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## Midnight regulations and the Cinderella effect

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## ABSTRACT

Recent studies have shown preliminary evidence of a tendency for outgoing administrations to generate a flurry of last-minute regulatory activity. This so-called Cinderella effect is described as resulting from the combination of an administration being in power yet, because it is out-going, not being subject to political ramifications from its actions. In this paper, we look at monthly regulatory activity over the past 30 years and compare the baseline growth in regulations (measured using the proxy of pages in the Federal Register) to the growth immediately following a Presidential election when the sitting President is re-elected, not re-elected, and when the party in control of the White House changes. We find significant evidence supporting the existence of a Cinderella effect.

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## 1. Introduction

The term “midnight regulation” was coined in the final days of the Carter administration to describe regulations enacted by an outgoing administration. In its final three months in power, the Carter administration added 24,531 pages to the Federal Register—the document containing all federal regulations. The benefit of midnight regulations is that the administration has the ability to enact policy while being free of any subsequent political backlash. Clinton’s unprecedented passage of midnight regulations in late 2000 sparked a renewed interest in the use of presidential power in the period between an election and a new administration. During its last 3 months in office, the Clinton administration published more than 26,542 pages in the *Federal Register*. Dudley (2001) shows that the regulatory activity in Clinton’s post-election quarter represented a 51 percent increase over the average number of pages published during the same quarter of the previous 3 years of Clinton’s second term.

Cochran (2001) examined the number of pages in the *Federal Register*, as a proxy for regulatory activity. Going back to 1948, he found that when the party in control of the White House changes, the volume of regulation in the outgoing administration’s final quarter-year averaged 17 percent more than the volume during the same period in non-election years. These pages include executive orders, proclamations, administrative directives, and regulatory documents (from notices of proposed rulemaking to final rules). According to the analysis, the sudden outbursts are systemic and cross party lines. Cochran explains how the mix of what he calls the Cinderella constraint (cabinet officers and agency heads often turn over after a successful re-election and must turn over after two terms in office) and individual preference combine to produce an outburst of regulatory activity, known as midnight regulations.

In this paper, we take a second look at the existence of the midnight regulation phenomenon and seek to extend Cochran’s work by using a longer data set (1975–2006 vs. 1975–1999) with higher frequency (monthly data vs. quarterly data). In addition, whereas Cochran used the log of pages published in the *Federal Register* as a proxy for regulatory activity, we use the number of *Federal Register* pages published in the current month as a percentage of the total pages published during the calendar year. This change allows us to capture the increase in regulation activities during the post-election

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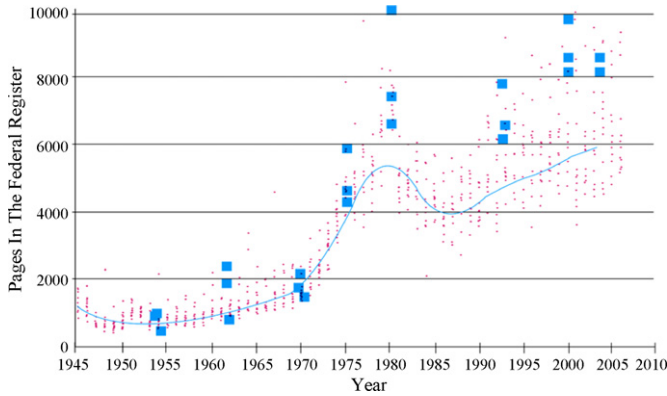


Fig. 1. Number of pages added to the Federal Register.

months for a given administration relative to the administration's baseline annual output.

We find that, with one exception, our results are consistent with Cochran's results. We confirm a positive relationship between post-election months and regulatory output. We also find that the legislature is a significant contributor to the existence of midnight regulations. In other words, the more days Congress is in session the month before the start of the midnight period, the more regulations will be promulgated. In addition, our data show a positive relationship between the rate of cabinet turnover and regulatory output. The higher the rate of the executive branch turnover (for example, when the entire cabinet is about to be replaced because the incumbent president has lost re-election), the more regulations will be issued during the midnight period. As the rate of the executive branch turnover diminishes (such as following a successful re-election) fewer regulations will be issued.

