Stix and Freeman (2000) that certain forms of government institutions insulate bond prices from election cycles.

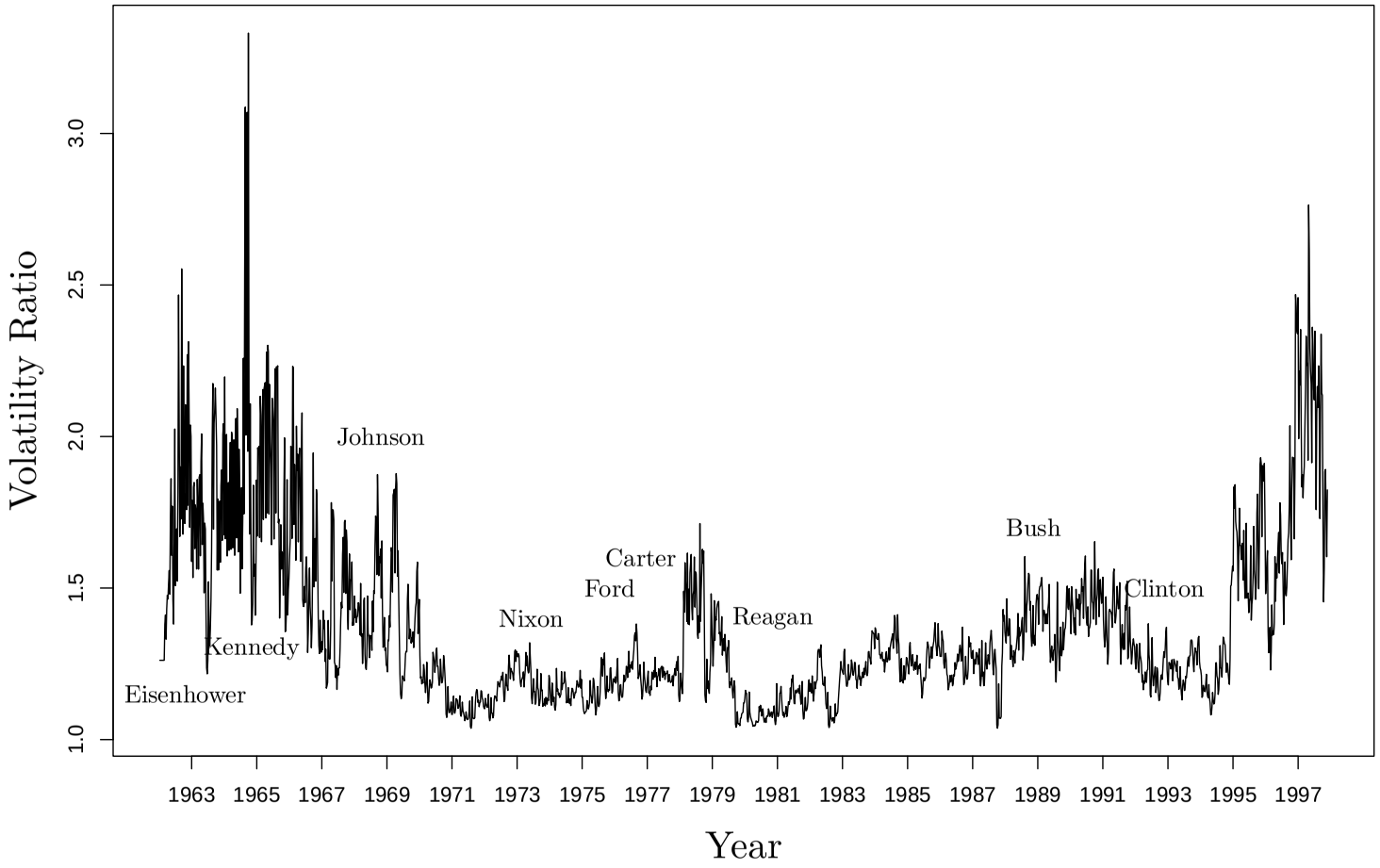
One can see from Figure 4 that the impact of political institutions on one year rate volatility was large during the Eisenhower and Kennedy years, the second half of the Carter Administration, and the second Clinton Administration. Moreover, there are several interesting features of this figure.

