

[연구 논문]

# Divided Government and Legislative Productivity

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## Introduction

In the United States, divided government designates a situation in which the presidency and the Congress are controlled by different parties. Debate surrounding the role of divided government has dominated the study of the American political system since the 1980s. As a result of this research, we now know that divided government is not an extraordinary phenomenon confined only to contemporary U.S. politics. Divided government was the most prevalent form of US government during the late 19<sup>th</sup> century.<sup>1)</sup> In other presidential democracies like Taiwan, South Korea, and Turkey, divided government has become a regular occurrence during the post-democratic-transition era.

However, the biggest question on divided government has yet to be settled: whether divided government significantly decreases legislative

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1) Cameron, Charles, *Veto Politics* (New York: Cambridge University Press, 2000).

productivity, which is measured by the number of important enactments passed by the legislature. In this paper, I tackle this question and show that divided government can be less productive for a certain type of enactment.

## 1. Previous Research

The traditional view of divided government is that it is less productive than unified government and, therefore, a less desirable form of government.<sup>2)</sup> David R. Mayhew, however, challenges this traditional view with a comprehensive analysis of post-WWII enactments in the U.S.<sup>3)</sup> Identifying important enactments according to his own standards,<sup>4)</sup> he finds no statistically significant relationship between regime type and legislative productivity; there was little difference between unified and divided government as far as important enactments were concerned.<sup>5)</sup> Keith Krehbiel also argues that once a

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

3) David R. Mayhew, *Divided We Govern: Party Control, Lawmaking, and Investigations, 1946-1990* (New Haven: Yale University Press, 1991).

4) Mayhew uses two standards to identify important enactments. *Sweep I* is the contemporary standard; the enactments chosen by the *Sweep I* standard were considered important by contemporary journalists. *Sweep II* is a retrospective standard; the enactments chosen by *Sweep II* are retrospectively judged as important by policy specialists.

5) Most empirical studies conclude with a preference for divided government. David R. Jones' reassessment of the postwar presidency in the U.S. in light of partisanship also goes along with the thrust of Mayhew's findings; see David R. Jones, "Explaining Policy Stability in the United States: Divided Government or Partisanship in the House?," presented at the annual meeting of the Midwest Political Science Association, Chicago, April, 1995 and David R. Jones, "Parties, Institutions, and Gridlock in the United States" (PhD diss University of

government changes from unified to divided and then back to unified, the Status Quo (SQ) locations of all enactments would be trapped in the so-called gridlock interval.<sup>6)</sup> It is less than surprising, therefore, that we observe little to hardly any difference in legislative productivity under unified and divided government.

Despite its strengths, however, this revisionist view of the divided government hypothesis has yet to earn support from other scholars. Many studies have challenged the revisionist view of divided government in a variety of ways. Some critiques emphasize the qualitative aspects or contents of the bills rather than the sheer number of important enactments. Susanne Lohmann and Sharyn O'Halloran show that divided government leads to more protectionism.<sup>7)</sup> David

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California, Los Angeles, 1998). Paul J. Quirk and Bruce Nesmith show that divided government is less productive only in the case of highly ideological issues and that circumstantial factors other than regime type are more important in creating policy deadlock; see Paul J. Quirk and Bruce Nesmith, "Explaining Deadlock: Domestic Policymaking Under the Bush Presidency," in *New Perspectives on American Politics*, ed. Lawrence C. Dodd and Calvin Jillson, (Washington, DC: CQ Press, 1994), 191-211 and Paul J. Quirk and Bruce Nesmith, , "Divided Government and Policy Making: Negotiating the Laws," in *The Presidency and the Political System*, ed. Michael Nelson (Washington, DC: CQ Press, 1998), 565-588.1998). Morris Fiorina, in his comprehensive review of the debate on divided government, also supports Mayhew's challenge to conventional wisdom; see Morris Fiorina, *Divided Government* (Boston: Allyn Bacon, 1996). David McKay provides a good review of early literature on divided government; See David McKay, "Divided and Governed? Recent Research on Divided Government in the United States," *British Journal of Political Science* 24 (1994): 517-534.

- 6) Keith Krehbiel, "Institutional and Partisan Sources of Gridlock: A Theory of Divided and Unified Government," *Journal of Theoretical Politics* 8 (1996), 7-39; Keith Krehbiel, *Pivotal Politics: A Theory of U.S. Lawmaking* (Chicago: University of Chicago Press, 1998).
- 7) Susanne Lohmann and Sharyn O'Halloran, "Divided Government and U.S. Trade Policy: Theory and Evidence," *International Organization* 48 (1994): 595-632.

