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EMPIRICAL TESTS FOR MIDNIGHT REGULATIONS AND THEIR EFFECT ON OIRA REVIEW TIME

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Empirical Tests for Midnight Regulations and Their Effect on OIRA Review Time

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ABSTRACT

The midnight regulations phenomenon—an increase in the rate of regulation promulgation during the final months of an outgoing president’s term—is empirically tested using OIRA data on the number of economically significant regulations reviewed each month. Submissions of economically significant regulations to OIRA are found to increase by about 7 percent during midnight periods. Spikes in regulatory activity, such as those of midnight periods, are shown to decrease the average amount of time regulations are under review at OIRA, perhaps because of budget and staff limitations at OIRA. Evaluated at the mean, one additional economically significant regulation submitted to OIRA decreases the mean review time for all regulations by about half a day. If OIRA review improves the quality of regulations, then any phenomenon such as midnight regulations that leads to spikes in regulatory activity that decreases in average review time could result in the occasional proliferation of low-quality regulations.

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1. Introduction

Midnight regulations are federal regulations passed during an outgoing president's term between Election Day and the inauguration of the next president. The term "midnight regulations" was coined after the regulatory outburst at the end of the Carter administration set a record for the number of pages added to the *Federal Register* (in which all federal regulatory activity is published) during an outgoing president's lame-duck period, with 24,531 pages.² Since then, outgoing presidents have continued to add pages to the *Federal Register* at higher rates during the midnight period—the period between Election Day and Inauguration Day of an outgoing president—than at other times in their presidencies.

Although the term "midnight regulations" has been around for decades and the phenomenon has received attention by researchers and media alike, there exists no straightforward, empirical test for whether there actually is a spike in regulatory activity during the midnight period. Optimally, researchers would simply track the total number of regulations created by federal agencies during midnight and non-midnight periods, but such data are not tracked or available. Instead, researchers have relied on the number of pages added to the *Federal Register* as a proxy for regulatory output in a given time period. Cochran (2001), Davies and de Rugy (2008), and Brito and de Rugy (2008) all have presented evidence that the average number of regulations created during the

² Dudley, Susan. "Reversing Midnight Regulations." *Regulation Magazine*, Spring 2001. Available online: <http://www.cato.org/pubs/regulation/regv24n1/dudley.pdf>.

Davies, Antony and Veronique de Rugy. "Midnight Regulations: An Update." Mercatus Center at George Mason University Working Paper No. 08-06, 2008. Available online: http://www.mercatus.org/repository/docLib/20080403_midnightregulations_final.pdf.

Bruto and de Rugy. "Midnight Regulations and Regulatory Review." Mercatus Working Paper.

midnight period greatly exceeds the number created during non-midnight periods.³ Both Cochran (2001) and Davies and de Rugy (2008) empirically verified the midnight regulations phenomenon, defined here as a statistically significant increase in the number of regulations created during the midnight period relative to non-midnight periods, by using the aforementioned variable, the number of pages added to the *Federal Register* in that time period, as a proxy for the number of regulations created in a given time period. Although the monthly rate of pages publication in the *Federal Register* seems quite likely to increase as more regulations are created in that month, there might be other factors that could cause increases in the number of pages published in a given month. For example, instances of deregulation are published in the *Federal Register*, and lengthier individual regulations could increase the rate of page addition without actually increasing the rate of regulation promulgation. Because of these possibly confounding factors, the rate of page publication in the *Federal Register* may not serve as the best possible proxy for actual regulatory output.

In this paper, I add to the existing literature on federal regulations by using new proxies and data to test for increases in rulemaking during midnight periods. I also identify and test for a potential consequence of spikes in regulatory activity, such as those associated with midnight regulations: overwhelming the institutional regulatory review process.

Rather than rely on *Federal Register* pages as a proxy for regulatory output, I examine the relation between midnight periods and economically significant regulations, which are defined as regulations that will have more than \$100 million in impact on the

³ Cochran, Jay. "The Cinderella Constraint: Why Regulations Increase Significantly During Post-Election Quarters." Mercatus Center at George Mason University Working Paper, 2001. Available online: http://www.mercatus.org/publications/pubID.4198,cfilter.0/pub_detail.asp.

economy.⁴ Various executive orders have obligated the Office of Information and Regulatory Affairs (OIRA) to review all economically significant regulations produced by executive branch agencies.⁵ If there is a dramatic increase in overall rulemaking during the midnight period, then it stands to reason that the number of economically significant rules reviewed by OIRA would increase during the midnight period compared to any other period. The results presented in this paper are consistent with the midnight regulations phenomenon pointed out by previous researchers.

Midnight regulations are often criticized for several reasons. Primary among these reasons is a lack of accountability.⁶ Lame-duck administrations need not worry about pleasing the electorate or gaining Congress's cooperation. As a result, the administration is free to pursue regulatory policies that, in other circumstances, might have invited retaliation.⁷ Similarly, because midnight regulations occur after an election, any regulatory actions taken by the lame-duck administration may run counter to the will of the electorate as voiced through the election process. As such, midnight regulations are sometimes viewed as "undemocratic."⁸

Midnight regulations, and spikes in regulatory activity in general, pose another potential problem: They could overwhelm the institutional review process.⁹ Because of the increase in regulations created in the midnight period, midnight regulations may

⁴ Reagan's Executive Order 12291 established OIRA's role as administrative reviewer of federal regulations. It required regulatory impact analyses to be prepared for "major rules," but left some flexibility in the definition of "major rule." (See Brito and de Rugy, 2008; *supra note 2*) Executive Order 12866, September 30, 1993, clearly established the definition of "major rule" as a regulation that might "have an annual effect on the economy of \$100 million or more."

⁵ For example, see Executive Order 12866. Available online at: <http://www.whitehouse.gov/omb/inforeg/eo12866.pdf>

⁶ Brito and de Rugy, *supra note 2*.

⁷ Morrow, William S. "Midnight Regulations: Natural Order or Disorderly Governance." *Admin. & Reg. L. News, Spring 2001*

⁸ Brito and de Rugy, *supra note 2*.