First, overall rate volatility was high during the Reagan years, but the political component of this volatility – namely, the increase in volatility due to the government gridlock interval – was relatively low. This is despite the fact that the gridlock interval itself was large during the Reagan Administration. In other words, in the 1980s interest rate volatility was not a function of political factors. Presumably this volatility was a function of other economic variables and global trends that were reflected in American interest rates.

Second, the Eisenhower and Kennedy years featured gridlock intervals of roughly similar lengths as those witnessed under Reagan. But, in contrast to the Reagan findings, the effects of political institutions under the former two presidents was relatively large. In other words, the non–political components of rate volatility were low in the 1960s.

Third, there is a distinct increase in the political component of rate volatility in the late 1990s. What is interesting about this particular finding is that it comes during a period when there were increasing concerns about the impact of globalization on national economic sovereignty and speculations that capital mobility would force all democratic governments to pursue similar fiscal and monetary policies. If this conjecture were entirely true, then the import of domestic political institutions on interest rate volatility would have been relatively low during the Clinton years, particularly toward the end of this period. However, Figure 4 shows that this did not happen. Namely, the 1990s upturn in the political component of the one year interest rate shows that domestic institutions still matter, despite increasing economic globalization.

Figure 4: Ratio of Rate Volatility with No Gridlock Effect to Actual Rate Volatility



7 Conclusion

This paper addresses the debate on the source of government gridlock, and in its most broad sense examines the importance of the lawmaking institutions of the American federal government. There are two competing theories as to the source of gridlock, and the key issue dividing the theories is the extent to which the party composition of the federal government is meaningful. One set of theories with implications for the source of government gridlock is explicitly party–based, it focuses on whether the federal government is unified or divided, and, notably, it does not draw on the specific institutional features of Congress. A second set, though, is institutional in nature, it disregards issues of party membership, and its claims are based on the procedures used to generate legislation.

In light of these two sets of theories – one which is not institutional, one which is – the evidence offered here supports the institutional view of Congress. Namely, the evidence shows that party composition appears unimportant vis–a–vis federal government gridlock and that governments characterized by gridlock are those that have conflict in individual–level policy preferences.

In contrast to the gridlock research in Mayhew (1992) and Krehbiel (1998), this paper's evidence on the source of government gridlock is indirect and depends on financial time series. Namely, assuming that gridlocked governments are those that are most predictable, it was argued here that gridlocked governments should be associated with low interest rate volatility and non–gridlocked governments with relatively high volatility. Based on this assertion, econometric analysis of a collection of floating American interest rates shows that short and medium term rate volatility is a function of individual–level preference conflict in the government; as to be expected, there are no political effects on long term rate volatility. Moreover, the paper uncovers no evidence that the political party composition of the federal government influences short or long term interest rate volatility.

Therefore, viewed from a narrow perspective, this paper lends empirical support to the latter half of the party versus preferences dichotomy, the half which argues that party affiliations

are not very important insofar as influencing legislator behavior. More generally, however, the paper illustrates the importance of institutional rules and how these rules have consequences for institutional behavior. Furthermore, in conjunction with Hays, Stix and Freeman (2000), the paper shows how political institutions can mitigate uncertainty.

References

Binder, Sarah A., Eric D. Lawrence and Forrest Maltzman. 1999. "Uncovering the Hidden Effect of Party." *Journal of Politics* 61(3):815–31.

Brady, David W. and Craig Volden. 1998. *Revolving Gridlock*. Boulder, CO: Westview Press.

Brander, James A. 1991. "Election Polls, Free Trade, and the Stock Market: Evidence from the 1988 Canadian General Election." *Canadian Journal of Economics* 24(4):827–843.

Bueno De Mesquita, Bruce. 1990. "Pride of Place: The Origins of German Hegemony." *World Politics* 43(1):28–52.

Cameron, Charles M. 2000. *Veto Bargaining: Presidents and the Politics of Negative Power*. New York, NY: Cambridge University Press.

Cox, Gary W. and Mathew D. McCubbins. 1993. *Legislative Leviathan: Party Government in the House*. Berkeley, CA: University of California Press.

Engle, Robert F. 1982. "Autoregressive Conditional Heteroskedasticity with Estimates of the Variance of U.K. Inflation." *Econometrica* 50:987–1008.

Fiorentini, Gabriele, Giorgio Calzolari and Lorenzo Panattoni. 1996. "Analytic Derivatives and the Computatoin of GARCH Estimates." *Journal of Applied Econometrics* 11(4):399–417.