Epstein and O'Halloran further insist that bureaucratic autonomy will decline under divided government.<sup>8)</sup> Others have suggested that divided government is likely to produce higher budget deficits<sup>9)</sup> and a slower response to tackling deficits.<sup>10)</sup> Some have also argued that divided government is less responsive to the public mood than is unified government.<sup>11)</sup> Gregory Thomson reports that the contents of significant legislations under divided government are more partisan.<sup>12)</sup> Stephen M. Weatherford investigates tax cut discussions in the U.S. in 1958 and finds that Thorson's argument holds good for the tax cut discussion.<sup>13)</sup>

Another group of critiques focus on Mayhew's definition of legislative productivity. Sean Q. Kelly insists that the importance of an enactment should be judged not only at the time of its adoption, but also subsequently by experts.<sup>14)</sup> In other words, an important

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8) David Epstein and Sharyn O'Halloran, *Delegation Power: A Transaction Cost Politics Approach to Policy Making under Separate Powers* (New York: Cambridge University Press, 2000).

9) Matthew D. McCubbins, "Government on Lay-Away: Federal Spending and Deficits Under Divided Party Control," in *The Politics of Divided Government*, ed. Gary W. Cox and Samuel Kernell (Boulder: Westview Press, 1991), 113-153.

10) James E. Alt and Robert C. Lowry, "Divided Government, Fiscal Institutions, and Budget Deficit: Evidence from the States," *American Political Science Review* 88 (1994): 811-28; James Poterba, "State Response to Fiscal Crisis: The Effects of Budgetary Institutions and Politics," *Journal of Political Economy* 102 (1994): 799-821.

11) John J. Coleman, "Unified Government, Divided Government, and Party Responsiveness," *American Political Science Review* 93 (1999), 821-835.

12) Gregory Thomson, "Divided Government and the Passage of Partisan Legislation, 1947-1990," *Political Research Quarterly* 51 (1998): 751-764.

13) M. Stephen Weatherford, "Responsiveness and Deliberation in Divided Government: Presidential Leadership in Tax Policy Making," *British Journal of Political Science* 24 (1993): 1-31.

14) Sean Q. Kelley, "Divided We Govern? A Reassessment," *Polity* 25 (1993a);

enactment must simultaneously satisfy both of Mayhew's standards of *Sweep I* and *Sweep II* and not just one of them. If we adopt this new standard, unified government shows better legislative productivity. George C. Edwards, Andrew Barrett, and Jeffrey Peake argue that legislative productivity should also take into account how many potentially important bills fail to be enacted; according to this criteria, potentially important legislation fails more often under divided government than unified.<sup>15)</sup> Binder develops a measure of the legislative agenda and finds that failure of agenda items is significantly more likely in divided government.<sup>16)</sup>

Despite the sheer volume of studies favoring unified government, however, no study directly disputes Mayhew's empirical analysis. Moreover, no one provides a theoretical explanation as to why unified government should produce more important enactments. In this paper, I show that unified government produced a "greater number" of important enactments. I will also offer a theoretical explanation as to why unified government should be more productive in this manner. The theoretical model, in fact, is a modification of the gridlock model, as I will show later.

## 2. Gridlock Model and Its Assumptions

The Median Voter Theorem emphasizes that a policy (namely,

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475-84; Sean Q. Kelly, "Response: Let's Stick with the Larger Question," *Polity* 25 (1993b): 489-90.

15) George C. Edwards, Andrew Barrett and Jeffrey Peake, "The Legislative Impact of Divided Government," *American Journal of Political Science* 41 (1997): 545-563.

16) Sarah A. Binder, "The Dynamics of Legislative Gridlock, 1947-1996," *American Political Science Review* 93 (1999), 519-533.

legislation or enactment) will represent the median voter's preference. However, the U.S. law-making process is substantively different from this representation. The filibuster rule in the U.S. Senate allows a minority to block a bill with 40 votes; more than 60 votes are then necessary to terminate the filibuster. The president also has veto power while two thirds of the Senate can collaborate to override this veto. Thus, at least 60 Upper House votes are needed for any legislation to pass—meaning that an enacted policy may not represent the median voter's preference.

Krehbiel is the first to incorporate the supermajority rules into the formal model. To wit, assume the locations of pivotal players as shown in Krehbiel's book.<sup>17)</sup> There are four pivotal players: a conservative president ( $p$ ), a veto overriding-senator ( $v$ ), a median senator ( $m$ ), a liberal filibuster pivot ( $f$ ). Their ideal points (ideological preferences) are plotted on the horizontal axis from left to right, with left being most liberal and right being most conservative. The horizontal coordinate of the thick line represents the Status Quo locations of policies and the vertical one represents how they will be changed with the distribution of pivotal players.