⁹ This potential problem was identified in Brito and McLaughlin, "Midnight regulations and regulatory review." *Regulation Magazine*, forthcoming, as well as in Brito and de Rugy, *supra note 2*.

receive less scrutiny from the agencies that produce them, the federal agency tasked with reviewing them (Office of Information and Regulatory Affairs, or OIRA), and the public in general. This paper focuses on testing whether the regulatory review process could be hampered because OIRA becomes overloaded with rules to review during midnight periods, even while staff and budgeting at OIRA do not expand to accommodate the increased burden.¹⁰

In this paper, I test whether economically significant regulations passed in the midnight period are reviewed by OIRA for a shorter time period than economically significant regulations promulgated during non-midnight periods. I also test whether an increase in regulatory activity in general causes a decrease in average review time at OIRA. The results indicate not only that economically significant regulatory activity increases during midnight periods but also that periods of high regulatory activity, such as midnight periods, lead to decreases in average review time at OIRA. Specifically, I find that one additional, economically significant regulation submitted to OIRA decreases the mean review time for all regulations reviewed by OIRA by about half a day. Part of this finding is attributable to the increase in the number of regulations submitted to OIRA, the reviewing agency, during midnight periods.

2. Background

The most basic test of the midnight regulations phenomenon is determining whether there is an actual increase in new regulations promulgated during midnight periods vis-à-vis non-midnight periods. Previous studies examining whether there were more regulations passed in the midnight period than other periods have relied on the

¹⁰ Ibid.; Brito and de Rugy, *supra note 2*.

number of pages added to the *Federal Register* in a given time period as a proxy for the number of regulations created in that period. Both Cochran (2001) and De Rugy and Davies (2008) found that the rate of adding pages to the Federal Register increases on average by 17 percent during the midnight period compared to the average of the rest of the year.

Until now, the rate of page publication in the *Federal Register* remained the only variable used by researchers to proxy for the actual number of regulations created in a given time period. Because the rate of page publication in the *Federal Register* could increase in cases of deregulation or lengthier individual regulations, giving the appearance of a growth in regulatory activity when in fact there was none, I present alternative proxies for the number of regulations created. These new proxies are the total number of economically significant regulations reviewed by OIRA in a given time period and the ratio of economically significant regulations reviewed by OIRA to the total number of regulations reviewed by OIRA in a given time period.

These proxies allow further testing for the existence of the midnight regulations phenomenon. Data on the number of economically significant rules submitted to OIRA in a given time period allow a direct test of a variant on the midnight regulations phenomenon: that more economically significant rules are created during midnight periods than during other periods. Additionally, the number of economically significant rules submitted to OIRA in a given period may serve as a proxy for the total number of rules created in a given period that, unlike pages in the *Federal Register*, is not obscured by confounding phenomena such as pages created due to deregulation or to lengthier regulations. The other proxy—the ratio of economically significant regulations to the all

regulations submitted to OIRA in a given time period—captures two separate, possible consequences of spikes in regulatory activity. The first of these is that during spikes in rulemaking the number of economically significant rules submitted to OIRA will likely increase; if this occurs, the ratio’s numerator would increase. The second is that during spikes in rulemaking, OIRA might choose to classify fewer rules as “significant” than it would otherwise.¹¹ OIRA might do this in order to free up reviewers to review economically significant rules, rather than significant rules. If this occurs, the ratio’s denominator would decrease. Both of these actions at OIRA would indicate an overwhelming of OIRA’s capabilities and are captured in this ratio.

Additionally, it is possible that the amount of time OIRA spends reviewing rules decreases during the midnight period compared to other periods. OIRA has a relatively constant operating budget and staff, so it seems possible that, during periods of high rulemaking volumes, OIRA cannot spend as much time reviewing each rule.¹² This paper tests whether average rule review time decreases during the midnight period, as well as whether rule review time decreases as a result of increases in the number of significant rules created in a given period. None of these tests necessarily demonstrates any relation between OIRA review time and rule quality, however quality may be defined.

3. Data

The Office of Information and Regulatory Affairs (OIRA), a part of the Office of Management and Budget, has been tasked since 1981 with reviewing the regulations

¹¹ OIRA has at least some flexibility in classifying a regulation as “significant” but none in classifying a regulation as “economically significant.” See EO 12866, Sec. 3(f), which is also addressed in Section 3 of this paper.

¹² Brito and de Rugy, *supra note 2*.

created by governmental agencies in the executive branch. Between 1981 and 1993, OIRA reviewed an average of approximately 203.5 regulations per month. From 1994 to 2007, the mean number of regulations reviewed per month fell to nearly 53.5. This decrease in regulations reviewed by OIRA is likely attributable to Executive Order 12866 (EO 12866).

Under EO 12866, all new regulations must be submitted to OIRA, but OIRA may review only “significant regulations.”¹³ A regulation can be determined to be significant by either the agency creating it or by OIRA.¹⁴ A regulation is categorized as significant if it is likely to:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- (4) Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in [EO 12866]¹⁵

Figure 1 shows that after 1993, when EO 12866 was created, the pattern of agencies’ regulation submission to OIRA for review changed drastically: The total

¹³ The White House. Executive Order 12866, Sec.6(a)(3)(A). Available online: <http://www.whitehouse.gov/omb/inforeg/eo12866.pdf>

¹⁴ Ibid.

¹⁵ EO 12866, Sec. 3(f)

number of rules submitted declined precipitously from an annual average of 1,955 to 617. As such, it may be most appropriate to examine data from years after EO 12866 was implemented (i.e., 1994–2007) separately from prior data. Data from the post-EO 12866 period (1994–2007) and the entire period (1981–2007) are described in this section, and, for robustness, some results using both data poolings are given in section 4.

OIRA’s website contains information on which rules it has reviewed, when it received those rules from regulatory agencies, when OIRA finished reviewing those rules, and when the rules were published in the *Federal Register*.¹⁶ The website also denotes which reviewed rules were economically significant, *ex ante*. The remainder of this paper refers to rules marked by OIRA as economically significant as “economically significant” and all other rules reviewed by OIRA as “significant.” Table 1 gives the numbers of economically significant and significant rules reviewed each year by OIRA as well as the mean review time in days. Figure 1 graphically depicts the total number of rules reviewed each month, and figure 2 shows the number of economically significant rules reviewed each month. In these figures, election periods and midnight periods are marked. Both election periods and midnight periods refer to the time between Election Day and Inauguration Day. An election period is defined as the time between Election Day and Inauguration Day when the incumbent has won the election, whereas a midnight period is defined as the time between Election Day and Inauguration Day after a new president has been elected. The midnight periods, therefore, occurred between the Reagan and George H.W. Bush administrations, the George H.W. Bush administration and the Clinton administration, and between the Clinton administration and the George W. Bush administration.

