Follow the Pipeline: Anticipatory Effects of Proposed Regulations

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Abstract

Anecdotal evidence suggests that firms anticipate regulatory actions long before the proposed regulations are finalized. Applying a novel machine-learning algorithm to a new dataset, we provide the first large-sample evidence of substantial anticipatory effects. The granular data set tracks the entire rulemaking activity of all federal agencies since 1995. Out of 41,000 rule proposals, only two-thirds converted into a final rule, and they did so after spending two years on average in the rulemaking pipeline. We track the timeline of each proposed rule, assign proposed rules to firms based on a machine-learning algorithm, and derive a firm-level measure of exposure to the regulatory pipeline: the amount of rule proposals which are relevant to the firm. We find that firm-level exposure to the regulatory pipeline has significant anticipatory effects. Firms with greater exposure express more concerns about future political risk, increase their overhead costs, and see lower profits. To prepare for the anticipated regulatory changes, firms spend more on lobbying, build up cash reserves, and reduce capital investment. The effects are independent of the firm's current regulatory burden and are driven by rule proposals that are more likely to convert into final rules. Financially constrained and small firms are especially responsive to the regulatory pipeline, which highlights the role of budget constraints and economies of scale. Our results are the first to consistently document anticipatory effects based on the entire body of potential federal regulations.

Keywords: machine learning, economics of regulation, rulemaking, anticipatory effects

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Introduction

The economics of regulation is a rapidly growing field of study, exploring how regulation in all its forms affects economic activity. Papers in this field focus on *effective* regulations, which are included in the Code of Federal Regulation and dictate prices and behavior. Missing from this literature is the role of *proposed* regulations: proposals to create new rules or amend existing ones. This omission is unfortunate. Anecdotal evidence suggests that firms strive to stay ahead of the curve and prepare for future regulatory developments, long before the proposed regulations are finalized and codified. In this paper we begin to fill the gap by introducing the first firm-level measure of regulatory pipeline.[1] It captures the amount of regulations which are still under development by federal agencies and are relevant to the firm. Building on the new measure, we document substantial anticipatory effects: exposure to the regulatory pipeline spurs significant changes in firm operations including higher costs, less capital investment, and smaller profits, independent of the effective regulations which are currently in place.

To carry out the analysis, we source a granular data set from the Unified Agenda. It is a semi-annual official publication which describes each rule proposal that is actively under development at the time. We reconstruct the precise timeline of each proposal, since the day it was first introduced until its final resolution. Thus, we observe the federal government's pipeline at any point in time. Nearly 41,000 proposals have passed through the pipeline since 1995, and the daily average is 3,500 rule proposals. The average proposal spends 29 months in the pipeline. One out of three proposals does not survive, and is officially rescinded after 41 months. Two out of three proposals survive, clearing the pipeline after 22 months to become an effective rule. Given the large number of proposals in the pipeline, the uncertainty about the ultimate outcome, and the long time it takes to resolve the uncertainty, it is reasonable to expect potential regulations to be on the collective minds of managers.

In the first part of the paper, we map the aggregate rulemaking pipeline to the cross-section of firms. The intuition is that firms have differential exposure to rules. For

[1]The new measure is available on our website.

example, financial firms will likely be more affected by rule proposals regarding trading and disclosure, while pharmaceutical firms will be more attuned to lab safety issues. To capture this heterogeneity, we first decompose the rulemaking pipeline into 100 regulatory topics. The decomposition is conducted by an unsupervised Latent Dirichlet Allocation (LDA) algorithm, an increasingly popular tool in the financial economics literature.[2] We apply the same algorithm to conference calls, to identify how important is each LDA topic to each firm at a given point in time. To obtain our final firm-level measure, we interact each topic's importance (the perspective of the firm) with the fraction of the pipeline associated with this topic (the perspective of regulators), and sum across all topics. Intuitively, our measure captures the average number of proposals which are currently in the rulemaking pipeline and are relevant to the firm. It is a weighted average, where weights vary over time and across firms, reflecting how important each topic is for the firm at a given time.