For example, if a SQ belongs in the interval I, the policy will be considered too liberal even by the liberal filibuster pivot and it will be changed to represent the preference of the median senator. This is why the vertical-axis value is " $m$ " for all the SQs belonging to interval I.

Interestingly, policies whose SQs are located between  $f$  to  $v$ , e.g.

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17) Krehbiel, *Pivotal Politics*, 35.

interval III, will not be changed at all. The SQs between the liberal filibuster pivot ( $f$ ) and the median voter ( $m$ ) cannot be changed because the median wants to move the SQ closer to  $m$  but the liberal filibuster pivot ( $f$ ) will be compelled to use the filibuster. The SQs between  $m$  and  $v$  cannot be changed either because  $m$  wants to move it to the left, ie. closer to herself, but  $p$  will veto such movement and the override player ( $v$ ) will stand with the president. Krehbiel dubs this interval the gridlock interval. In Figure 1, the gridlock interval is from  $f$  to  $v$ , e.g. interval III.<sup>18)</sup> Thus if the SQ is in the gridlock interval, the SQ will not be changed. More importantly, this figure clearly shows that the legislative productivity is directly associated with the size of the gridlock interval.

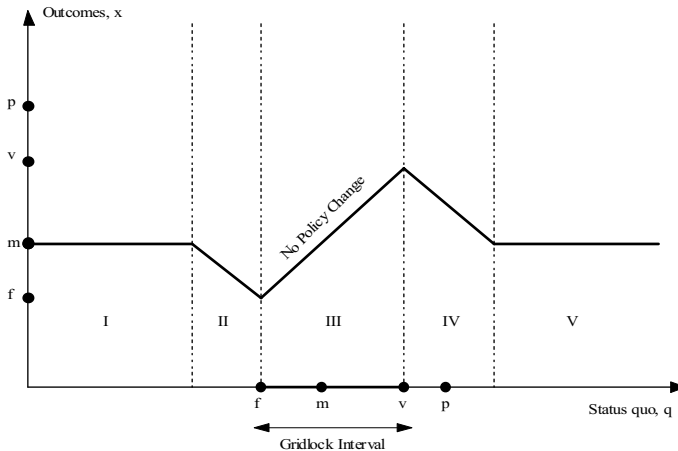


Figure 1. The (Static) Gridlock Model

18) Depending on the locations of pivotal players, the gridlock interval can be the distance from the filibuster pivot to the president or between the two filibuster pivots.

On the other hand, a quasi-dynamic gridlock model, which traces changes in the gridlock interval over time, shows why the gridlock model justifies Mayhew's finding. Again, for illustration, I will depend on Krehbiel's example of enactments during the Carter through the Clinton administrations.<sup>19)</sup> Krehbiel allows the SQ locations during the start of the Carter administration to be anywhere. That is, the policy could be very liberal, moderate, very conservative or whatever. The Carter administration, consisting of a unified government and a liberal president, will move the SQs into the interval between  $p1$  to  $f1$  (see Figure 2). Accordingly, the SQs of the policies will be more centered than they were previously. In the Reagan and Bush administrations—divided governments with conservative presidents—liberal policies will be changed into more moderate ones. Accordingly, the SQs will be funneled into the narrower interval between  $f2$  and  $f1$ . However, during the Clinton administration, the SQs will remain stationary as they had been already moved inside the gridlock interval—recall that the policies trapped within the gridlock interval cannot be changed as we saw before. Therefore, for the Clinton administration, regime type would have little to no effect on the possibility of policy change. This is also true for the administrations after the Clinton administration. As the SQs have been already funneled into a tight interval that is smaller than the gridlock interval, even if a unified government has a smaller gridlock interval than a divided government, more policy changes (namely, more enactments) will not result.

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19) Ibid., 41.