¹⁶ <http://www.reginfo.gov/public/do/eoHistoricReport>

The data utilized in this draft match very closely to the summary data presented by OIRA on a different section of its website. OIRA provides statistics on how many regulation reviews it completed in each month. The data used in this paper were taken from a different section of OIRA's website because the OIRA summary data include only the number of reviews completed each month and the mean review time, rather than the number of rules received each month and individual regulation review times. The data used in this draft, however, also include information on when each review was completed as well as when OIRA received it, which can be compared to OIRA summary statistics to verify their accuracy. A comparison of the summary statistics of the data used in this draft to those produced by OIRA on its website showed a few slight discrepancies; nevertheless, the summary of reviews completed each month produced by OIRA and that produced by the data used in this draft are nearly identical. Discrepancies are presently being further investigated and will be addressed in the next draft of this paper.

4. Model

Two aspects of regulatory activity during midnight periods may be empirically testable. The first is whether more regulations are created during midnight periods than during non-midnight periods. The second is the possibility that regulations created during periods of high regulatory activity, such as midnight periods, might receive less scrutiny from OIRA. If less scrutiny of a proposed regulation leads to a regulation of lower quality, however quality may be defined, then the midnight regulations phenomenon

could conceivably result in occasional proliferation of low-quality regulations that could negatively and unnecessarily affect the economy or individual liberties.¹⁷

The first hypothesis tested in this paper is whether there is a statistically significant increase in the number of regulations submitted to OIRA during midnight periods vis-à-vis non-midnight periods. Let R equal the total number of regulations submitted to OIRA in time period t . R is a function of the administration, A , the election cycle, E , and some normally distributed stochastic element, σ . The administration term captures presidents' inclination to regulate. The election cycle term, in this context, simply refers to whether an administration is in a midnight period.

$$R = f(A, E, \sigma) \tag{1}$$

Regulatory activity, and perhaps political activity in general, might systematically change according to the incentives produced by the election cycle. A broader model of actions and incentives created by election cycles might include such activities as directing government capital investment, exceeding budgetary limits, or legislative voting. This paper, however, is focused primarily on producing empirical tests of whether regulatory activity increases in midnight periods and whether midnight regulations receive less scrutiny from OIRA.

4.1 Metrics of new regulations

The measures of regulatory activity proposed here might serve as good proxies for the total number of regulations created in a given time period. Specifically, I propose two measures of regulatory activity: the number of economically significant regulations

¹⁷ Whether scrutiny of regulations is related to regulation quality remains an empirical question that I do not address in this paper.

submitted to OIRA each month, and the ratio of economically significant regulations to all regulations submitted to OIRA each month. Regardless of whether they proxy well for the total number of regulations created in a given month, these measures allow testing of the following two hypotheses:

Hypothesis 1. There are more economically significant regulations created during midnight periods relative to non-midnight periods (i.e., is the midnight regulations phenomenon real?).

Hypothesis 2. Increases in the number of economically significant regulations sent to OIRA in a given month cause the average amount of time spent by OIRA reviewing each rule to decrease.

The remainder of this subsection discusses the conditions under which the proxies of regulatory activity proposed in this paper might have high correlations with the total number of regulations created in a given time period.

Cochran (2001), de Rugy and Davies (2008), and Brito and de Rugy (2008) all have concluded that regulatory activity increases in midnight periods; each used the number of pages published in the *Federal Register* to measure regulatory activity. Pages published in the *Federal Register* might be a good proxy for regulatory activity as well as for actual regulations created. The proxy could suffer an upward bias in measuring the number of new regulations created, however, as deregulation, longer individual regulations, or other (non-regulatory) bureaucratic affairs published in the *Federal Register* would conflate into the same proxy. As alternative proxies, I use the number of economically significant rules reviewed and the ratio of economically significant rules reviewed to all rules reviewed. The first alternative proxy proposed—the number of

economically significant rules reviewed in a given period—would serve as a good proxy for the total number of rules created in that period under the following conditions:

1. The number of total rules created is directly proportional to the number of economically significant rules reviewed.
2. OIRA reviews a relatively constant percentage of economically significant rules in all time periods.
3. The total number of rules that OIRA is capable of reviewing in a given period is relatively constant across time periods.

The last two conditions are likely to be true, as explained here. The first condition seems plausible but not necessarily true.

Since late 1993, OIRA has reviewed all economically significant proposed rules under EO 12866, where economically significant rules are defined as rules that have more than \$100 million in impact. Thus, since the end 1993 at least, OIRA should have reviewed a constant percentage—100%—of economically significant rules. Also, since 1993, OIRA’s budget has remained relatively constant. Given a fairly constant budget since 1993, it seems reasonable to assume that the total number of rules that OIRA can review in any given period has remained constant, if the average time required to review an economically significant rule and to review a significant rule has also remained relatively constant across time periods. If regulations have increased in length and complexity, it is possible that the time required to review them has increased. This can be tested by examining the number of pages published in the *Federal Register* and the number of economically significant and significant rules reviewed each period, although this test might suffer from the same confounding effect of deregulatory and other

bureaucratic activity mentioned earlier. Pending data acquisition, this test will be included in the next draft of this paper.

If the average review times of economically significant and significant rules across time are not constant or indeterminable, then total economically significant rules reviewed by period might not serve well as a proxy for total new rules created in a period. Fortunately, the ratio of economically significant rules reviewed to all rules reviewed might not suffer from any bias due to changes in average rule review times because systematic changes in average rule review time should occur for both economically significant and significant rules.

The ratio of economically significant rules reviewed to all rules reviewed captures two margins in the OIRA review process that spikes in regulatory activity might change. The first is the increased regulatory review burden caused by the submission of additional economically significant rules to OIRA. This increases the numerator of the ratio. The other margin of change is in the number of other (non-economically) significant rules OIRA reviews. While economically significant rules must be reviewed by OIRA and are clearly defined as those rules that have an effect of \$100 million or more, whether other rules are significant and must be reviewed by OIRA is, to at least some degree, decided upon by OIRA.¹⁸ This flexibility allows for OIRA to choose to review less-significant rules during times when its review burden is particularly high. Thus, if there are periods where OIRA is operating at its maximum review capacity and additional economically significant rules are submitted to OIRA, OIRA may pursue two different options: Spend less time reviewing each rule in order to get more rules reviewed and choose to review

¹⁸ See Section 3 of this paper for details taken from EO 12866 on when a rule is classified as economically significant or significant.

less significant rules by simply not classifying as many rules as significant. This ratio captures both of these possible OIRA actions.