In the second part of the paper, we investigate the properties of the regulatory pipeline. First, we verify that the LDA algorithm reasonably identifies distinct areas of regulatory activities. We do so by examining unique keywords associated with each topic and showing that they vary intuitively across agencies and industries. For instance, Topic 45 is prevalent in National Oceanic and Atmospheric Administration's rules (keywords: "ocean," "fish", "species"), while Topic 31 is closely aligned with the SEC (keywords: "investment", "disclosure", "company"). From the firm's perspective, Topics 26 is a dominant topic only for the Healthcare industry (keywords: "medicare", "medicaid", "hospital"), while Topic 27 is largely confined to the Banking industry (keywords: "loan", "mortgage", "soundness"). Thus, the LDA is a useful method to categorize the firm's operations and the federal government's rulemaking activities.

More broadly, we establish three facts regarding the firm-level regulatory pipeline. *First*, we conduct a simple variance decomposition: regressing our measure on a growing number of fixed effects and noting the incremental increase in R^2. We find that economy-

[2]For examples, it is used to study asset pricing puzzles (Israelsen (2014), Bao and Datta (2014), Bybee et al. (2019), Lopez-Lira (2019), Bybee et al. (2022)), risks in the financial sector (Hanley and Hoberg (2019)), issues discussed in FOMC speeches (Hansen et al. (2018)), and government regulations (Kalmenovitz et al. (2021)).

wide factors (time FE) account for 65% of the variation, industry factors explain an additional 14%, and the remaining 21% of the variation plays out at the firm level. *Second*, related industries share a commonality in regulatory pipeline (à la Chen and Kalmenovitz (2020)). For example, the regulatory pipeline of Business Services is positively correlated with Computers and Electronic Equipment, but negatively correlated with Construction Materials and Rubber and Plastic. *Third*, firms with greater exposure to the regulatory pipeline are subject to lower regulatory burden in the present, while expressing more concerns about future political risk. We demonstrate this fact by correlating our measure with a host of existing measures from the literature, such as costs of compliance with paperwork regulations (Kalmenovitz (2023)) and discussion of political risk in the firm's conference call (Hassan et al. (2019)).

Combined, these exercises sharpen the interpretation of our measure. It captures a distinct notion of regulatory burden, one that is focused on potential future changes in the regulatory environment, rather than the current regulatory environment the company is facing. There is a strong time-series component, which is expected given that our measure explicitly accounts for the government's pipeline, and a weaker cross-industry component, which reflects potential commonality in regulatory environment across industries. Importantly, our measure varies substantially across firms. It suggests that each firm has a unique exposure to the aggregate regulatory pipeline, consistent with recent empirical findings on firm-specific regulatory burden and political risk.

In the third part of the paper, we study the economic impact of exposure to the regulatory pipeline. The empirical analysis is guided by two overarching theories of regulation. On one hand, *public interest* theories argue that regulation is a welfare-increasing institution designed to correct market failures, such as monopoly power and asymmetric information.[3] The alternative theories, often known as *public choice*, *private interest* or *regulatory capture*, view regulation as a rent-seeking process where private actors advance their self-interests at the expense of the public good.[4] While the two

[3]See Pigou (1938); Demsetz (1974); Joskow and Rose (1989); and Melody (2016).

[4]See Tullock (1967); Stigler (1971); Krueger (1974); Posner (1974); Peltzman (1976); Becker (1983); and Benmelech and Moskowitz (2010).

theories differ with respect to the benefits of regulation, both seem to agree that regulation is costly for firms. Therefore, as more regulatory changes are being considered, companies could internalize some of the future costs and forgo potential investment opportunities. Moreover, exposure to the regulatory pipeline creates more uncertainty: it is not clear which proposals will successfully convert into a final rule, how long would they stay in the pipeline, and what would be the ultimate content of the pending rules. This uncertainty could further affect companies as they evaluate potential business decisions.