2. Data

Fig. 1 shows the number of pages added to the Federal Register over time. The dots represent non-transition months and the squares represent months during the transition period (the solid line represents a non-linear trend). Fig. 2 shows that the number of pages of the Federal Register grew slowly between 1945 and 1970. After 1970, the number of pages started to grow rapidly before it decreased slightly in the 1980s. In the 1990s, it starts increasing again—but at a slower pace than in the 1970s.

Table 1 Variable definitions and descriptive statistics.

Variable	Description	Mean/median	Standard deviation
$Y_t$	Pages added per month as percentage of total pages added over calendar year	0.083/0.081	0.018
$S_t$	Number of days in month $t$ in which Congress was in session	11.7/13.0	6.0
$C_t$	Percentage of cabinet officers replaced in month $t$	0.027/0.000	0.107
Dummy variable	Description	Value	Number of observations
$N_t$	End of year dummy	1 = month $t$ is November or December	66
		0 = otherwise	316
$E_t$	Midnight month dummy	1 = month $t$ is November or December of Presidential election year	16
		0 = otherwise	366
$P_t$	Midnight month for outgoing administration dummy	1 = month $t$ is November or December of Presidential election year and incumbent was not re-elected	10
		0 = otherwise	372
$R_t$	Midnight month for outgoing party dummy	1 = month $t$ is November or December of Presidential election year and incumbent's party was not re-elected	8
		0 = otherwise	374

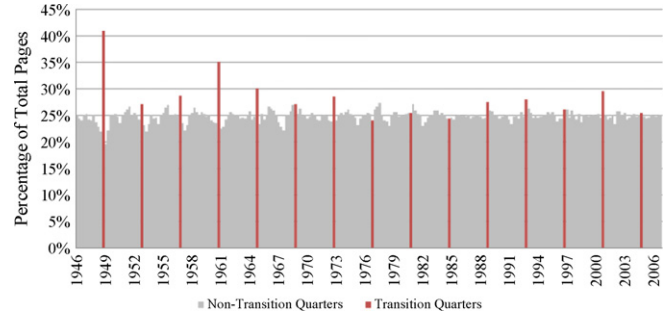


Fig. 2. Pages added to the Federal Register as a fraction of the total pages added for the calendar year.

Fig. 2 shows the number of pages added to the Federal Register between 1946 and 2006 during the last 3 months of a calendar year as a fraction of total pages added for the entire year. Fig. 2 contrasts the growth during the non-transition quarters (quarters in which no presidential election occurred) and the growth in the transition quarters (quarters in which a presidential election occurred).

We find that, in non-transition quarters, pages are added to the Federal Register at a constant rate—roughly one-fourth of the pages added during a calendar year will be added each quarter. However, for quarters in which a presidential election occurred, the number of pages added exceeded the 25 percent baseline 13 out of 15 times. The two exceptions were following the elections of 1976 (Carter defeated Ford) and 1984 (Reagan elected to a second term). Descriptive statistics for data used in our analysis are shown in Table 1.

3. Models and results

We test our hypothesis using monthly data from 1975 through 2006. Let  $Y_t$  be the number of pages added to the Federal Register in month  $t$  expressed as a fraction of all pages added during the calendar year. Let  $N_t$  be 1 if month  $t$  is November or December, 0 otherwise. We will measure the midnight time period with the dummy variable  $E_t$  that is 1 if month  $t$  is November or December of a year in which a Presidential election was held, 0 otherwise. Let  $P_t$  and  $R_t$  be dummy variables that are 1 if month  $t$  is November or December of a year in which a Presidential election was held and the sitting President was not re-elected ( $P_t = 1$ ) or the sitting President's party was not re-elected ( $R_t = 1$ ), 0 otherwise. For example, in November 1988, Bush (a Republican) was elected to succeed Reagan (a Republican). Therefore,  $P_{11/88} = P_{12/88} = 1$  and  $R_{11/88} = R_{12/88} = 0$ . Similarly,

**Table 2**  
Relative additions to Federal Register in midnight months vs. non-midnight months.

$$Y_t = \alpha + \beta_1 E_t + \beta_2 S_{t-1} + \beta_3 C_t + u_t + \rho u_{t-1}$$

Coefficient	Estimate	Standard error
$\alpha$	0.0737	0.0020**
$\beta_1$	0.0136	0.0042**
$\beta_2$	0.0007	0.0001**
$\beta_3$	0.0321	0.0081**
$\rho$	-0.1087	0.0515*
R <sup>2</sup>	0.09	
D.W.	2.02	

OLS estimates, 382 monthly observations, March 1975–December 2006.