4.2 Results: Confirming the Midnight Regulations Phenomenon

Each of these proxies, total economically significant rules reviewed and the ratio of economically significant to all rules reviewed—is used to test whether more regulations are created during midnight months than other months. The first specification is:

$$ECON_SIGN_t = \beta_0 + \beta_1 MIDNIGHT_t + \beta_2 EO12866_t + \beta_x ADMIN_x + \varepsilon_t \quad (2)$$

where $ECON_SIGN$ is the number of economically significant regulations reviewed in month t , $MIDNIGHT$ is a dummy variable indicating whether month t is a midnight month, $EO12866$ is a dummy variable indicating Executive Order 12866 was in effect during month t , $ADMIN_x$ is a dummy variable for each presidential term

($ADMIN_1$ =Reagan, 1981–1984; $ADMIN_2$ =Reagan, 1985–1988; $ADMIN_3$ =George H.W. Bush, 1989–1992; $ADMIN_4$ =Clinton, 1993–1996; $ADMIN_5$ =Clinton, 1997–2000; $ADMIN_6$ =George W. Bush, 2001–2004; $ADMIN_7$ =George W. Bush, 2005–2007).

Because Executive Order 12866 was created in 1993, the set of regressions that use only data from 1994 onward will not include that term nor the pre-1993 administration dummy variables.

The econometric specification of the model using the second proxy is similar, except that the dependent variable, $SIGN_RATIO$, is the ratio of economically significant rules reviewed in period t to the total number of rules (economically significant and significant) reviewed in period t .

$$SIGN_RATIO_t = \beta_0 + \beta_1 MIDNIGHT_t + \beta_2 EO12866_t + \beta_x ADMIN_x + \varepsilon_t \quad (3)$$

The results of OLS regressions of Equations (2) and (3) are presented in tables 2, 3, 4, and 5.¹⁹ In these regressions, an observation is the monthly mean of *ECON_SIGN* in tables 2 and 3 or *SIGN_RATIO* in tables 4 and 5. Thus, there are 323 observations for the 1981–2007 period (February 1981 through December 2007), and there are 168 observations after EO 12866 (January 1994–December 2007).

All results indicate a statistically significant increase in the total number of economically significant regulations received by OIRA during midnight periods relative to non-midnight periods. Columns 1–3 of table 2 show various specifications of equation (2). The coefficient estimate on *MIDNIGHT* across all three specifications remains positive and significantly significant. The coefficient estimate is fairly consistent, ranging from 5.89 to 6.37.

Interpretation is relatively straightforward: During midnight periods between 1981 and 2007, the monthly average quantity of economically significant regulations submitted to OIRA increases by about six regulations. The mean monthly quantity of economically significant regulations submitted to OIRA over this period was about eighty-five, so during midnight periods economically significant rules submitted to OIRA increased by approximately 7 percent. These midnight period increases in submissions of economically significant regulations are probably not attributable to political party or other individual presidential characteristics, because including administration dummy variables, as in column 3 of table 2, does not change the estimate. Also, controlling for the creation of EO 12866 barely changes the estimate on the midnight regulations term.

¹⁹ Although Davies and de Rugy (2008) found that the rate of page publication in the *Federal Register* follows a unit root process, Dickey-Fuller tests rejected unit root processes for all the dependent variables used in this paper. OLS is appropriate.

Table 3 also details estimates of equation 2. The data used for table 3, however, contain only observations made from 1994–2007 (i.e., only observations made after EO 12866 was in effect), whereas those in table 2 include observations from 1981–2007. The coefficient estimates on the midnight periods variable are 7.360 without any administration dummies and 7.464 with administration dummies, and both are significant at the 1 percent level. This corresponds to an approximately 8 percent increase in economically significant regulations during midnight periods.

In table 4, regressions similar to those of table 2 are presented, except that the dependent variable is *SIGN_RATIO*, or the monthly ratio of economically significant regulations to all regulations submitted for review, as shown in equation 3. These estimates are consistent with those of table 2 and table 3. The estimates presented in table 4 show that during midnight periods, the ratio of economically significant regulations to all regulations increases. The coefficient estimates on *MIDNIGHT* are 0.0531 when not including administration dummies and 0.0464 with them, and both estimates are statistically significant at the 5 percent level or greater. The ratio could increase if either the number of significant rules submitted to OIRA increased or the total number of rules submitted decreased. Figure 1, however, shows that the total number of rules submitted to OIRA does not seem to change during midnight periods, but, as figure 2 shows, there are tremendous increases in the amount of economically significant rules submitted for review during at least two of the three midnight periods in the data. Based on the evidence of figures 1 and 2, it seems likely that the positive effect of *MIDNIGHT* on *SIGN_RATIO* is caused by an increase in economically significant rules submitted rather than a decrease in the total rules submitted. This evidence bolsters the case made through

the results of tables 2 and 3 that the number of economically significant regulations submitted to OIRA increases significantly during midnight periods.

Table 5 also contains regression results of equation (3), where *SIGN_RATIO* is the dependent variable. The data used for regressions in table 6 are from years 1994–2007 (i.e., after EO 12866 went into effect). The results are similar to those of Table 5. The coefficient estimates on *MIDNIGHT* are 0.0988 when not including administration dummies and 0.0916 with them, and both estimates are statistically significant at the 5 percent level.

Interpretation of the coefficient estimates of *MIDNIGHT* in tables 4 and 5 depends on the evidence presented in figures 1 and 2; specifically, because the dependent variable, *SIGN_RATIO*, is the ratio of economically significant rules submitted to OIRA to all rules submitted to OIRA, the coefficient estimate on the independent variable *MIDNIGHT* indicates changes in the ratio, which could mean changes in either the numerator or the denominator. Figures 1 and 2 show that any changes in that ratio that occur during midnight periods likely come as a result of increases in the numerator rather than decreases in the denominator.

The mean of *SIGN_RATIO* between 1981 and 2007 is 0.11, and that figure increases to 0.167 during the post-EO 12866 period (1994–2007). The coefficient estimate on *MIDNIGHT* presented in table 4, column 3, is 0.0464, which means that during midnight periods occurring between 1981 and 2007, the ratio of economically significant rules to all rules submitted to OIRA increased by about 42 percent. From table 5, which uses data from 1994–2007, the interpretation of the coefficient on *MIDNIGHT* in column 3, 0.0916, is that during midnight periods between 1994 and 2007, the ratio of

economically significant rules to all rules submitted to OIRA increases by about 55 percent. All of these results in tables 4 and 5 point to a marked increase in submissions of economically significant rules to OIRA during midnight periods, when combined with the evidence shown in figures 1 and 2.