Specifically, we present three sets of results. *First*, firms with higher exposure to the regulatory pipeline spend more on SGA (sales, general, and administrative) and COGS (cost of goods sold). Consequently, their profit margins shrink. *Second*, regulatory pipeline is associated with lower capital investment, more lobbying spending, and larger cash holdings. This suggests that exposure to the regulatory pipeline adds uncertainty and incentivizes firms to put on hold investment projects to prepare for future changes. *Third*, cross-sectional tests highlight two additional mechanisms: budget constraints and economies of scale. Anticipating rising compliance costs, financially constrained firms repurpose resources from profitable projects toward regulatory compliance (Giroud and Mueller (2017)). Moreover, smaller companies are less able to absorb the expected rise in compliance costs, relative to large firms. Indeed, we find that the effects we document are concentrated among financially constrained firms, which have little slack and must repurpose resources toward compliance, and among smaller companies, which do not enjoy economies of scale. All our empirical findings are identified within-firm over time, net of industry trends (firm and year×industry fixed effects). They are conditional on standard controls, such as size and cash flow, and controlling for the burden of effective regulations.[5] Thus, we interpret our findings as indicative of substantial anticipatory effects, whereby companies make material adjustments as they anticipate future change in regulation, independent of the current level of regulation.

Finally, we utilize the breadth of our data and expand the analysis in two ways. First, we exploit the heterogeneity across rules and investigate which ones elicit stronger antic-

[5]Note that regulatory pipeline is associated with *lower* regulatory burden, and thus an omitted variable would likely cause an attenuation bias.

ipatory effects. As expected, firms are more responsive to proposals which could have a substantial economic impact.[6] They are also more sensitive to proposals which have been in the pipeline for a longer time or have demonstrated some progress (for example, yielded an interim rule). From a different perspective, we compute a parallel measure of pipeline fragmentation (similar to Kalmenovitz et al. (2021)). Instead of measuring the quantity of the pipeline ("how many rule proposals"), it measures how fragmented the pipeline is ("how many agencies propose rules").[7] We add the fragmentation of the regulatory pipeline to all specifications and obtain similar results. Perhaps more interestingly, we find that the fragmentation has a strong impact on corporate outcomes (although smaller in magnitude than the pipeline quantity). It shows that the fragmentation of rulemkaing across many agencies adds a layer of burden which is independent from the quantity of rulemaking, consistent with Kalmenovitz et al. (2021).

In sum, exposure to the regulatory pipeline is costly and leads to material adjustments of corporate policies. The results are broadly consistent with theories of regulation but highlight the independent importance of anticipatory effects. These findings help validate the new measure, but should not be interpreted as a conclusive verdict against the value of regulation. First, causal inference is challenging because regulation is rarely imposed on companies exogenously. Second, many regulations will likely have significant positive externalities. Full investigation of those benefits is beyond the scope of this paper, but they must be ultimately weighed against any potential costs. Thus, while theories of regulation are helpful in guiding the analysis, one should be cautious when drawing final conclusions from the empirical findings presented here.

There is a growing recognition of the need to better understand the economic impact of regulation. Against the backdrop of this important challenge, the main innovation in our paper is to focus on *potential* regulations. We develop the first firm-specific measure of regulatory pipeline and shed light on a relatively unexplored aspect of regulatory burden: the amount of potential future regulations that are relevant to the firm. Exposure to

[6]In the government parlance, those rules are labelled as "major," "significant," or "substantive," as opposed to rules which are labelled as "administrative" or "routine."

[7]The quantity and fragmentation of the pipeline are negatively correlated. In other words, when the regulatory pipeline increases, it tends to be driven by a small number of federal agencies.

the regulatory pipeline differs conceptually from current studies, which focus on the burden of effective regulations. Moreover, regulatory pipeline has little correlation with effective regulations and it independently affects a broad range of firm outcomes. From a methodological standpoint, our measure has several advantages. First, it does not require companies to explicitly discuss regulation or to use keywords from a pre-determined list.[8] Second, we account for the relative importance of different regulatory topics, both within firms and within the government's rulemaking pipeline. This helps us measure the exposure more precisely. Third, the underlying data set (Unified Agenda) is publicly available and hence replicable. It is updated continuously and can be easily extended for future studies. Moreover, it allows nuanced analysis at various frequencies or for a subset of regulations and agencies.