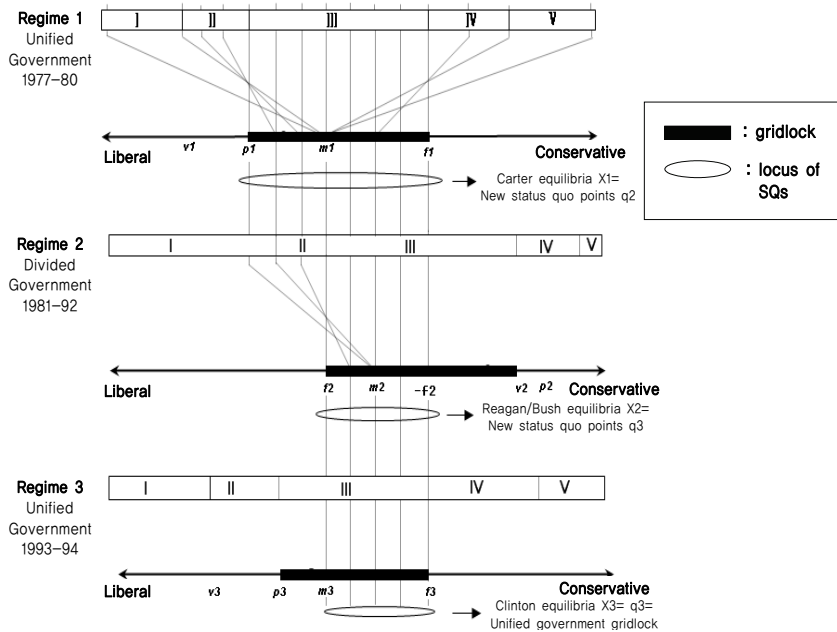


Figure 2. Quasi-Dynamic Gridlock Model

The quasi-dynamic gridlock model has no logical flaws. In developing his logic, however, Krehbiel implicitly assumes that all legislative bills are deliberated during the first Congress (the Carter administration in his example) and will be enacted. He does not think about new legislative bills that did not exist in the first Congress but are needed later due to social, economic, or political changes or technical or scientific developments. Who could have imagined in the 1980's the need for a stem-cell research bill, which has been a hot issue with recent administrations? Let's call this kind of enactment "brand-new," while the ones in the Figure 2 will be called "recurrent" enactments.

As brand new enactments were not passed by any of the previous administrations, the SQs of new enactments need not be trapped in the interval in which the SQs of the recurrent enactments were placed. Accordingly, the gridlock interval size matters to this kind of enactment, though it does not to the recurrent enactments which have already been funneled into a narrow interval smaller than the gridlock interval. If the SQ of a brand-new bill is outside the gridlock interval, it will be enacted. If the SQ of it is inside the gridlock interval, it will not be enacted.

Furthermore, we can easily infer that the unified government will have a smaller gridlock interval than will a divided government. This is because the filibuster pivot will be closer to the president under a unified government; by contrast, a divided government will have a greater number of senators of the opposite party. That is, the filibuster pivot in a unified government ( $f_3$ ) should be closer to the president than her counterpart in a divided government ( $f_3^d$ ), as represented in Figure 3. This difference in the two possible gridlock intervals does not matter for the recurrent bills that are supposed to be already trapped in an interval smaller than either of the two possible gridlock intervals. However, the difference is critical to the enactment of brand new bills. If the SQ of a new bill is located between  $f_3$  (filibuster pivot in a unified government) and  $f_3^d$  (filibuster in a divided government), the bill will be enacted only if the regime is one of unified government. These newly proposed bills will thus enjoy a higher chance of being enacted depending on whether they are introduced under a divided or unified government.

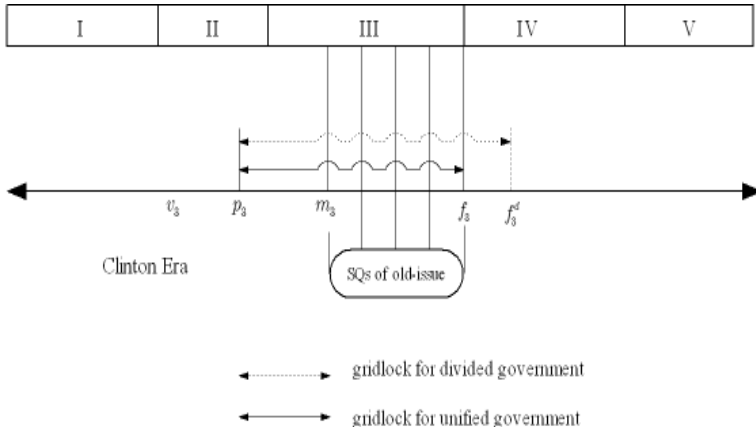


Figure 3. The Locations of the Filibuster under Divided and Unified Government

A good example is the NAFTA bill, which was passed in 1993 under the Clinton administration. In any meaningful sense, NAFTA was unimaginable during the Carter administration. We cannot find any evidence that the Carter administration and its Congresses seriously deliberated on such an enactment. However, social and economic changes resulted in the need for NAFTA during the Clinton administration. It was enacted by a unified government after a long discussion. The Senate voting record shows that 61 Senators voted for NAFTA while 38 senators opposed it and one was absent. Considering the fact that it collected only as many votes as was needed to invoke cloture, the NAFTA could not have been passed in 1993 if there was a divided government with a bigger gridlock interval.

