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DOES HASTE MAKE WASTE IN REGULATORY ANALYSIS?

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Does Haste Make Waste in Regulatory Analysis?

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Abstract

Most federal agencies must conduct economic analysis when proposing major regulations. This paper uses a new dataset scoring the quality of analysis that accompanied proposed regulations in 2008 to assess whether some types of regulations receive more thorough analysis than others. Previous scholarship speculates that midnight regulations receive less thorough consideration, and the Office of Management and Budget asserts that agencies rarely estimate benefits and costs of transfer regulations. We test these hypotheses and find that the evidence supports both. We find that two classes of regulations have significantly lower-quality analysis: "midnight" regulations proposed after June 1, 2008, and budget or "transfer" regulations that describe how federal agencies will spend or collect money.

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1. Introduction

Not all regulations are created equal. Since 1974, a series of executive orders have required executive branch regulatory agencies to produce some form of economic analysis when promulgating significant regulations. However, the quality of regulatory analysis varies considerably across agencies (Ellig and McLaughlin 2010, Hahn and Dudley 2007, Hahn et. al. 2000). Quality may vary systematically across time as well, possibly due to incentives created by election cycles. Numerous scholars note that regulatory activity spikes during an outgoing president's lame-duck period; national news media dubbed these regulations "midnight regulations" (Cochran 2001, Davies and de Rugy 2008, Howell and Mayer 2005). One documented criticism of midnight regulations is that they may suffer in quality because they are rushed both during their creation at the promulgating agency and throughout the review process (Brito and De Rugy 2009, Brito and McLaughlin 2008, Morriss et. al. 2003). McLaughlin (2010) finds that midnight regulations receive shorter reviews at the Office of Information and Regulatory Affairs (OIRA). This result raises the question of whether midnight regulations receive lower-quality analysis than regulations that are reviewed for longer periods.

Using a new data set that measures the quality of agencies' regulatory analyses (Ellig and McLaughlin 2010), this paper finds that midnight regulations tend to receive lower-quality analysis than other regulations. We also show that one particular type of regulation—budget or "transfer" regulations that define how an agency will spend or collect money—tends to be reviewed for shorter periods and receive lower-quality analysis. Holding other things constant, a midnight regulation would score about 19 percent below the mean score for all 2008 regulations, and a transfer regulation would score more than 60 percent below the mean. Review time at

OIRA is a significant determinant of quality only when we do not control for whether regulations are transfer regulations.

Our findings point out a critical relationship between political pressure, legal deadlines, and the quality of regulatory analysis. While midnight regulations have often been criticized in the news media and pulled back for review by the incoming administration, the finding that midnight regulations tend to receive lower quality analysis than other regulations makes the criticism more than mere political showmanship. Our results provide an additional reason an incoming administration would want to give midnight regulations a second look. Even if the new administration agrees with a predecessor's midnight regulation, it may feel additional scrutiny is warranted because midnight regulations are not thought out as carefully as "daylight" regulations. Our findings also help explain why an outgoing administration would seek to limit its own midnight regulations—as the G.W. Bush administration explicitly did in 2008 (Dudley 2009). Minimizing midnight regulation reduces the likelihood that a new administration could reject its predecessors' regulations because of shoddy analysis. Instead, the incoming administration would need to articulate the policy differences that led it to make a different decision. By limiting midnight regulation, an outgoing administration forces its successor to be more transparent about its reasons for altering regulatory policies.

The reduction in analytical quality associated with transfer regulations is even bigger than the reduction in quality associated with midnight regulations. Transfer regulations are apparently treated differently by OIRA. Several former OIRA officials have told us that most OMB review of transfer regulations is conducted by budget analysts, whose main concern is ensuring that

agencies correctly estimated the effects on the federal budget, rather than focusing on the economic analysis. OMB (2010, 18) observes that although transfer regulations generate social costs via mandates, prohibitions, and price distortions, agencies do not usually estimate the social benefits and costs of transfer regulations. For whatever reason, agencies apparently feel free to propose transfer regulations with much lower-quality economic analysis.

The quality of regulatory analysis is quite likely correlated with the quality of regulations themselves. For example, one important component of regulatory analysis is the consideration of alternative regulatory approaches to achieve the outcomes desired. Many low-quality analyses fail to consider even a single alternative approach. If other alternatives were not even considered, how can an agency be confident that its regulatory approach represents the best one, however "best" may be defined? Similarly, many of the low-quality analyses did a poor job of articulating the systemic problem the regulation is supposed to solve and presenting evidence that the problem is indeed significant. It is difficult to believe that the regulation will effectively solve the problem when the agency cannot even articulate the problem or prove that it exists (Ellig and McLaughlin 2010). Thus, this research documents what numerous other scholars have suspected: certain factors related to election cycles (such as midnight periods) and political processes (such as judicial and statutory deadlines) may diminish the effectiveness or efficiency of federal regulations.

2. Data and empirical strategy

The Office of Information and Regulatory Affairs (OIRA), located within the Office of Management and Budget (OMB), reviews "significant" proposed and final regulations, and the

accompanying analyses, before agencies can publish them in the *Federal Register*. The most extensive analytical requirements apply to "economically significant" regulations, which are usually those that are anticipated to have an effect on the economy of $100 million or more.[1] Executive Order 12866 has guided regulatory analysis since President Clinton signed it in 1993. OMB issued Circular A-4 during the Bush administration in 2003 to provide agencies with more detailed guidance on regulatory analysis.