In addition, we contribute to the literature on the economic impact of regulation. This topic is the subject of many policy discussions and broad theories (cited above), ranging from *public interest* to *regulatory capture*. We apply those theories to the context of regulatory pipeline and estimate the impact of pending regulations on key company-level outcomes. Anticipating future changes in regulations, companies increase spending (especially on lobbying activities), build up their cash reserves, and reduce capital investment. Consequently, their profit margins shrink. Further analysis highlights the role of budgetary constraints and economies of scale, which could amplify the economic impact of regulation. Combined, these results shed more light on the real effects of regulation and the underlying mechanisms.

Lastly, our work relates to a large body of papers that study how specific rules affect companies. In this domain, several scholars have questioned the use of exact dates of regulatory policies, given that market participants may change their behavior in anticipation of future rules (Bessembinder et al. (2018); Trebbi and Xiao (2019); Borochin et al. (2021)). Using a novel methodology and a comprehensive data on all federal rules, we document substantial anticipatory effects: companies adjust their operations in expectation of future regulatory developments, independent of the current regulatory

[8] Calomiris et al. (2020) report that 70% of companies do not explicitly discuss regulation in their quarterly earning calls.

environment. This is important because it shows that focusing on the passage of a final rule misses a large part of the effect, as firms make substantial adjustments years before the regulation is finalized. The anticipatory effects are surprisingly large, given that a third of the proposed rules fail to convert into a final rule, and even those who do succeed spend nearly two years in the pipeline. Future studies can dig deeper into the origins and consequences of anticipatory effects, tactics adopted by companies to mitigate those effects, and potential heterogeneity across firms and rules.

1 Institutional setting and data

1.1 Institutional setting

Rulemaking is the process by which federal agencies develop, amend, and repeal regulations. In this paper we focus on the vast majority of regulations which are developed through the "informal" notice-and-comment process. The alternative, "formal" procedure need to be specifically required by Congress and in practice is rarely used (Yackee and Yackee (2010)).

The notice-and-comment process is outlined in Section 553 of the 1946 Administrative Procedures Act (APA), and additional requirements are in Executive Order 12866 and a few other statutes and decrees. Figure 1 provides a simple illustration of the process. It starts with a triggering event, such as an act of Congress. For example, the Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) authorized the Securities and Exchange Commission to develop dozens of rules to enhance transparency and efficiency in financial markets. Once an agency decides that a regulatory action is necessary, it publishes a proposed rule in the Federal Register and solicits written comments by interested parties. The public has 30 to 60 days to comment on the proposed rule. The agency must consider the relevant comments when formulating the final rule. In some cases, the agency decides to withdraw the regulation. Otherwise, the agency makes changes where appropriate and publishes a final rule in the Federal Register with a specific date upon which the rule becomes effective. That rule is then integrated into the Code of Federal

Regulations.

Some exceptions apply. For example, some rules are initiated by the agency as part of its broad authority, not by a specific act of Congress. A final rule might be issued without first issuing a notice of proposed rulemaking, and some rules may be published for public comment more than once.

1.2 Data sources

The primary source for this paper is the Unified Agenda (UA). It is the official, semiannual publication of all expected and pending rulemaking activities of all federal agencies at that time point. Twice a year, each federal agency prepares a detailed report on regulations under development. The reports conform to government-wide uniform guidelines and the entire process is overseen by the Office of Information and Regulatory Affairs (OIRA), a unit within the Office of Management and Budget. The reports cover all regulations in various stages of development, some merely an early draft and some nearing completion. The agency provides a timetable of all the actions it has taken so far with regards to each regulation: publishing a draft, convening a public meeting, or a full or partial retraction of the proposed regulation. OIRA processes the reports from the entire federal government and produces a single publication, the Unified Agenda. The Agenda is thus a comprehensive snapshot of all federal regulations that are still under development or have been resolved since the latest edition.