4.3 Results: The effects of regulatory activity on average rule review time

It would be important to know whether increases in submission of economically significant rules lead to any change in the quality of those rules. Presumably, a major function of OIRA is to improve the quality of analyses performed by regulatory agencies. If OIRA review leads to higher quality analysis of regulations, then the amount of time OIRA spends reviewing proposed rules might serve as a proxy for regulatory analysis quality. Conversely, the amount of time OIRA spends reviewing a rule might be completely unrelated to how much OIRA's review improves the quality of the rule. To the econometrician, there is no way of knowing whether a rule that was "under review" by OIRA for twenty days was actually being worked on for twenty days or sat on someone's desk for nineteen days and was worked on for one day. Without making any assumptions about the relation between rule review time and rule quality, in this subsection I attempt to ascertain any relation between mean review time and the number of economically significant rules submitted to OIRA as well as between mean review time and the ratio of economically significant rules to all rules submitted to OIRA.

Increased submission of rules to OIRA could reduce review time, depending on OIRA's staffing and budgeting constraints. Brito and de Rugy (2008) point out that OIRA's staffing level has remained relatively constant since 1993, so it is reasonable to

assume that OIRA's review capabilities have also remained constant. According to EO 12866, OIRA has ninety days to complete its review of submitted rules, which can be extended by thirty days at OIRA's request or indefinitely at the request of the head of the submitting agency.²⁰ Thus OIRA is obligated to complete its reviews within predetermined timeframes, regardless of how many rules are submitted to OIRA or how many staffers OIRA has available to review rules. Holding staff and maximum review time constant, if OIRA ever operates at maximum review capacity, then OIRA could only review any increased economically significant rule submissions by reviewing at a faster rate—that is, by spending less time reviewing individual rules. Whether OIRA actually operates at maximum review capacity and thus must decrease the amount of time spent reviewing rules when rule submission increases is an empirical question that is not addressed here. Nevertheless, results that show that mean review time decreases when rule submission increases would be consistent with the idea that OIRA can only review a higher number of rules in a given time period if it spends less time on each rule on average.

Table 6 shows the results of regressions of monthly mean review time on the total number of economically significant rules and significant rules submitted to OIRA, as well other covariates, including midnight period and administration dummies. The analysis has been restricted to only the years 1994–2007 because of the clear definition of the obligation of OIRA created by EO 12866. The results shown in table 6 contain two important findings. The first is that mean review time decreases significantly when the number of economically significant rules submitted to OIRA increases. The second is

²⁰Office of Management and Budget. "The President: Executive Order 12866 - Regulatory Planning and Review." *Federal Register*, Oct. 4, 1993, pp. 51735 -51744.

that the midnight period that occurred in this timeframe also caused a significant decrease in mean review time. Caution should be taken in attributing causation to the second finding, because of the limited number of observations of midnight periods that occurred between 1994–2007.²¹

The first result, that an increase in total economically significant rules submitted to OIRA negatively affects mean review time, is shown in column 1. The dependent variable is monthly mean review time in all regressions in table 6. Column 1 shows that, holding the number of significant rules submitted to OIRA constant and controlling for differences across administrations, the submission of one additional economically significant rule to OIRA decreases the mean review time of all rules by -0.537 days (statistically significant at the 5 percent level). In other words, evaluated at the mean, when OIRA must review one more economically significant rule in a given month, the review time for all rules submitted to OIRA that month decreases by about half a day on average. This could occur because OIRA substitutes some reviewing capability from significant rules to the economically significant rule. Column 2 repeats the regression shown in column 1 while adding in a dummy variable for the midnight period. The coefficient estimate on economically significant rules, *ECON_SIGN*, remains negative but loses its statistical significance. Instead, *MIDNIGHT* is the only statistically significant, negative determinant of review time.

In column 2, the coefficient on *MIDNIGHT* is -25.48 and is significant at the 1 percent level. This result indicates that, when controlling for the number of economically significant and significant rules as well as differences across administrations, the mean

²¹ One midnight period occurred at the end of 2000, yielding three observations of midnight period months (November, December, and January) out of the 168 total months of 1994 - 2007.

review time decreased during the midnight period by an astonishing twenty-five days. That is a 50 percent decrease relative to the mean review time over the entire period.

Total economically significant rules submitted to OIRA might not affect review time if review time depends on both economically significant rules and significant rules. Under an assumption that OIRA operates at maximum review capacity, however, the ratio of economically significant rules to all rules submitted would capture the total reviewing burden placed upon OIRA in any particular month. This measure is used in columns 3 and 4. The coefficient estimates on *SIGN_RATIO* in columns 3 and 4 are -44.01 and -35.49, and both are statistically significant. These results indicate that an increase in the ratio causes a decrease in mean review time. The interpretation of these coefficients is that a 1 percent increase in *SIGN_RATIO* leads to a decrease in review time of about 0.35 to 0.44 days. The mean review time between 1994 and 2007 was 49.8 days, so, in percentage terms, a 1 percent increase in *SIGN_RATIO* leads to a 0.7 percent to 0.9 percent decrease in mean review time.

As explained previously, there may be some flexibility available to OIRA in determining whether to classify a rule as “significant” and therefore whether OIRA must review it. It is possible that OIRA would classify fewer rules as significant during periods of high volumes of rule submissions in order to reduce its workload and to allow reviewers to spend time reviewing economically significant rules. Such an action would show up in the data as a decrease in the denominator of the ratio. Conversely, economically significant rules are clearly defined as rules that have an impact of more than \$100 million, and, once that figure is established by a submitting agency, it seems unlikely that OIRA could decline to review the rule. If OIRA does choose to review less

significant rules when its regulatory review burden is high, that might show up as a positive coefficient estimate on the *SIGN* variable (significant rules variable) in columns 1 and 2 of table 6. That coefficient is positive in both columns, but it is not statistically significant.