Regulations proposed in 2008 are of special interest for two reasons. First, 2008 was the last year of the second George W. Bush administration, making regulations proposed or finalized towards the end of that year "midnight" regulations. Second, the Bush administration attempted to curtail midnight regulations. The OIRA administrator at the time, Susan Dudley, had previously headed a research project that documented and analyzed the Clinton administration's midnight regulations (Dudley 2001). A memo from White House chief of staff Joshua Bolten issued on May 9, 2008, instructed executive agencies that "regulations to be finalized in this Administration should be proposed no later than June 1, 2008" (Bolten 2008). OIRA interpreted the memo to mean that OIRA's review of regulations scheduled to be issued by the end of the administration should be finished by June 1, even if the proposed regulation was not published in the *Federal Register* until some date thereafter.[2] This interpretation of the memo yields a clear definition of midnight *proposals* in 2008: any proposed regulation that had its OIRA review completed after June 1 is considered a midnight proposal.

[1] The definition of "economically significant" also includes regulations that "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"(EO 12866 Sec. 3(f)(1)).
[2] E-mail conversation with former OIRA Administrator Susan Dudley, March 29, 2010.

We analyze the relationship between midnight proposals and quality using Ellig and McLaughlin's (2010) systematic assessment of the quality and use of regulatory analysis for 45 economically significant regulations proposed in 2008. Their results are summarized in Table 1. Their assessment relied on a 12-point qualitative framework that drew from criteria established in Executive Order 12866 and OMB Circular A-4. Each regulation could earn between zero and five points on each of 12 criteria, for a maximum possible score of 60.[3] Their criteria and evaluation questions are listed as Appendix I.

Regulatory activity ebbs and flows. One well-documented type of regulatory surge occurs during an outgoing administration's midnight period, between Election Day and Inauguration Day (Cochran 2001, Davies and de Rugy 2008, Howell and Mayer 2005). McLaughlin (2010) shows that one consequence of these surges in regulatory activity is that OIRA reviews individual regulations for shorter periods. He suggests that shorter regulatory review by OIRA may cause a decrease in quality of both regulations and the accompanying regulatory analyses. Figure 1 implies just such a relationship between proposed regulations and the quality of analysis. It shows that the quality of economic analysis appears to increase as the length of review at OIRA increases. Our measure of quality is the score from Table 1. Data on review time for each regulation is from the reginfo.gov website, which tracks the progress of regulations through the OIRA review process.

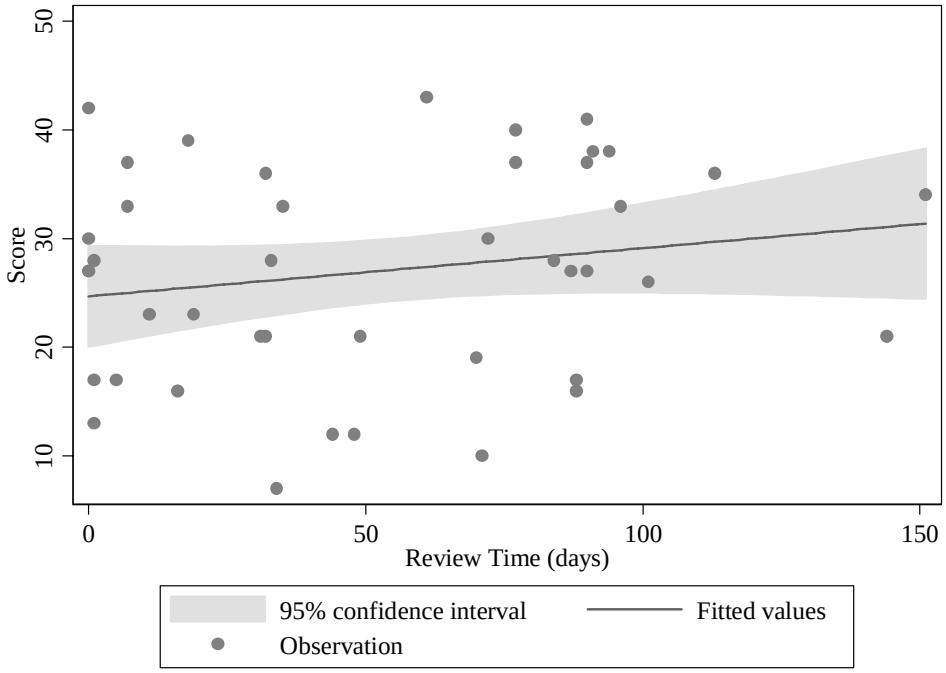
[3] Four of their 12 criteria assess whether the agency used regulatory analysis to inform decisions on the regulation. When we performed the analysis below using only the eight criteria that explicitly measure quality, the results were virtually the same. This is not surprising, because Ellig and McLaughlin (2010) report that the scores on their use criteria are positively correlated with their scores on the quality criteria.