Thus, the gridlock model suggests that unified government should produce more brand-new enactments although not more recurrent

enactments. I will show, in the next section, that empirical analyses of the post-World-War-II enactments strongly support my interpretation.

### 3. Data

To check the validity of my interpretation of the gridlock model, I turn to Charles Cameron's dataset.<sup>20)</sup> This dataset classifies all enactments from 1945 to 1993, which makes it the most comprehensive dataset on legislative productivity. For this reason, Krehbiel also uses this dataset in his book.<sup>21)</sup> According to their importance, the enactments in Cameron's dataset are classified into 4 categories: **Group A**, **B**, **C**, and **D**. The descriptions for the categories are as follows: **Group A** or Landmark enactments: Mayhew's Sweep One public laws (226 enactments); **Group B** or Major enactments: all other public laws mentioned in either *The New York Times* or *The Washington Post* and receiving greater than or equal to six pages in coverage in the *CQ Almanac* (292 enactments); **Group C** or Ordinary enactments: all other public laws mentioned in the *CQ Summary*; and **Group D** or Minor enactments: all remaining public laws, including commemorative legislation.

Here only **Groups A & B** are of interest because **Groups C & D** are not important enactments at all. I include **Group B** as they seem important. Furthermore, only 4.3 bills that fall into **Group A** are passed each year. It is hardly believable that the members of Congress only pay attention to such a small number of bills each

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20) Cameron, *Veto Politics*.

21) Krehbiel, *Pivotal Politics*. For details on data collection procedure, coding, and other topics, please refer to Cameron, *Veto Politics*.

year. As such, it makes more sense to say that *Groups A & B* should together form the enactment category relevant to us here. Other studies also consider both *Groups A & B* as important enactments.<sup>22)</sup>

I re-classify the enactments into two categories, brand-new vs. recurrent. The reclassification is straight-forward as the dataset is already classified into four categories: *Enactment type 0*, *1*, *2*, and *3*. Their meanings are as follows: *Enactment type 0* categorizes an appropriation enactment, *Enactment type 1* a re-authorization enactment, *Enactment type 2* a new authorization enactment, and *Enactment type 3* all other enactments, such as pay raises, increases in the debt ceiling and so on. *Enactment type 0*, *1*, and *3* are merged to create the recurrent enactment category. *Enactment type 0* represents appropriation enactments that recur annually. *Enactment type 1* is made up of re-authorization enactments (e.g. treaty renewal). Therefore, by definition these two types should be classified as recurrent. After looking at the content of each enactment belonging to *Enactment type 3*, I classify them as recurrent enactments. It should be clear why I classify *Enactment type 2* as brand-new. Table 1 represents the tabulation of *enactment type* by importance of enactment.

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22) eg. William Howell, Scott Adler, Charles Cameron, and Charles Riemann, "Divided Government and the Legislative Productivity of Congress, 1954-1994," *Legislative Studies Quarterly*, 25 (2000): 285-312.

Table 1. Number of Enactments by Their Type (average per session)

Enactment Type	Group A Landmark Bills	Group B Major Bills
<b>Type 0: Appropriation (Recurrent)</b>		
Divided (14 times)	2 (0.14)	56 (4.00)
United (11 times)	1 (0.09)	27 (2.45)
Total	3	83
<b>Type 1: Reauthorization (Brand-New)</b>		
Divided (14 times)	7 (0.5)	26 (1.86)
United (11 times)	3 (0.27)	20 (1.82)
Total	10	46
<b>Type 2: New Authorization (Recurrent)</b>		
Divided (14 times)	104 (7.42)	76 (5.43)
United (11 times)	109 (9.91)	79 (7.18)
Total	213	155
<b>Type 3: Others (Recurrent)</b>		
Divided (14 times)	0	3 (0.21)
United (11 times)	0	5 (0.45)
Total	0	8

Notes: Total number of bills. Average number per session is in parenthesis.

In *Group A*, the number of the brand-new (*enactment type 2*) enactments per session of a divided government is 75% of that of a unified government (see Table 1). In *Group B*, it is 76% of that of a unified government. Accordingly, unified government consistently shows its superiority in legislative productivity for brand-new

enactment in both *Groups A* and *B*. However, this is not the case for recurrent enactments. Namely, in *enactment types 0, 1, and 3*, unified government does not show higher productivity than divided government. More importantly, the majority of the important enactments made is brand-new (almost all of *Group A* and about half of *Group B*). Accordingly, though it is not unreasonable to simply say that unified government has a higher legislative productivity, its superior productivity is confined only to brand-new enactments.