In the Agenda, rules are uniquely identified by the Regulatory Identification Number (RIN). The RIN remains constant throughout the entire rulemaking process. For ease of notation, we will use the terms "RIN," "rule," and regulation" interchangeably to describe a single regulatory action.[9] Finally, note that we download and parse all the Agenda editions since Fall 1995.[10] However, our ultimate firm-level measure of regulatory pipeline relies on conference calls, and those transcripts are widely available only since

[9]Occasionally a single regulatory action would have multiple RINs, for example if multiple agencies collaborate on a new regulation. Also, a single RIN could yield more than one regulation or rule, i.e. it could add or modify more than a single section in the Code of Federal Regulation.

[10]Federal agencies have been required to compile regulatory agendas since 1978, and comparable data is available beginning in 1983, but in electronic format only since 1995.

2008. Therefore, our empirical exercises start in 2008.

For our empirical analysis, it is important to establish the timeline of each rule (RIN). This helps us determine if the rule is actively under consideration and therefore potentially relevant the the firm. We provide a full description of the procedure in Appendix A.1. In a nutshell, a rule enters the pipeline when it is first formally announced by the agency, and exits the pipeline when a final version has been published, or if the proposed regulation has been officially retracted. For part of the analysis we also exploit the fact that the Agenda differentiates between two tiers of rules.[11] The top tier includes *significant* rules, which raise novel legal issues; *economically significant* rules, which have an annual economic effect of $100 million or more; and *substantive* rules, which are important but were not labeled as significant. Some of the top-tier rules are additionally labeled as *major*, a definition that partially overlaps with the three groups (see 5 U.S.C. §804(2)). The bottom tier includes *routine* and *administrative* rules, which largely pertain to how federal agencies organize themselves and execute their powers.

Table 1 summarizes the sample of 40,529 regulations under development. The average regulation was in the pipeline for 882 days (29 months). One quarter (26%) of the rules were put on hold at least once during their lifetime, meaning that the agency decided to suspend the rulemaking process for at least 12 months. The latest edition of the Unified Agenda was published in Fall 2021, and 8.1% of the rules were still actively under consideration (total of 3,282). Out of the remaining 37,227 rules, which were resolved prior to Fall 2021, nearly one third (30.5%) were officially rescinded without any rule and nearly two thirds (67.9%) concluded with at least one published rule. The remaining 1.6% ended with mixed results: part of the original proposal was withdrawn and part of it was finalized and codified into the CFR. In terms of importance, 33% of the rules are considered significant (economically or otherwise) and 63% are substantive. The bottom tier includes 7% of the rules, either administrative or routine. Table A.1 lists the top 20 agencies by rule quantity. The top four agencies are the National Oceanic and Atmospheric Administration, the Internal Revenue Service, the Fish & Wildlife Service,

[11] The system was established in 1993, following Executive Order 12866 which subjected significant regulations to a more rigorous vetting process.

and the Department of Defense. Combined, they are responsible for nearly 22% of the government's rulemaking.

In addition to the Unified Agenda, we use conference call transcripts from the Capital IQ Transcripts database and financial performance data from Compustat. We also source a set of control variables from the emerging literature on the economics of regulation, which we describe below in Section 3.3.

2 Measuring regulatory pipeline

Our goal is to measure firm-specific exposure to the regulatory pipeline. Intuitively, we seek to capture how many potential regulations apply to the company. Formally, it is defined as:

$$RegPipeline_{i,t} = \sum_{o=1}^{O} \omega_{i,o,t} \cdot TopicPipeline_{o,t}, \tag{1}$$

where $TopicPipeline_{o,t}$ represents the fraction of the aggregate pipeline at time t which belongs to topic o. This is a time-series measure which varies across regulatory topics and over time, but does not vary across firms. The variation across firms is driven only by $\omega_{i,o,t}$, which captures the importance of topic o in the eyes of firm i at time t.