Table 1: Quality of regulatory analyses of proposed regulations in 2008

Proposed Rule	Department	Score
*Passenger Car and Light Truck Corporate Average Fuel Economy 2011-2015	DOT	43
**National Ambient Air Quality Standards for Lead	EPA	42
Real Estate Settlement Procedures Act	HUD	41
Class Exemption for Provision of Investment Advice, Proposed Rule	Labor	40
Congestion Management Rule for LaGuardia Airport	DOT	39
US VISIT Biometric Exist System	DHS	38
Large Aircraft Security Program	DHS	38
**Effluent Limitations Guidelines and Standards for Construction and Development	EPA	37
Fiduciary Requirements for Disclosure in Participant-Directed Individual Account Plans	Labor	37
Notice of Proposed Class Exemption for Provision of Investment Advice	Labor	37
Electronic Prescriptions for Controlled Substances	DOJ	36
Migratory Bird Hunting; 2008 to 2009 Migratory Game Bird Hunting Regulations	Interior	35
Nondiscrimination on the Basis of Disability in State and Local Government Services	DOJ	35
Nondiscrimination on the Basis of Disability by Public Accoms./Commercial Facilities	DOJ	34
*Improving the Safety of Railroad Tank Car Transportation of Hazardous Materials	DOT	33
Family and Medical Leave Act of 1993	Labor	33
HIPAA Code Sets	HHS	33
Cranes and Derricks in Construction	Labor	30
Congestion Management Rule for John F. Kennedy Airport and Newark Airport	DOT	30
Integrity Management Program for Gas Distribution Pipelines	DOT	28
*Refuge Alternatives for Underground Coal Mines	Labor	28
Special Areas; State-Specific Inventoried Roadless Area Management	USDA	28
*Proposed Changes to the Outpatient Prospective Payment System	HHS	27
*Changes to the Hospital Inpatient Prospective Payment Systems and FY2009 Rates	HHS	27
Alternative Energy Production and Alternate Uses of Existing Facilities on the OCS	Interior	27
**Energy Conservation Standards for Fluorescent Lamps	Energy	27
Standardized Risk-Based Capital Rules (Basel II: Standardized Option)	Treasury	27
Oil Shale Management – General	Interior	26
HIPAA Electronic Transaction Standards	HHS	25
Teacher Education Assistance for College and Higher Education Grant Program	ED	23
Federal Perkins Loan Program	ED	21
Employment Eligibility Verification	FAR	21
Standards for Maximum Allowable Operating Pressure for Gas Transmission Pipelines	DOT	21
Abandoned Mine Land Program	Interior	21
Revisions to the Medicare Advantage and Prescription Drug Benefit Programs	HHS	19
*Medicaid Program Premiums and Cost Sharing	HHS	17
*Prospective Payment System for Long-Term Care Hospitals	HHS	17
*Medicare Program: Revisions to Physician Fee Schedules	HHS	17
*State Flexibility for Medicaid Benefit Packages	HHS	16
*Proposed Hospice Wage Index for Fiscal Year 2009	HHS	16
*Prospective Payment System and Consolidated Billing for Skilled Nursing Facilities	HHS	14
Schedule of Fees for Consular Services	State	13
CHAMPUS/TRICARE	Defense	12
*Post-9/11 GI Bill	VA	10
Setting the Time and Place for a Hearing before an Administrative Law Judge	SSA	7
Average		**27.24**

*Regulations with statutory deadlines. **Regulations with judicial deadlines. *Regulations in italics are budget or "transfer" regulations.*

Figure 1: Quality (*score*) and review time



If midnight proposals are indeed different, shorter review times may explain the difference. We acknowledge, however, that measures of review time at OIRA could be a noisy signal of the quality of OIRA review, for two reasons. First, there may be some days when a regulation is not actively being reviewed, even though the regulation is technically at OIRA for review. A regulation that sits on someone's desk at OIRA for 30 days and is reviewed for one day would appear to have been reviewed for 31 days to an outside observer using the reginfo.gov data. Second, at least during the George W. Bush administration, OIRA would often provide feedback to promulgating agencies regarding a regulation or economic analysis prior to actually beginning formal review. This policy explains, in part, why some regulations are reviewed for less than one day (according to OIRA data), even though they may be quite lengthy and accompanied by

hundreds of pages of formal and technical economic analysis.[4] Nevertheless, we focus on review time because it remains our sole measure of the attention OIRA gives to particular regulations and because it has been shown to vary systematically with the quantity of regulatory output (McLaughlin 2010). Furthermore, it seems reasonable to assume any noise introduced into the variable *review time* is random with respect to the quality of the regulatory analysis performed by the promulgating agency. Indeed, Figure 1 shows that the proposed regulations that received either zero- or one-day reviews span a wide range of quality, implying at least that the provision of advanced feedback was not concentrated on only regulations of a certain quality. One agency, the Department of Health and Human Services, tended to utilize advance review extensively, but when we dropped HHS regulations from the sample, the econometric results reported below were virtually unchanged.

A multitude of other hypotheses could explain why certain types of regulations, such as midnight proposals or regulations with statutory or judicial deadlines, would differ in quality from regulations proposed earlier in the year. For example, political pressure could cause the promulgating agency to rush its regulatory analysis, thereby diminishing quality, or a regulation may be limited in scope or method by statute, causing the economic analysis to only pay short shrift to some regulatory options. Alternatively, perhaps those government employees who could have helped improve the quality of regulations are too busy dealing with the impending administrative transition to deal with regulations, so those regulations are instead written or vetted by second-best regulators.

[4] It is possible that OIRA is may be prevented politically from reviewing some regulations in great depth for political reasons.