Fiorina, Morris P. 1996. *Divided Government*. Boston: Allyn and Bacon.

Garrett, Geoffrey and Peter Lange. 1995. "Internationalization, Institutions, and Political Change." *International Organization* 49(4):627–55.

Gilligan, Thomas W. and Keith Krehbiel. 1988. "Complex Rules and Congressional Outcomes: An Event Study of Energy Tax Legislation." *Journal of Politics* 50(3):625–654.

Groseclose, Timothy. 1996. "An Examination of the Market for Favors and Votes in Congress." *Economic Inquiry* 34(2):320–40.

Hays, Jude, Helmut Stix and John R. Freeman. 2000. "The Electoral Information Hypothesis Revisited." Working paper, University of Minnesota.

Herron, Michael C. 2000. "Estimating the Economic Impact of Political Party Competition in the 1992 British Election." *American Journal of Political Science* 44(2):326–37.

Herron, Michael C., James Lavin, Donald Cram and Jay Silver. 1999. "Measurement of Political Effects in the Stock Market: A Study of the 1992 Presidential Election." *Economics & Politics* 11(1):51–82.

Krehbiel, Keith. 1993. "Where's the Party?" *British Journal of Political Science* 23(2):235–66.

Krehbiel, Keith. 1995. "Cosponsors and Wafflers from A to Z." *American Journal of Political Science* 39(4):906–23.

Krehbiel, Keith. 1996. "Institutional and Partisan Sources of Gridlock: A Theory of Divided and Unified Government." *Journal of Theoretical Politics* 8(1):7–40.

Krehbiel, Keith. 1998. *Pivotal Politics: A Theory of U.S. Lawmaking*. Chicago: University of Chicago Press.

Krehbiel, Keith. 1999. "The Party Effect from A–to–Z and Beyond." *Journal of Politics* 61(3):832–40.

Krehbiel, Keith. 2000. "Party Discipline and Measures of Partisanship." *American Journal of Political Science* 44(2):212–227.

Lamb, Reinhold, K.C. Ma, R. Daniel Pace and William F. Kennedy. 1997. "The Congressional Calendar and Stock Market Performance." *Financial Services Review* 6(1):19–25.

Leblang, David and William Bernhard. 2000. "Parliamentary Politics and Foreign Exchange Markets: The World According to GARCH." Paper presented at the annual meeting of the Midwest Political Science Association, Chicago.

Mayhew, David R. 1992. *Divided We Govern: Party Control, Lawmaking, and Investigations 1946–1990*. New Haven, CT: Yale University Press.

McKenzie, Calvin and Saranna Thornton. 1996. *Bucking the Deficit: Economic Policymaking in America*. Boulder, CO: Westview Press.

Michelson, S. 1993. "Using Congressional Sessions to Predict the Stock Market." *Journal of Business and Economic Perspectives* 19(1):89–99.

Poole, Keith T. 1998. "Recovering a Basic Space from a Set of Issue Scales." *American Journal of Political Science* 42(3):954–93.

Poole, Keith T. and Howard Rosenthal. 1997. *Congress: A Political–Economic History of Roll Call Voting*. New York: Oxford University Press.

Roberts, Brian E. 1990. "A Dead Senator Tells No Lies: Seniority and the Distribution of Federal Benefits." *American Journal of Political Science* 34(1):31–58.

Rohde, David. 1991. *Parties and Leaders in the Postreform House*. Chicago: University of Chicago Press.

Romer, Thomas and Howard Rosenthal. 1978. "Political Resource Allocation, Controlled Agendas, and the Status Quo." *Public Choice* 33(4):27–43.

Sinclair, Barbara. 1995. *Legislators, Leaders, and Lawmaking*. Baltimore, MD: Johns Hopkins University Press.

Snyder, Jr., James M. 1991. "On Buying Legislatures." *Economics & Politics* 3(2):93–109.

Snyder, Jr., James M. and Tim Groseclose. 2000. "Estimating Party Influence in Congressional Roll–Call Voting." *American Journal of Political Science* 44(2):193–211.

Sundquist, James L. 1988. "Needed: A Political Theory for the New Era of Coalition Government in the United States." *Political Science Quarterly* 103(4):613–35.