Overall, the evidence appears consistent with the hypothesis that the limited resources of OIRA can be stretched by increases in the ratio of economically significant rules submitted to all rules submitted. The coefficient estimates on *MIDNIGHT* presented in table 6 should perhaps be taken with caution, because, as mentioned above, there is only one midnight period during 1994–2007. Conversely, as figure 2 shows, the number of significant rules submitted to OIRA did dramatically increase at the end of the year 2000—i.e., during the midnight period included in the 1994–2007 timeframe. Therefore, even if midnight periods do not lead to decreases in review in and of themselves, the evidence shows that the associated increase in the number of significant regulations submitted to OIRA does cause a decrease in review time. Economically significant rules may merit more review time than other rules, if the possible consequences of the economically significant rules are substantially greater. These results, however, indicate that review time decreases as the ratio increases. One possible explanation is that during periods of high volume rulemaking, such as midnight periods, there are more rules of both economic significance and non-significance submitted. Under EO 12866, OIRA must review the economically significant rules and significant rules within a constrained timeframe, so, although OIRA may possibly prefer a longer review for economically significant rules, the high volume of rules submitted requires spending less time on each rule.

5 Conclusion

It has long been contended that changes in the presidency result in outbursts of regulations from executive branch agencies—the midnight regulation phenomenon. Previous researchers have found support for the midnight regulations phenomenon by examining the rate of page publication in the *Federal Register*. As a proxy for rulemaking, however, pages in the *Federal Register* may suffer an upward bias because deregulation and lengthier regulations also increase the rate of page publication. In this paper, I introduce two alternative proxies for rulemaking: the number of economically significant rules submitted to OIRA for review each month and the ratio of economically significant rules to all rules submitted to OIRA each month. The results of statistical regressions using data from 1981–2007 and from 1994–2007 all support the existence of a real increase in economically significant rulemaking during midnight periods.

Because OIRA is tasked with reviewing all economically significant and significant regulations promulgated by executive branch agencies, dramatic increases in the number of economically significant and significant regulations sent to OIRA for review, like the spikes in regulatory activity that occur during midnight periods, could overburden the reviewing agency. After all, OIRA has a limited staff and budget, and only ninety days to complete each review. If OIRA operates near its maximum capacity for reviewing rules, then increases in the number of rules submitted to OIRA may result in two actions. First, OIRA may spend less time reviewing individual rules, in order to review more rules in a given time period. Second, it is possible that OIRA classifies rules as “not significant” that would have qualified as “significant” during times of lower reviewing burdens. I find strong support for the first possibility; holding the number of

significant rules submitted to OIRA constant, an additional economically significant rule submitted to OIRA causes the average review time for all rules to decrease by about half a day. I do not find statistically significant evidence for the second action—classifying less rules as significant than OIRA would have otherwise—but I also fail to reject the notion.

At least some of the decrease in review time caused by increases in submissions of economically significant regulations were driven by the midnight regulations spike that occurred at the end of the Clinton administration. Midnight periods themselves seem to cause a decrease in review time at OIRA—an effect that is separate from that of the increased number of economically significant regulations submitted to OIRA. Controlling for the number of economically significant and significant rules, average review times decreased by twenty-five days during the midnight period that occurred between 1994 and 2007. This is a curious result that could be driven by a number of factors. One possibility is that the process of deciding whether a rule qualifies as significant requires OIRA reviewer time. If there are more rules overall created during midnight periods, and OIRA’s decision on whether to review each rule is also a burden to possible reviewers, then those potential reviewers may spend less time reviewing each rule in order to gain time for deciding whether to review rules. Such an action would result in lower average review times during midnight periods. Another possibility, and one that seems more likely, is that there is pressure put on OIRA to quickly approve submitted rules. Knowing that a new administration could replace OIRA appointees from the previous administration with its own appointees, it is possible that the incumbent administration pressures OIRA staffers, either explicitly or tacitly, to approve its midnight regulations

quickly. Otherwise, if the rules linger at OIRA into the next administration, the likelihood of the rules being rejected outright (returned to the agency) may increase.

This finding leaves an opening for future research. If there is some political pressure on OIRA to approve rules quickly in order to avoid the next administration's scrutiny, it seems like that pressure would be greater when the incumbent president and the new president are of different political parties. If that is the case, then we might see differences in the effect of the midnight period on review time that depend on whether there was a change of parties in the White House.

Another possible line of future research involves examining the regulatory repercussions of midnight regulations. Especially in cases where there was a change of political parties, newly elected presidents might spend their first few months on the job trying to get rid of the previous president's midnight regulations. For every outburst of regulations that occurs in a midnight period—the figurative earthquake—there might be a corresponding outburst of regulatory activity of the next president—the earthquake recovery effort. This might not show up in OIRA reviews if the aftershocks involve deregulation, but perhaps the original proxy, pages in the *Federal Register*, would indicate this.

Finally, another avenue of future research involves a very fundamental question: Is the quality of regulations affected by midnight regulations and other election cycle phenomena? While this question seems important, it also seems unanswerable without some good definition and consistent measure of regulation quality. This paper sheds some light on the issue, though. If more OIRA review time leads to higher quality, then outbursts of regulatory activity such as those of midnight periods may lead to lower

quality regulations. Of course, it is entirely possible that OIRA review time does not have any affect on regulation quality, but that does not eliminate the question. Also, even if OIRA review does improve regulation quality, it is not necessarily the case that the number of days a regulation is “under review” actually correlates to a more thorough review. Nevertheless, this paper emphasizes the need to answer the question of whether election cycles affect regulation quality, and offers the first empirical evidence that the regulatory review process may indeed suffer during spikes of regulatory activity.

Tables and Figures

Table 1: Summary Statistics by year and by period

Year	Total Rules Reviewed	Economically Significant Rules Reviewed	Other Significant Rules Reviewed	Economically Significant-to-all Ratio	Mean Review Time (days)
1981	2857	65	2792	0.028	9.627
1982	2675	79	2596	0.033	12.919
1983	2491	64	2427	0.031	18.452
1984	2153	67	2086	0.038	26.604
1985	2185	54	2131	0.030	26.282
1986	2025	71	1954	0.042	24.494
1987	2383	79	2304	0.039	28.559
1988	2381	88	2293	0.046	31.412
1989	2158	71	2087	0.041	23.300
1990	2120	86	2034	0.046	26.369
1991	2224	135	2089	0.079	33.723
1992	2338	135	2203	0.075	43.546
1993	2009	99	1910	0.068	32.448
1994	810	138	672	0.186	30.60
1995	597	62	535	0.121	36.760
1996	520	76	444	0.160	43.683
1997	499	76	423	0.168	49.236
1998	510	82	428	0.171	54.125
1999	586	88	498	0.179	56.681
2000	655	112	543	0.201	62.029
2001	533	87	446	0.209	49.321
2002	686	97	589	0.155	46.774
2003	709	100	609	0.157	48.647
2004	639	85	554	0.142	55.521
2005	589	76	513	0.150	57.976
2006	639	76	563	0.136	58.718
2007	480	76	404	0.169	53.250
Yearly Mean: 1981-2007	1955.655	85.085	1870.573	0.11	30.801
Yearly Mean: 1994-2007	617.104	90.029	527.075	0.167	49.815