Table 2 shows how different categories of regulations performed in the Ellig and McLaughlin (2010) evaluation. *Midnight* indicates that the regulation had its review completed after June 1, *judicial* indicates a judicial deadline, and *statutory* indicates a statutory deadline. The sole category that is not time-sensitive is *transfer*, which indicates a budget or "transfer" regulation. A transfer regulation is a regulation that defines how the federal government will spend or collect money. The Department of Health and Human Services, for example, annually issues numerous regulations that recalculate Medicare payment rates for doctors, hospitals, hospices, and other health care providers. Since these recalculations usually redistribute hundreds of millions of dollars, these regulations are economically significant. Regardless of the issuing agency, transfer regulations stand out as singularly low scoring, with a mean value of about 17 points, versus 27 points for the entire sample. Regulations with statutory deadlines also have a somewhat lower mean score of 22 points.

Table 2: Summary statistics of *quality* by category of regulation

Category	Obs.	Mean	Std. Dev.	Min.	Max.
All	45	27.16	9.58	7	43
Midnight	23	26.57	9.18	7	40
Daylight	22	27.77	8.90	12	43
Transfer	15	16.93	5.81	7	27
Non-Transfer	30	32.27	6.47	21	43
Judicial	3	34	9.85	23	42
Non-Judicial	42	26.67	9.49	7	43
Statutory	12	22	9.63	10	43
Non-Statutory	33	29.03	8.98	7	42

Our empirical strategy is twofold. First, we test the relative importance of possible determinants of quality. Second, we examine the determinants of review time.

3. Results

We formally test the relationship between review length and quality of economically significant regulations proposed in 2008. Simultaneously, we test whether "midnight proposals" differ in quality from other regulations proposed in 2008. Because of the limited size of our dataset, we subject the population of midnight proposals to a battery of tests designed to determine whether they are statistically different from other proposed regulations. Finally, we use data from the reginfo.gov website to test the relative importance of three other possible determinants of review time spent on individual regulations: statutory deadlines, judicial deadlines, and status as a transfer regulation.

3.1 The effects of review time and midnight proposals on quality

Simple OLS regression analysis provides lukewarm support for the hypothesis that review time positively affects quality, as implied by Figure 1. Table 3 shows the results of OLS regressions of various forms of equation 1,

$$quality_i = b_0 + b_1 review\ time_i + b_2 midnight_i + b_3 statutory_i + b_4 judicial_i + e_i \quad (1),$$

where the *quality* of regulation *i* is a function of *review time*, which equals the number of days a regulation spends at OIRA for review, *midnight*, which is a dummy variable indicating whether a regulation's review at OIRA was finished after June 1, 2008, *statutory*, which is a dummy variable indicating whether regulation *i* had a statutory deadline, and *judicial*, a dummy variable indicating whether regulation *i* had a judicial deadline.[5]

Table 3: OLS estimations; dependent variable is *quality* of regulatory analysis

	(1)	(2)	(3)	(4)	(5)	(6)

[5] These regressions were also performed using log-transformed *quality* and *review time* variables. The results were similar in sign but fell slightly outside the statistically significant range for the coefficient estimate on *review time*. Conversely, the coefficient estimate on *midnight* became statistically significant. We report only the linear model because the distributions of the untransformed variables appear closer to normal (using diagnostic plots such as P-P and Q-Q plots against a normal distribution).

Revtime	0.044		0.047	0.032	0.069	0.051
	(1.36)		(1.42)	(0.99)	(2.02)*	(1.49)
Midnight		-1.208	-1.803	-3.729	-2.544	-4.014
		(0.42)	(0.63)	(1.30)	(0.90)	(1.42)
Statutory				-7.608		-6.460
				(2.30)**		(1.93)*
Judicial					11.407	8.857
					(1.95)*	(1.52)
Constant	24.691	27.773	25.445	29.315	23.877	27.513
	(10.73)***	(13.47)***	(9.74)***	(9.76)***	(8.99)***	(8.64)***
Observations	45	45	45	45	45	45
R-squared	0.04	0.00	0.05	0.16	0.13	0.20

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

As an explanatory variable, *review time* would have a positive coefficient estimate if additional review time improved *quality*. In Table 3, *review time* has a positive and marginally significant effect on *quality* in only one out of five regressions in which the variable is included.[6] Similarly, *midnight* is expected to have a negative coefficient estimate if midnight proposals are of lower quality, but its coefficient estimates, although negative throughout, are not statistically significant. With only 45 observations, however, statistical significance is perhaps not easily achieved, or outliers might heavily influence the results.

Because of the limited size of the dataset and the possible influence of outliers, Table 4 shows bootstrap estimations of the equations in Table 3 using 10,000 replications. The results are identical in sign and magnitude, but some coefficient estimates become statistically significant. Still, even using bootstrap estimation, *midnight* is not a statistically significant determinant of *quality*, and *review time* is only significant in three out of five regressions that include the variable.

[6] The relationship between review time and quality may not be linear. However, when we included a review time squared variable, it was never statistically significant and did not alter other results.

Table 4: Bootstrap estimations; dependent variable is *quality* of regulatory analysis