\* Significant at 5% level.  
\*\* Significant at 1% level.

in November 1992, Clinton (a Democrat) was elected to succeed Bush. Therefore,  $P_{11/92} = P_{12/92} = R_{11/92} = R_{12/92} = 1$ . To control for Congressional activity during the month in which regulations would be conceived and written, we use the proxy of the number of days in which Congress was in session in month  $t - 1$ ,  $S_{t-1}$ . Finally, as the Cinderella effect likely applies to individual cabinet members as well as to the administration as a whole, we control for turnover throughout the year by defining  $C_t$  to be the percentage of cabinet officers replaced in month  $t$ . Over the sample period of 396 months, there are 66, 16, 10, and 8 months for which  $N_t = 1$ ,  $E_t = 1$ ,  $P_t = 1$ , and  $R_t = 1$ , respectively.

Controlling for Congressional activity and the turnover of cabinet members throughout the year, we estimate the model in Table 2 so as to measure the change in relative additions to the *Federal Register* in the midnight months vs. non-midnight months.

These results show a significant increase in relative additions to the *Federal Register* (pages added in month  $t$  divided by total pages added for the calendar year) during the months of November and December of a presidential election year. After accounting for the impact of other factors, during the months of November and December following a presidential election the relative additions to the *Federal Register* are 1.4 percentage points greater than throughout the previous 8 months. If the pages were added at a constant rate over the calendar year, we would expect 8.3 percent would be added each month. Compared to the 8.3 percent baseline, the 1.4 percentage point increase represents a 17 percent increase in the number of added pages to the *Federal Register* in the midnight regulation months relative to the non-midnight months.

Howell and Mayer (2005) claim that midnight regulation occurs when “political uncertainty shifts to political certitude.” During the last 100 days of his administration, a President knows who will succeed him, his legislative priorities, and the level of partisan support he will enjoy within the new Congress. If the sitting President lost the election, he has every reason to promulgate last-minute reg-

**Table 3**  
Relative additions to Federal Register in midnight months vs. non-midnight months for outgoing administrations.

$$Y_t = \alpha + \beta_1 p_t + \beta_2 S_{t-1} + \beta_3 C_t + u_t + \rho u_{t-1}$$

Coefficient	Estimate	Standard error
$\alpha$	0.0744	0.0019**
$\beta_1$	0.0154	0.0052**
$\beta_2$	0.0007	0.0001**
$\beta_3$	0.0312	0.0081**
$\rho$	-0.1106	0.0515*
R <sup>2</sup>	0.09	
D.W.	2.02	

OLS estimates, 382 monthly observations, March 1975–December 2006.

\* Significant at 5% level.  
\*\* Significant at 1% level.

**Table 4**  
Relative additions to Federal Register in midnight months vs. non-midnight months for parties losing control of the White House.

$$Y_t = \alpha + \beta_1 R_t + \beta_2 S_{t-1} + \beta_3 C_t + u_t + \rho u_{t-1}$$

Coefficient	Estimate	Standard error
$\alpha$	0.0745	0.0019**
$\beta_1$	0.0167	0.0052**
$\beta_2$	0.0006	0.0001**
$\beta_3$	0.0311	0.0081**
$\rho$	-0.1080	0.0515*
R <sup>2</sup>	0.09	
D.W.	2.02	

OLS estimates, 382 monthly observations, March 1975–December 2006.

\* Significant at 5% level.  
\*\* Significant at 1% level.

ulations to tie his successor's hands. But even if the President did not lose the election, midnight regulations can extend the outgoing President's influence beyond the day he leaves office. To test this, we re-estimate the model in Table 3, replacing  $E_t$ , the dummy measuring the midnight period, with  $P_t$ —a more restrictive dummy that measures the midnight period when the sitting President has not been re-elected. In Table 4 where we replace  $E_t$  with  $R_t$ , which measures the midnight period when the party in control of the White House changes.