Table 2: Effects of Midnight Periods on the Number of Economically Significant Rules Reviewed, 1981 - 2007

	(1) <i>ECON_SIGN</i>	(2) <i>ECON_SIGN</i>	(3) <i>ECON_SIGN</i>
<i>MIDNIGHT</i>	6.288*** (1.521)	6.366*** (1.524)	5.887*** (1.509)
<i>EO12866</i>		0.376 (0.419)	0.0313 (1.225)
<i>ADMIN2</i>			0.0126 (0.754)
<i>ADMIN3</i>			2.743*** (0.753)
<i>ADMIN4</i>			1.820 (1.185)
<i>ADMIN5</i>			1.265 (1.422)
<i>ADMIN6</i>			1.731 (1.420)
<i>ADMIN7</i>			0.365 (1.467)
Constant	7.052*** (0.212)	6.855*** (0.305)	5.879*** (0.529)
Observations	323	323	323
R-squared	0.051	0.053	0.115

*** p<0.01, ** p<0.05, * p<0.1

Estimates from OLS regressions.

Dependent variable is the number of economically significant rules reviewed by OIRA each month.
Standard errors in parentheses.

Table 3: Effects of Midnight Periods on the Number of Economically Significant Rules Reviewed, 1994 - 2007

	(1) <i>ECON_SIGN</i>	(2) <i>ECON_SIGN</i>
<i>MIDNIGHT</i>	7.360*** (2.254)	7.464*** (2.290)
<i>ADMIN5</i>		-0.609 (0.740)
<i>ADMIN6</i>		-0.0642 (0.733)
<i>ADMIN7</i>		-1.450* (0.788)
Constant	7.216*** (0.260)	7.713*** (0.551)
Observations	168	168
R-squared	0.060	0.086

*** p<0.01, ** p<0.05, * p<0.1

Estimates from OLS regressions.

Dependent variable is the number of economically significant rules reviewed by OIRA each month.
Standard errors in parentheses.

Table 4: Effects of Midnight Periods on the Ratio of Economically Significant Rules to All Rules Reviewed, 1981 - 2007

	(1) <i>SIGN_RATIO</i>	(2) <i>SIGN_RATIO</i>	(3) <i>SIGN_RATIO</i>
<i>MIDNIGHT</i>	0.0304 (0.0284)	0.0531*** (0.0179)	0.0464** (0.0180)
<i>p12866</i>		0.109*** (0.00490)	0.0979*** (0.0147)
<i>ADMIN2</i>			0.00348 (0.00902)
<i>ADMIN3</i>			0.0186** (0.00900)
<i>ADMIN4</i>			0.0177 (0.0142)
<i>ADMIN5</i>			0.0272 (0.0170)
<i>ADMIN6</i>			0.0185 (0.0170)
<i>ADMIN7</i>			0.0109 (0.0175)
Constant	0.0929*** (0.00395)	0.0356*** (0.00357)	0.0277*** (0.00633)
Observations	323	323	323
R-squared	0.004	0.609	0.619

*** p<0.01, ** p<0.05, * p<0.1

Estimates from OLS regressions.

Dependent variable is the ratio of econ. significant rules reviewed to all rules reviewed by OIRA each month.
Standard errors in parentheses.

Table 5: Effects of Midnight Periods on the Ratio of Economically Significant Rules to All Rules Reviewed, 1994 - 2007

	(1) <i>SIGN_RATIO</i>	(2) <i>SIGN_RATIO</i>
<i>MIDNIGHT</i>	0.0988** (0.0381)	0.0916** (0.0391)
<i>ADMIN5</i>		0.00748 (0.0126)
<i>ADMIN6</i>		0.000951 (0.0125)
<i>ADMIN7</i>		-0.00679 (0.0135)
Constant	0.144*** (0.00439)	0.143*** (0.00940)
Observations	168	168
R-squared	0.039	0.046

*** p<0.01, ** p<0.05, * p<0.1

Estimates from OLS regressions.

Dependent variable is the ratio of econ. significant rules reviewed to all rules reviewed by OIRA each month.
Standard errors in parentheses.

Table 6: Effects of Rulemaking on Monthly Mean Review Times, 1994 – 2007

	(1) <i>REV_TIME</i>	(2) <i>REV_TIME</i>	(3) <i>REV_TIME</i>	(4) <i>REV_TIME</i>
<i>SIGN</i>	0.133 (0.0825)	0.127 (0.0800)		
<i>ECON_SIGN</i>	-0.537** (0.266)	-0.322 (0.266)		
<i>MIDNIGHT</i>		-25.48*** (7.634)		-23.94*** (7.433)
<i>SIGN_RATIO</i>			-44.01*** (14.82)	-35.49** (14.66)
<i>ADMIN5</i>	17.47*** (2.480)	18.78*** (2.438)	17.31*** (2.405)	18.43*** (2.364)
<i>ADMIN6</i>	12.22*** (2.440)	12.28*** (2.367)	12.27*** (2.406)	12.30*** (2.340)
<i>ADMIN7</i>	16.85*** (2.663)	17.14*** (2.585)	16.71*** (2.591)	16.77*** (2.519)
Constant	36.20*** (4.124)	34.82*** (4.021)	44.44*** (2.789)	43.22*** (2.738)
Observations	168	168	168	168
R-squared	0.283	0.329	0.298	0.340