	(1)	(2)	(3)	(4)	(5)	(6)
Revtime	0.044		0.047	0.032	0.069	0.051
	(1.59)		(1.65)*	(1.15)	(2.44)**	(1.70)*
Midnight		-1.208	-1.803	-3.729	-2.544	-4.014
		(0.43)	(0.62)	(1.32)	(0.91)	(1.42)
Statutory				-7.608		-6.460
				(2.16)**		(1.78)*
Judicial					11.407	8.857
					(1.91)*	(1.54)
Constant	24.691	27.773	25.445	29.315	23.877	27.513
	(11.18)***	(13.07)***	(9.54)***	(9.33)***	(9.47)***	(8.42)***
Observations	45	45	45	45	45	45
R-squared	0.04	0.04	0.05	0.16	0.13	0.20

z statistics in parentheses

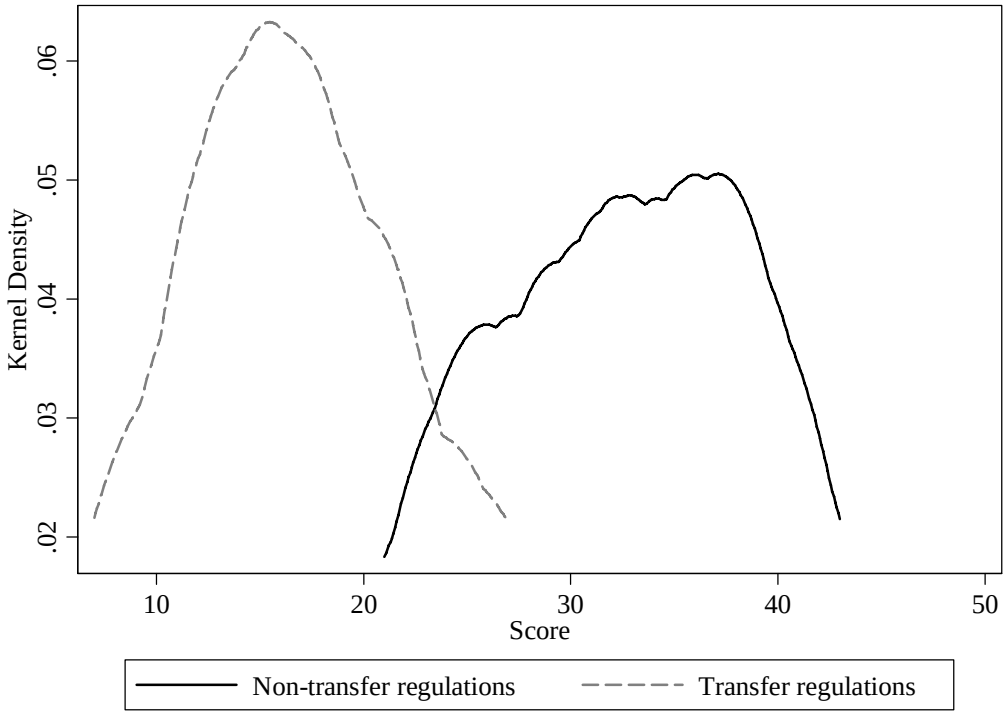
* significant at 10%; ** significant at 5%; *** significant at 1%

Other factors besides *review time* and *midnight* apparently matter. The coefficient estimates on *statutory* and *judicial*, for example, are statistically significant in some regressions shown in Tables 3 and 4. *Statutory* has the expected negative sign, indicating that statutory deadlines are associated with lower-quality analysis. *Judicial*, however, has the opposite sign, contrary to what we expected.

The results reported above do not control for one important category of regulations: transfer regulations. One might infer that transfer regulations receive low scores because many of them recalculate payments under programs that already existed in prior years. However, there is no evidence in these transfer regulations or their economic analyses that the agencies ever performed thorough regulatory analysis when the first set of regulations creating the programs were issued. This suggests that transfer regulations should have much lower-quality economic analysis, as the mean in Table 2 implies. Figure 2 shows the kernel density approximations of the probability density functions of *quality* for transfer regulations and for non-transfer

regulations.[7] This figure clearly demonstrates that regulatory analyses of transfer regulations are of a different, lower-quality ilk.

Figure 2: Kernel Density, transfer regulations and non-transfer regulations



[7] A kernel density estimation is a non-parametric method of estimating the probability density function of a random variable, and can be conceived of as a smoothed histogram. See: http://en.wikipedia.org/wiki/Kernel_density_estimation.

The inclusion of *transfer* in the regression equation changes the results on *review time* and *midnight* substantially, unlike the inclusion of the variables for other types of regulations. Table 5 below shows regressions identical to those in Table 3 except that *transfer* is now included in each regression, following equation (2):

$$quality_i = b_0 + b_1 review\ time_i + b_2 midnight_i + b_3 transfer_i + b_4 statutory_i + b_5 judicial_i + e_i \quad (2).$$

Viewed in a certain light, the results shown in Table 5 remove some of the heat from the already tepid support for *review time* being a significant determinant of *quality*. When we control for whether a regulation is a transfer regulation, *review time* loses all semblance of statistical significance, and in fact the sign on its coefficient estimate flips. However, the seeming unimportance of *review time* when controlling for *transfer(s)* should not necessarily lead us to conclude that OIRA review does not affect quality. It is quite possible that the reason that transfer regulations are of lower quality is that OIRA treats them differently. In fact, the results shown in Table 5 would be completely consistent with the hypothesis that OIRA review improves quality, but that the length of review time has little effect on the quality of analysis, given that any extensive review is performed. In other words, OIRA may treat regulations as either worth reviewing extensively (non-transfer regulations) or worth only a nominal review (transfer regulations).