#### 4. Statistical Analysis

##### 4.1 Static Analysis

To verify the impression from the tabulation, regressions are run. Before reporting the results of statistical analyses, I want to mention some methodological issues raised by Howell et al.<sup>23)</sup> They point out that legislative data is a unit-root nonstationary process and therefore Mayhew's OLS analysis of legislative data is methodologically incorrect. Furthermore, legislation provides event-count data, which makes poisson regression more suitable than OLS.

Because OLS does not hold up well for unit-root nonstationary processes, I investigated whether the legislative data still remains unit-root nonstationary after the dichotomization. To check, I used ACF & PACF plots as well as the well-known (Augmented) Dickey-Fuller tests.<sup>24)</sup> Additionally, Phillips-Perron and DF-GLS unit-root tests

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23) Ibid.

24) Peter J. Brockwell and Richard A. Davis, *Introduction to Time Series and Forecasting*, 2nd ed. (New York: Blackwell, 2002).

were also used. The Phillips-Perron test accounts for heteroskedasticity in a time series and the DF-GLS has better power than the standard ADF test. Because every unit-root test has its own pros and cons, using various unit-root tests together is important to obtain a reliable result.

Results of the various unit-root tests are conflicting. Whereas the ADF and Phillips-Perron tests strongly imply that both brand-new and recurrent bill series are stationary, the DF-GLS test, which is known to have higher power than the ADF test, indicates that all of the series are non-stationary.

Table 2. Results of Unit-Root Test Results

Variables	ADF (p-value)	DF-GLS <sup>1</sup>	Phillips-Perron <sup>2</sup>
<b>Brand-New</b>			
Group A	-2,908**	-1,905	-2,919**
Group B	-2,581*	-1,496	-2,627*
<b>Recurrent</b>			
Group A	-3,241**	-2,215	-3,241**
Group B	-3,436***	-2,208	-3,408***

Notes: \* =  $p < .1$ ; \*\* =  $p < .05$ ; \*\*\* =  $p < .01$ ; <sup>1</sup>) To choose the lag length, MAIC is used rather than SIC. Look at the appendix for details; <sup>2</sup>)  $Z(t)$  values are reported.

The mixed results make it unclear whether or not we should difference the data to make it stationary. The results of unit-root tests, however, are not important as long as we use poisson regression for the data analysis. The spurious regression problem is found only when we use OLS for time series. Because poisson regression is a non-linear regression technique, the concept of stationarity is totally irrelevant to poisson regression.<sup>25)</sup> Thus, once



we decide to use poisson regression, we do not need to worry about the stationarity of the time series used in the analysis.

One thing should be pointed out about Howell et al's analysis. There are two different concepts of non-stationarity in time series: trend and difference non-stationarity. Trend nonstationary series can be made stationary by removing the deterministic time trend from the series, which is usually done by including time variables. Difference non-stationarity can be made stationary only by differencing, which means subtracting the value of the  $(t - 1)^{\text{th}}$  observation from the value of  $t^{\text{th}}$  observation. Usually non-stationarity means "difference non-stationarity" not "trend non-stationarity." The unit-root tests are designed to detect difference non-stationarity in a time series. It seems that Howell, et al are confused about trend non-stationarity and difference non-stationarity when they include the linear and quadratic time variables in their model to handle non-stationarity. Non-stationarity cannot be removed by including the trend variables. Therefore, including time variables in their model does not make a difference nonstationary series become stationary. Instead, inclusion of the time variables in their model eliminates auto-correlation in the data. Accordingly, inclusion of the time trend variables is helpful in avoiding the serial correlation problem but not the issue of non-stationarity.

Although I will report the negative-binomial regression results later, to make the comparison with Howell, et al's, I here report the results

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25) Kedem, Benjamin and Konstantinos Folkianos, *Regression Models for Time Series Analysis* (New York: John Willey & Sons, 2002). Thanks to Konstantinos Fokianos for illuminating this point to me.

obtained from robust poisson regression. For regression model settings, I reproduce the regressions in Howell, et al. As you can see from Table 3, the findings strongly support my re-interpretation. While the  $p$ -values of the unified government variable in the recurrent enactments in both **Groups A** and **B** are far from being significant, the  $p$ -values of the unified variables in the brand-new enactments in both **Groups A** and **B** are statistically significant at the .05 level.