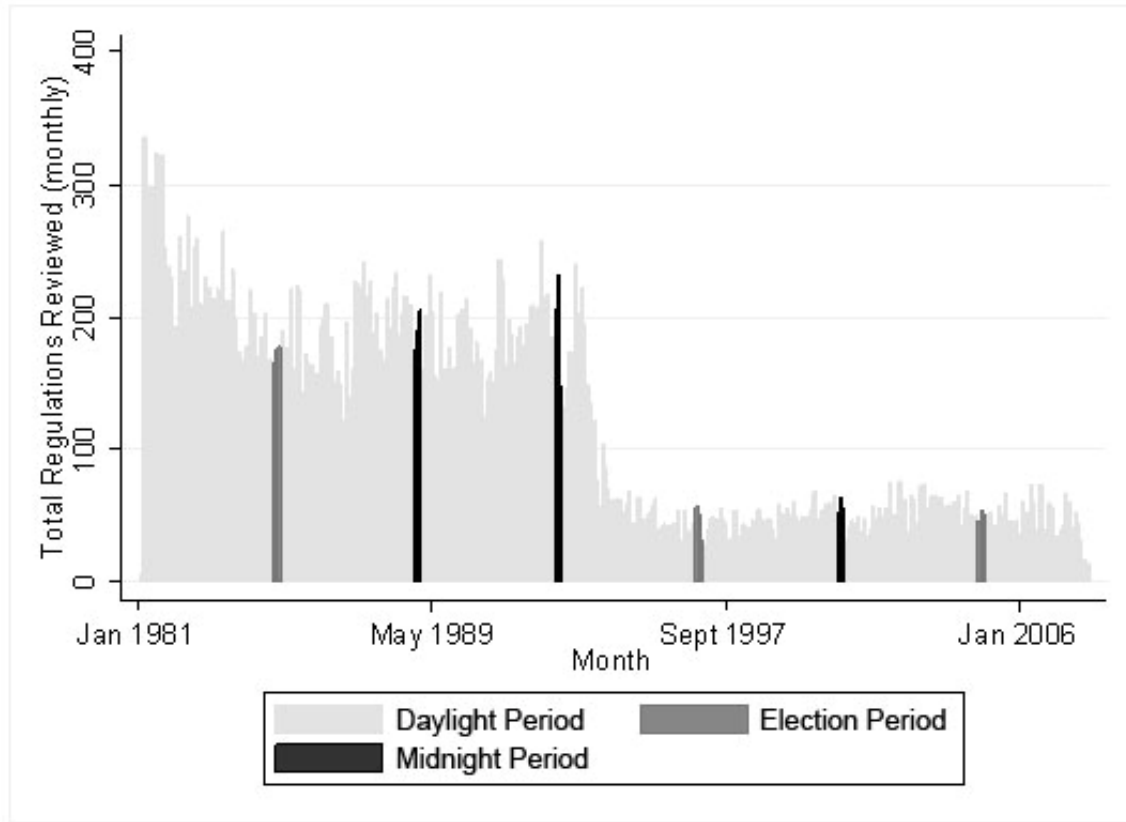
*** p<0.01, ** p<0.05, * p<0.1

Estimates from OLS regressions.

Dependent variable is the mean review time for all rules submitted to OIRA by month submitted.

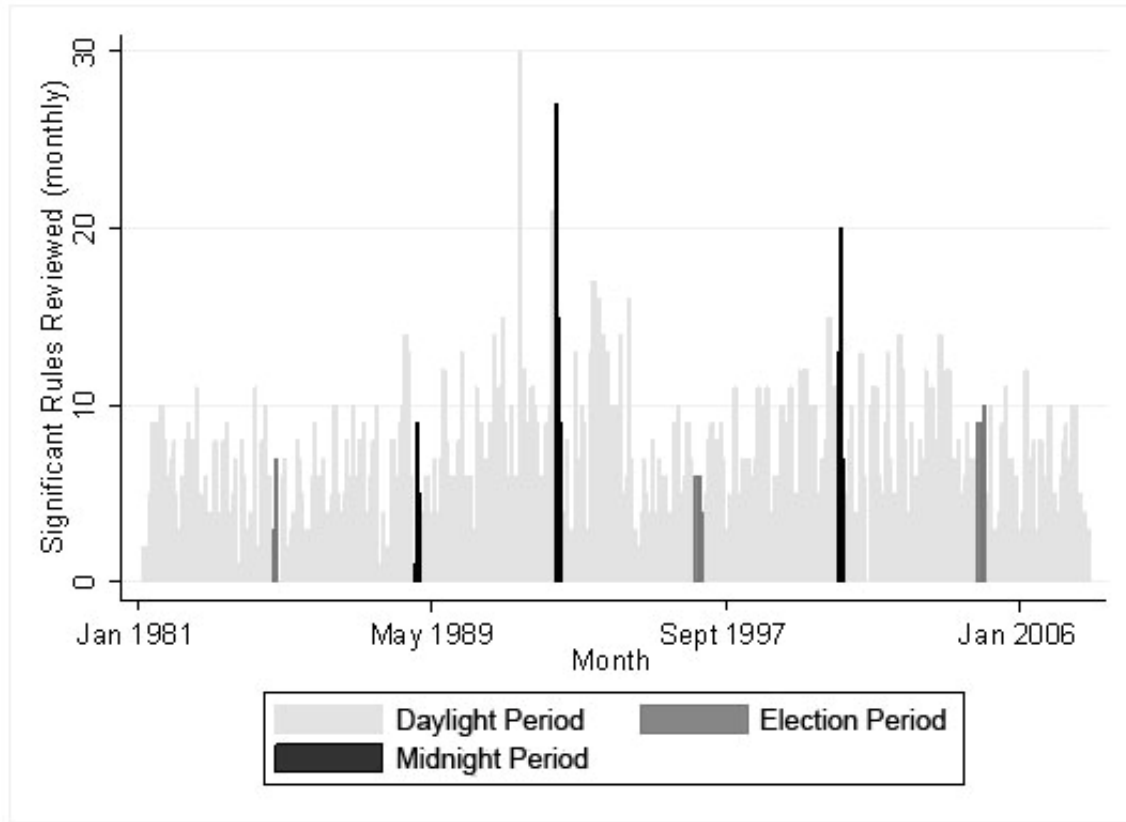
Standard errors in parentheses.

Figure 1: Total Rules Reviewed (Month Received)



Note: “Election periods” denote election periods wherein the incumbent was re-elected. “Midnight periods” denote election periods wherein the incumbent either lost or was not eligible for re-election. “Daylight periods” denote all other periods.

Figure 2: Significant Rules Reviewed (Month Received)



Note: “Election periods” denote election periods wherein the incumbent was re-elected. “Midnight periods” denote election periods wherein the incumbent either lost or was not eligible for re-election. “Daylight periods” denote all other periods.