Table 5: OLS estimations; dependent variable is *quality* of regulatory analysis; controlling for whether regulations are *transfer*

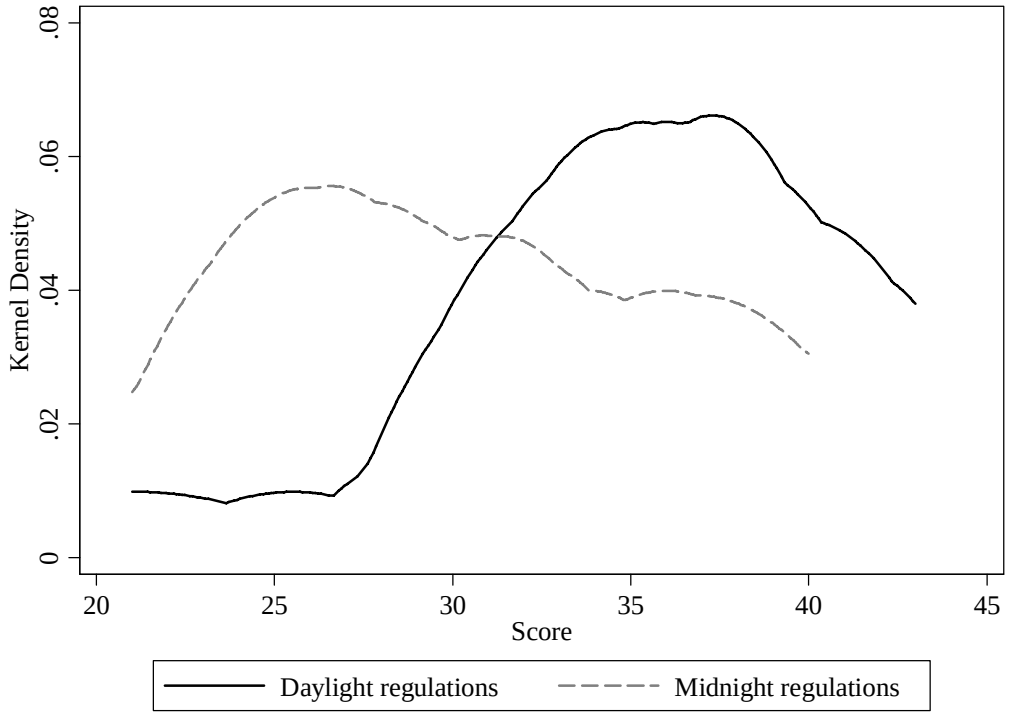
	(1)	(2)	(3)	(4)	(5)	(6)
Revtime	-0.015		-0.011	-0.011	-0.006	-0.006
	(0.65)		(0.52)	(0.49)	(0.27)	(0.23)
Transfer	-15.807	-16.712	-17.046	-17.418	-16.729	-17.128
	(7.44)***	(8.84)***	(8.47)***	(7.59)***	(7.82)***	(7.18)***
Midnight		-5.171	-5.111	-4.969	-5.172	-5.014
		(2.90)***	(2.84)***	(2.66)**	(2.84)***	(2.66)**
Statutory				0.848		0.971
				(0.35)		(0.40)
Judicial					1.878	2.033
					(0.48)	(0.51)
Constant	33.257	35.369	36.065	35.865	35.609	35.342
	(17.37)***	(23.53)***	(17.77)***	(16.85)***	(15.76)***	(14.85)***
Observations	45	45	45	45	45	45
R-squared	0.59	0.65	0.65	0.66	0.66	0.66

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

On the other hand, *midnight* goes from being negative and statistically insignificant (p-values range from 0.16 to 0.67 for OLS coefficient estimates given in Table 3) to being negative and statistically significant with p-values less than 0.01 in multiple regressions. This result supports the notion that midnight proposals are lower in quality—a result that holds when controlling for *review time* and *transfer*. The difference in the means of the population of midnight proposals and daylight proposals, when excluding transfer regulations, are also obvious in Figure 3, which shows kernel density estimations of midnight and daylight non-transfer regulations.

Figure 3: Kernel density, midnight and daylight regulations; non-transfer regulations only



Because of the small sample size, Table 6 reports the results of bootstrap estimations. The results of both the OLS regressions reported in Table 5 and the bootstrap estimations reported in Table 6 point to both transfer regulations and midnight proposals being of lower quality.

Table 6: Bootstrap estimations (10,000 replications); dependent variable is *quality* of regulatory analysis; controlling for whether regulations are *transfer*

	(1)	(2)	(3)	(4)	(5)	(6)
Revtime	-0.015		-0.011	-0.011	-0.006	-0.006
	(0.67)		(0.57)	(0.54)	(0.32)	(0.27)
Transfer	-15.807	-16.712	-17.046	-17.418	-16.729	-17.128
	(7.93)***	(9.33)***	(8.85)***	(7.96)***	(8.43)***	(7.63)***
Midnight		-5.171	-5.111	-4.969	-5.172	-5.014
		(2.94)***	(2.86)***	(2.70)***	(2.93)***	(2.74)***
Statutory				0.848		0.971
				(0.39)		(0.44)
Judicial					1.878	2.033
					(0.40)	(0.43)
Constant	33.257	35.369	36.065	35.865	35.609	35.342
	(16.57)***	(23.52)***	(16.45)***	(15.74)***	(15.00)***	(14.26)***
Observations	45	45	45	45	45	45
R-squared	0.59	0.65	0.65	0.66	0.66	0.66

z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The econometric results in Tables 5 and 6 imply that midnight regulations receive scores about five points lower than daylight regulations, and transfer regulations receive scores 16-17 points lower than non-transfer regulations. Since the mean score was 27 points, these differences seem substantively significant as well as statistically significant. Holding other things constant, a midnight regulation would score about 19 percent below the mean, and a transfer regulation would score more than 60 percent below the mean.