Table 3. Robust Poisson Regression Results

Variable	Group A Brand-New	Group A Recurrent	Group B Brand-New	Group B Recurrent
<b>Unified</b>	.379 <sup>***</sup> (.128)	.567 (.490)	.398 <sup>**</sup> (.192)	-.099 (.207)
<b>Time</b>	.130 <sup>***</sup> (0.033)	.034 (.147)	.197 <sup>***</sup> (.071)	.153 <sup>***</sup> (.052)
<b>Time<sup>2</sup></b>	.004 <sup>***</sup> (.001)	-.001 (.005)	-.006 <sup>***</sup> (.002)	-.004 <sup>**</sup> (.001)
<b>Constant</b>	1.185 <sup>***</sup> (.254)	-1.156 (.992)	.459 (.484)	.708 <sup>**</sup> (.358)
<b><i>N</i></b>	25	25	25	25
<b>Log-Likelihood</b>	59.94	-22.39	-64.59	-56.01
<b>Wald <math>\chi^2(3)</math></b>	21.26	1.39	11.97	18.68

Notes: \*\* =  $p < .05$ ; \*\*\* =  $p < .01$ ; Standard Errors are in parenthesis.

One significant critique of Howell's analysis is the possibility of over-dispersion. Negligence of over-dispersion can lead to bias for rejection of the null hypothesis. Namely,  $p$ -values will be deflated to accept a relationship between the regressor and regressand. For this reason, conducting an over-dispersion test after poisson regression is mandatory. As it so happens, Howell et al's data *is* over-dispersed.

Therefore, using poisson regression results would be misleading.

To better address this problem, a negative binomial regression model is used in this paper. The results reported in Table 6<sup>26)</sup> are that the unified government variable is still significant at the .05 level for the brand-new bills although it is insignificant for recurrent bills. Thus, the previous findings from other regressions are confirmed.

Table 4. Negative Binominal Regression Results

Variable	Group A Brand-new	Group A Recurrent	Group B Brand-New	Group B Recurrent
<b>Unified</b>	.379*** (.143)	-.567 (.629)	.441** (.225)	-.099 (.184)
<b>Time</b>	.130*** (.042)	.033 (.171)	.193*** (.064)	.153 (.057)
<b>Time<sup>2</sup></b>	-.004*** (.001)	-.001 (.006)	-.006*** (.002)	-.004 (.002)
<b>Constant</b>	1.185*** (.287)	-.588 (1.070)	.431 (.447)	.708 (.393)
<b>N</b>	25	25	25	25
<b>Log-Likelihood</b>	-59.94	-22.38	-63.28	-56.016
<b>LR chi<sup>2</sup> (3)</b>	12.67	1.00	9.49	10.00

Notes: \*\*= $p < .05$ ; \*\*\*= $p < .01$  level; Standard Errors are in parenthesis.

Before moving to the next topic, one interesting observation is that Mayhew's finding does not seem to occur due to his usage of OLS,

26) Another way to deal with over-dispersion is to use a Quasi-Maximum Likelihood Estimate (See Jeffrey M. Wooldridge, *Econometric Analysis of Cross Sectional and Panel Data* [Boston: The MIT Press, 2001]). Although they are not reported here, the results of QMLE are essentially the same as those of negative binomial regression.

as Howell et al criticized. Table 5 shows the results of robust Poisson regression and negative binomial regression with Mayhew's data. As you can see, the model specifications are the same as that of Howell et al. Table 5 shows that the unified government predictor in any model is statistically non-significant, just as Mayhew found with the OLS analysis. Unlike the argument of Howell et al, Mayhew's findings do not therefore result from the misuse of OLS. As long as we use Mayhew's standard of important enactments, we will get the same findings as Mayhew.

Table 5. Poisson and Negative-Binomial Regression with Mayhew Data

Variable	Robust Poisson Coefficient p-value	Negative Binomial Coefficient p-value
<b>Unified</b>	.031 (.156)	.838 (.146)
<b>Time</b>	.168 (.053)	.002 (.048)
<b>Time<sup>2</sup></b>	-.007 (.002)	.001 (.002)
<b>Constant</b>	1.718 (.308)	.000 (.267)
<b>N</b>	22	22
<b>Log-Likelihood</b>	-60.44	-60.24
<b>Wald <math>\chi^2</math> (3)</b>	12.26	9.60

Howell et al's critique of Mayhew's usage of OLS does not seem appropriate. Mayhew's findings may be misleading not because he used an inappropriate statistical method (OLS), but because he did not appropriately account for the two different categories of enactments.