The results in Tables 3 and 4 show that Presidential and party transitions, respectively, witness a significant surge in regulatory activities during the midnight period. As expected, for each additional day that Congress was in session during a given month, there is an increase in the relative growth of the *Federal Register* in the subsequent month. Similarly, in months in which there is an increase in turnover among cabinet members, there is a significant increase in the *Federal Register's* relative growth. After accounting for the impact of Congressional activity and cabinet turnover, we find that whereas the *Federal Register's* relative growth is 1.4 percentage points greater during midnight months, the growth is 1.5 percentage points greater for midnight months in which the incumbent administration is outgoing, and 1.7 percentage points greater for midnight months in which the incumbent party is outgoing. Directionally, these results are intuitive—the greater the change (new term vs. new President vs. new party), the greater the additional regulatory activity.

What is left unanswered is whether there is a natural surge in regulatory activity at the end of most calendar years. If true, then the so-called Cinderella effect is merely coincidence. To test this, we re-estimate the models in Tables 2–4 this time including a dummy,  $N_t$ , to control for the months of November and December. These results appear in Tables 5–7.

**Table 5**  
Relative additions to Federal Register in midnight months vs. non-midnight months (controlling for November and December).

$$Y_t = \alpha + \beta_1 E_t + \beta_2 S_{t-1} + \beta_3 C_t + \beta_4 N_t + u_t + \rho u_{t-1}$$

Coefficient	Estimate	Standard error
$\alpha$	0.0739	0.0020**
$\beta_1$	0.0147	0.0047**
$\beta_2$	0.0007	0.0001**
$\beta_3$	0.0319	0.0081**
$\beta_4$	-0.0013	0.0025
$\rho$	-0.1104	0.0516*
R <sup>2</sup>	0.10	
D.W.	2.02	

OLS estimates, 382 monthly observations, March 1975–December 2006.

\* Significant at 5% level.  
\*\* Significant at 1% level.

**Table 6**  
Relative additions to Federal Register in midnight months vs. non-midnight months for outgoing administrations (controlling for November and December).

$$Y_t = \alpha + \beta_1 p_t + \beta_2 S_{t-1} + \beta_3 C_t + \beta_4 N_t + u_t + \rho u_{t-1}$$

Coefficient	Estimate	Standard error
$\alpha$	0.0745	0.0020**
$\beta_1$	0.0154	0.0055**
$\beta_2$	0.0007	0.0001**
$\beta_3$	0.0312	0.0081**
$\beta_4$	-0.0001	0.0024
$\rho$	-0.1107	0.0515*
$R^2$	0.09	
D.W.	2.02	

OLS estimates, 382 monthly observations, March 1975–December 2006.

\* Significant at 5% level.

\*\* Significant at 1% level.

As expected, we find that the months of November and December have no discernable impact on the number of pages published in the *Federal Register* except when the months follow a presidential election. These results are consistent with the expectation of a positive relationship between the rate of cabinet turnover and regulatory output. The higher the rate of the executive branch turnover – for example, when the entire cabinet is about to be replaced because the incumbent president has lost re-election – the more regulations will be issued during the midnight period. Our results also show a positive relationship between the number of session days (in the previous month) and regulatory output. In other words, the legislature is a significant contributor to the promulgation of regulations.

There may be more factors that contribute to the midnight regulation outburst. For example Howell (2003) has suggested that the state of the economy contributes to midnight regulations. However, when we include growth in RGDP in our models, we find no significant relationship between changes in economic activity and changes in relative regulatory output. Krause and Cohen (1997) suggest that regulation (in the form of executive orders) is a positive function of the misery index. We find that neither the changes in inflation, unemployment, nor the misery index is associated with the changes in the relative growth in the *Federal Register*, nor does the presence of these factors in our models appreciably alter our results. We also allow for a lag in the impacts of these factors by including changes in 12-month moving averages of inflation, unemployment, and the misery index in our models. These factors are also insignificant and do not appreciably alter our results. It is also possible that, due to the manner in which the regulatory process is scripted by the Administrative Procedures Act, Congressional action in the single month prior to enactment of new regulations would have little effect on the proposed regulations. To account for this possibility, we include in each of our models Congressional ses-