For robustness, we also perform nonparametric tests of the conditional distributions of the populations. We compare the populations of transfer regulations and non-transfer regulations as

well as those of midnight proposals and daylight proposals using Kruskal-Wallis and Kolmogorov-Smirnov tests.[8] Each of these tests supports the conclusions that midnight proposals and transfer regulations are of lower quality. The results are summarized in Table 7.

Table 7: Nonparametric tests for equality of conditional distributions of *quality*

	Kruskal-Wallis Test* (Equality of Medians)		Kolmogorov-Smirnov Test (Equality of CDFs)	
Groups Tested	Test stat	p-value	Test stat	p-value
Transfer vs. Non-Transfer	24.927	0.0001	0.7333	0.000
Daylight non-transfer vs. Midnight non-transfer	4.595	0.0321	0.4722	0.044

*This test is alternatively referred to as the Mann-Whitney-Wilcoxon Test.

3.2 Determinants of *review time*

Although review time appears not to affect quality directly, it still may reflect the outcomes of political, statutory, or judicial pressure to quickly publish a rule. These same pressures may cause promulgating agencies to rush their analysis, to the detriment of quality. We perform further regression analysis to test the relative importance of three possible determinants of review time spent on individual regulations: political pressure, statutory deadlines, and judicial deadlines. We use *midnight* as a proxy for the existence of political pressure on the promulgating agency to quickly produce a proposal. Similar political pressure may therefore be placed on OIRA to quickly finish its review process for midnight proposals. The existence of statutory deadlines and judicial deadlines is directly included based on data from reginfo.gov. Table 8 presents estimations from regressions following equation 3,

$$review\ time_i = b_0 + b_1 midnight_i + b_2 statutory_i + b_3 judicial_i + e_i \quad (3).$$

[8] The Kolmogorov-Smirnov test checks whether two samples are drawn from the same distribution. The Kruskal-Wallis test checks the equality of the medians of two rank-transformed samples assumed to come from identically shaped and scaled distributions.

Table 8: OLS estimations; dependent variable is *review time*

	(1)	(2)	(3)	(4)
Midnight	12.559	6.678	14.866	7.789
	(0.96)	(0.49)	(1.18)	(0.61)
Statutory		-21.107		-26.340
		(1.37)		(1.80)*
Judicial			-55.573	-61.919
			(2.21)**	(2.50)**
Constant	49.136	57.771	51.662	62.727
	(5.26)***	(5.16)***	(5.73)***	(5.84)***
Observations	45	45	45	45
R-squared	0.02	0.06	0.12	0.19

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Most notable in Table 8 is the positive sign and lack of statistical significance on *midnight*. It appears that OIRA did not reduce its review time of midnight proposals in 2008. Both *statutory* and *judicial* have negative, statistically significant effects on *review time*, indicating that those regulations with legal deadlines are reviewed for shorter periods. The bootstrap estimations shown in Table 9 below are consistent with the results shown in Table 8.

Table 9: Bootstrap estimations (10,000 replications); dependent variable is *revtime*

	(1)	(2)	(3)	(4)
Midnight	12.559	6.678	14.866	7.789
	(0.96)	(0.48)	(1.18)	(0.58)
Statutory		-21.107		-26.340
		(1.38)		(1.74)*
Judicial			-55.573	-61.919
			(3.89)***	(4.02)***
Constant	49.136	57.771	51.662	62.727
	(4.79)***	(4.54)***	(5.07)***	(4.91)***
Observations	45	45	45	45
R-squared	0.02	0.06	0.12	0.19

z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

The inclusion of *transfer* as an explanatory variable changes the results, as Table 10 below shows. In this case, however, the change does not involve *midnight* flipping signs. Instead, the coefficient estimate on *midnight* remains statistically insignificant and its magnitude gets even closer to zero when including *transfer*. Additionally, *statutory* becomes statistically insignificant when including *transfer*—probably due to the fact the 9 out of 12 transfer regulations had statutory deadlines, while only 3 out of 33 non-transfer regulations had statutory deadlines. As we should expect if OIRA treats *transfer* regulations differently, the coefficient estimate on *transfer* is negative and statistically significant. Finally, the coefficient estimate on *judicial* remains negative and statistically significant even when including *transfer*. However, there are only three observations of regulations with judicial deadlines, so while it is clearly possible that regulations with judicial deadlines receive shorter reviews, it is possible that some other, unobserved factor led those three regulations to have shorter review times.

Table 10: OLS estimations; dependent variable is *review time*; controlling for *transfer*

	(1)	(2)	(3)	(4)
Midnight	5.399	4.293	6.676	5.071
	(0.42)	(0.32)	(0.56)	(0.41)
Transfer	-30.194	-27.253	-36.580	-32.353
	(2.20)**	(1.71)*	(2.84)***	(2.18)**
Statutory		-6.472		-9.498
		(0.37)		(0.59)
Judicial			-67.272	-68.209
			(2.85)***	(2.86)***
Constant	62.861	64.172	68.822	70.828
	(5.77)***	(5.55)***	(6.68)***	(6.49)***
Observations	45	45	45	45
R-squared	0.12	0.13	0.27	0.27

Absolute value of t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Once again, because of the small sample size, we performed bootstrap estimations of the same equation, which are shown below in Table 11. The results are identical in sign and magnitude,

with some very slight decreases in t-stats for *midnight* and increases in statistical significance for *transfer*.