#### 4.2. Dynamic Analysis (Time Series Analysis)

Because the legislative data is essentially a time series, we may need to do time series analysis on the data. Although the series of interest has a poisson distribution, there is no standard poisson time series model agreed upon by econometricians. Time series models for count data are in their infancy, yet a remarkably large number of models dealing with it have been developed. The list of time series models developed for count data includes INARMA models, AR models, Serially Correlated Error Models, State-Space Models, Hidden Markov Models, Discrete ARMA Models and so on.<sup>27)</sup> In this paper, Zeger's simple log-linear AR(1) approach is used.<sup>28)</sup>

The time series analyses essentially reconfirm the finding that the unified government variable is statistically significant only for brand-new enactments. However, the  $p$ -value for **Group B** increased somewhat to .084. Thus it is not significant at the .05 level any more. Considering the small sample size, this moderate increase in  $p$ -value seems quite acceptable.<sup>29)</sup>

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27) Colin A. Cameron and Pravin K. Trivedi, *Regression Analysis of Count Data* (New York: Cambridge University Press, 1998).

28) S.L. Zeger, "A Regression Model for Time Series of Counts," *Biometrika* 75 (1988): 621-629.

29) One caveat should be mentioned at this point. The legislative productivity time series has just 25 observations. Time series regression requires quite a large sample size and 25 observations are too few for time series regression by any standard. With such a small sample size measuring legislative productivity, no time series model is able to give a reliable result. Furthermore, the static models show no serial correlation after including Time and Time<sup>2</sup> as regressors. Therefore, the results of this dynamic analysis should be considered supplementary to the static analyses.

Table 6. AR(1) Log-linear Time Series Regression Results

Variable	Group A Brand-New	Group A Recurrent	Group B Brand-New	Group B Recurrent
Unified	.321** (.154)	-.206 (.276)	.480 <sup>1</sup> (.277)	-.209 (.340)
Lagged Dependent	.503** (.215)	.318 (.208)	.444** (.225)	.241 (.287)
Constant	2.026*** (.140)	1.612*** (.213)	1.576*** (.231)	1.835*** (.241)
<i>N</i>	25	25	25	25
Log-Likelihood	-6.54	-22.44	-21.30	-18.26
Wald $\chi^2(2)$	9.02	4.36	5.52	0.86

Notes: \*\*= $p < .05$ ; \*\*\*= $p < .01$ ; 1)  $t$ -statistics = 1.73,  $p$ -value = 0.084

## Conclusion

I show that the modified gridlock model implies the conditional superiority of unified government in producing major enactments. The empirical analyses verified that unified government produced more brand-new enactments but not recurrent as the modified gridlock model predicts. The implication of the modified gridlock model for the debate on the legislative productivity of divided government is straight forward. Both traditionalists and revisionists are partially right and partially wrong about their argument. However, about 75% of the important enactments happen to be brand-new. Thus it can be said that divided government reduces legislative productivity.

More importantly, the modified gridlock model predicts which policy area will have legislative delays during a divided government. The recurrent enactments will not be affected by having a unified

government. However, if a brand-new policy is to be enacted, it will greatly benefit from being proposed under a unified government. Therefore, an administration that wants to adopt new policies will benefit from having a unified government.

Implications of this study for other presidential democracies are quite obvious. Although these countries do not have the filibuster rule, they give veto power to their president. The gridlock interval therefore exists in these countries too and the gridlock interval will be from the median legislator to the president. Therefore, these countries have the same kind of problem as the United States; some important and new policies will not be enacted under divided government.

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**Abstract****Divided Government and Legislative Productivity****Jee-Kwang Park**

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Debate surrounding the role of divided government has dominated the study of the American political system since the 1980s. However, the biggest question on divided government has yet to be settled: whether divided government significantly decreases legislative productivity, which is measured as the number of important enactments. The traditional view of divided government is that it is less productive than unified government. David R. Mayhew, however, challenges the traditional view with a comprehensive analysis of the post-WWII enactment. Moreover, Keith Krehbiel justifies the Mayhew's findings with his gridlock model.

Despite the sheer volume of studies favoring unified government, however, no study directly disputes Mayhew's empirical analysis. Moreover, no one provides a theoretical explanation as to why unified government should produce more important enactments. In this paper, I provide both a theoretical model and empirical analyses for the legislative superiority of unified government. I show that my modified gridlock model implies the conditional superiority of unified government in producing major enactments. The empirical analyses verified that unified government produced more brand-new enactment but not recurrent as the modified gridlock model predicts.

**Key Words**

American Politics, Presidency, Divided Government, Congress