**Table 7**  
Relative additions to Federal Register in midnight months vs. non-midnight months for parties losing control of the White House (controlling for November and December).

$$Y_t = \alpha + \beta_1 R_t + \beta_2 S_{t-1} + \beta_3 C_t + \beta_4 N_t + u_t + \rho u_{t-1}$$

Coefficient	Estimate	Standard error
$\alpha$	0.0746	0.0020**
$\beta_1$	0.0165	0.0061**
$\beta_2$	0.0006	0.0001**
$\beta_3$	0.0311	0.0081**
$\beta_4$	0.0003	0.0023
$\rho$	-0.1077	0.0515*
$R^2$	0.09	
D.W.	2.02	

OLS estimates, 382 monthly observations, March 1975–December 2006.

\* Significant at 5% level.

\*\* Significant at 1% level.

sion days for each of the 3 months prior to the page count (i.e., we include  $S_{t-1}$ ,  $S_{t-2}$ , and  $S_{t-3}$ ). For each model, the coefficient estimates for  $S_{t-2}$  and  $S_{t-3}$  were insignificant and the remaining parameter estimates showed no appreciable change. Finally, it is possible that ideological differences between the White House and the Congress could impact the quantity of regulatory output. For each of our models, we include a factor measuring the difference in party control between the two branches of government.<sup>1</sup> The coefficient for this measure is insignificant in all of our models and has no appreciable effect on the other parameter estimates.

A more robust approach to constructing our models is to start by developing a theoretical model along the lines of Tabellini and Alesina (1990). Tabellini and Alesina construct a behavioral model based on uncertainty about the future and disagreement as to appropriate policy to describe rational voters' preferences for budget deficits. Such a model may generalize to the problem of midnight regulations and may guide us in our model selection. As our work is largely exploratory and empirical in nature, and given the apparent robustness of our estimates to changes in our model, we forego a theoretical approach in this paper.

One potential criticism is our use of additions to the page count of the *Federal Register* as a proxy for regulatory output. In addition to the number of regulations, the number of pages is a function of the style of writing (i.e., increasing the number of words used to convey an idea adds more pages), what is being regulated (i.e., the more complex the thing being regulated, the more words one would expect to be required to define the regulation), and non-regulatory minutiae (tables of contents, etc.). However, as long as non-regulatory additions are evenly distributed throughout the year, we would expect them not to bias our results. One might argue that, for whatever reason, the quantity of non-regulatory minutiae may follow a cyclical pattern based on the calendar. But, our inclusion of the calendar dummy,  $N_t$ , would filter out such an effect.

#### 4. Conclusion

At the core, we confirm Cochran's (2001) findings that Presidents do not relinquish their powers the moment the country's electorate votes them out of office. Instead, in the last 3 months following an election (somewhat more so when there is a switch in power from one party to the other), the administration and heads of agencies increase their regulatory activity. As noted by Howell and Mayer (2005), "while the legislative processes may lay dormant at the end of a Presidential term, the production of unilateral directives kicks into high gear." In fact, we find that, going back to 1948, when the White House switches parties, relative additions to the *Federal Register* increases on average by 17 percent in the 3 months following an election, or what we have called here the midnight regulation period. The increase is slightly higher if the President in office has lost the election.

To be sure, some of the regulatory issues during the midnight period have nothing to do with Presidents trying to rush through last-minute regulations that they could not, or would not, push during the first part of the year. However, the systematic outburst during the midnight period suggests a consistent effort on the part of administrations to hurry regulation through while their power remains.

<sup>1</sup> The proxy we use is constructed as follows. Let  $D_W$  be 1 if the White House is controlled by the Democrats; 0 otherwise. Let  $D_C$  be the proportion of Congressional seats held by Democrats. The difference in party control is  $|D_W - D_C|$ . This range of this proxy measure is 0–1 where 0 indicates a "perfect difference" in party control (i.e., the Congress is 100% Democrat and the White House is Republican or vice-versa), 1 indicates a "perfect agreement" in party control, and intermediate values indicate some imperfect difference in party control.

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