Table 11: Bootstrap estimations (10,000 replications); dependent variable is *revtime*; controlling for *transfer*

	(1)	(2)	(3)	(4)
Midnight	5.399	4.293	6.676	5.071
	(0.41)	(0.29)	(0.54)	(0.37)
Transfer	-30.194	-27.253	-36.580	-32.353
	(2.39)**	(2.35)**	(2.91)***	(2.84)***
Statutory		-6.472		-9.498
		(0.47)		(0.69)
Judicial			-67.272	-68.209
			(3.99)***	(4.04)***
Constant	62.861	64.172	68.822	70.828
	(4.90)***	(4.41)***	(5.42)***	(5.02)***
Observations	45	45	45	45
R-squared	0.12	0.13	0.27	0.27

z statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Our tests of the determinants of *review time* mostly point to OIRA's treatment of transfer regulations as the dominant factor. Most other factors pale in importance when *transfer* is included in regressions. However, our results yield two other important findings. First, statutory and judicial deadlines may also cause OIRA to shorten its review, but more data are required before we can confidently test this. Second, midnight proposals apparently were not reviewed for shorter periods at OIRA in 2008, unless they were also transfer regulations. This may be a heretofore-unnoticed effect of the Bush administration's decision to resist midnight regulations.

4. Conclusions

The quality of economic analysis accompanying proposed regulations varies substantially across agencies and even across regulations within agencies (Ellig and McLaughlin 2010, Hahn and

Dudley 2007, Hahn et. al. 2000). Previous research on the midnight regulations phenomenon found that final regulations promulgated during high volume rulemaking periods, such as midnight periods, tended to be reviewed at OIRA for shorter periods (McLaughlin 2010). In this paper, we examined whether proposed midnight regulations, as a group, are accompanied by lower-quality economic analyses, and whether such a finding is attributable to shorter review times at OIRA. We found that, in 2008, proposed midnight regulations indeed appear to receive lower quality analysis compared to daylight regulations. This finding confirms the suspicions of previous scholarship suggesting that midnight regulations may not be considered as carefully because of political pressure to rush them through the process (Brito and De Rugy 2009, Brito and McLaughlin 2008, Morriss et. al. 2003). We also discovered that transfer regulations are of substantially lower quality. This is consistent with OMB's (2009, 19) observation that agencies rarely estimate the benefits and costs of these regulations.

As a general matter, we cannot conclusively say whether the lower quality of midnight proposals is due to shorter review times at OIRA. Although regressing review time on a midnight dummy variable and other determinants of review time paints *midnight* as an irrelevant factor, the administration and OIRA may have treated midnight proposals differently in 2008 than previous administrations in previous midnight periods. The 2008 White House memo (the Bolten memo) on the timing of regulation promulgation is evidence that OIRA probably treated *midnight* regulations with care at the very least, so any general conclusions drawn from 2008 data should be treated with caution.

This paper shows that certain types of regulations tend to receive lower-quality economic analysis. It seems quite possible that those regulations are themselves of lower quality, but several challenges must be overcome in order to test that. The first challenge would be defining and measuring the quality of regulations. An economist might define quality in terms of cost-effectiveness or the spread between benefits and costs, but of course other definitions are possible based on policy criteria other than economic efficiency. Another challenge would involve rigorous retrospective analysis of the actual results caused by the regulations after they were adopted. At best, the Regulatory Impact Analyses prepared when regulations are proposed measure the effects the agency's economists believe will occur, not the results that actually do occur. If these challenges could be overcome, then it would be possible to assess whether higher-quality analysis leads to better results.

Another possible research topic involves reconciling the differences between this paper, which finds that proposed midnight regulations are not reviewed for shorter times than other regulations, with McLaughlin (2010), which finds that regulations promulgated during high-volume rulemaking periods tend to receive significantly shorter review periods. There are many possible explanations, including the simplest one that the administration treated midnight regulations differently in 2008 than in previous midnight periods. Alternatively, perhaps the administration treated *midnight proposals* differently from *final midnight regulations*. A third possible explanation is that McLaughlin (2010) did not control for whether regulations were transfer regulations.

These suggestions for future research, together with the findings in this paper, demonstrate how consistent scoring data on the quality of regulations can be used to expand scholars' understanding of the regulatory process in a wide variety of ways.

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Appendix I: Regulatory Analysis Assessment Criteria (Ellig and McLaughlin 2010)

Openness

1. **Accessibility:** How easily were the RIA, the proposed rule, and any supplementary materials found online?
2. **Data Documentation:** How verifiable are the data used in the analysis?
3. **Model Documentation:** How verifiable are the models and assumptions used in the analysis?
4. **Clarity:** Was the Regulatory Impact Analysis comprehensible to an informed layperson?

Analysis

5. **Outcomes:** How well does the analysis identify the desired benefits or other outcomes and demonstrate that the regulation will achieve them?
6. **Systemic Problem:** How well does the analysis identify and demonstrate the existence of a market failure or other systemic problem the regulation is supposed to solve?
7. **Alternatives:** How well does the analysis assess the effectiveness of alternative approaches?
8. **Benefit-Cost Analysis:** How well does the analysis assess costs and benefits?

Use

9. **Use of Analysis:** Does the proposed rule or the RIA present evidence that the agency used the Regulatory Impact Analysis?
10. **Net Benefits:** Did the agency maximize net benefits or explain why it chose another option?
11. **Measures and Goals:** Does the proposed rule establish measures and goals that can be used to track the regulation's results in the future?
12. **Retrospective Data:** Did the agency indicate what data it will use to assess the regulation's performance in the future and establish provisions for doing so?