2.1 Regulatory topics

Our first step is to identify regulatory topics. For each RIN, we combine all the textual descriptions across all years and editions of the UA. This includes the rule's title and abstract. Next, we use Latent Dirichlet Allocation (LDA) to identify regulatory topics. LDA is a Bayesian unsupervised algorithm. It describes each rule as a distribution over topics, and each topic as a distribution over words. Consequently, LDA provides us a summary of the issues that the Unified Agenda describes, and what percentage of each rule discusses each topic.[12]

[12] LDA has been increasingly used in financial economics literature to study asset pricing puzzles (Israelsen (2014), Bao and Datta (2014), Bybee et al. (2019), Lopez-Lira (2019), Bybee et al. (2022)), emerging risks in the financial sector (Hanley and Hoberg (2019)), issues discussed in FOMC speeches (Hansen et al. (2018)), and government regulations (Kalmenovitz et al. (2021)).

By relying on the machine to define topics, we mitigate biases that might arrive from manually defining topics, for example through word lists. The only input is to define the number of topics. By way of comparison, Kalmenovitz et al. (2021) identify 100 topics in the Federal Register, the government's official daily publication. Lowry et al. (2020) identify 30 topics in firms' prospectuses and 8 topics in the SEC's comment letters pertaining to these prospectuses. We therefore chose 100 topics as our baseline. As described in more depth later, in robustness checks we consolidate these 100 topics into a smaller number and the results remain qualitatively similar.

2.2 Aggregate regulatory pipeline

The next step is to decompose the aggregate pipeline into distinct regulatory topics. We retain the set of rules which are in the pipeline as of time t, denoted by R_t. We then define the pipeline share of topic o at time t as:

$$TopicPipeline_{o,t} = \sum_{r=1}^{R_t} Weight_{o,r}, \tag{2}$$

where $Weight_{o,r}$ is the fraction of rule r dedicated to topic o, as identified by the LDA algorithm. Note that $Weight_{o,r}$ does not vary over time (the rule's topic distribution remains constant). Instead, the variation over time comes from R_t, that is, the set of rules that are currently in the government's pipeline. Another thing to note is that the sum of weights within rule always equals one ($\sum^{O} Weight_{o,r} = 1$), but the sum of weights within topic ($\sum^{R_t} Weight_{o,r}$) can be greater than 1. Therefore, the topic's share of the pipeline ($TopicPipeline_{o,t}$) can exceed 1. Higher values imply that potential rules touch more frequently on topic o.

2.3 Firm-level regulatory pipeline

Our next step is to identify how important is each LDA topic to the firm. To that end, we use quarterly conference calls from the Capital IQ Transcripts database. We keep all the text in each transcript except the parts corresponding to the operator speaking. We remove standard stopwords such as "the" and "and," as well as boilerplate words which appear repeatedly in the text but do not distinguish between topics (see full list in the Appendix). We project each conference call into the LDA model, trained on the Unified Agenda. Consequently, a conference call is represented as a 100-dimension vector, where each component corresponds to the fraction of the text allocated to each of the 100 topics discussed in the regulations. Each component can be defined as:

$$\omega_{i,o,t} = \frac{Words_{o,i,t}}{Words_{i,t}} = \frac{Words_{o,i,t}}{\sum_{o=1}^{O} Words_{o,i,t}}, \quad (3)$$

where $Words_{i,t}$ is the number of words in the conference call of firm i at time t, and $Words_{o,i,t}$ is words devoted specifically to topic o. Thus, $\omega_{i,o,t}$ reflects the relative importance of topic o for firm i at time t. By construction, $\omega_{i,o,t}$ ranges from 0 to 1 and its average is 1% (since there are 100 topics). Note that $\omega_{i,o,t}$ is measured at a quarterly frequency. Some of our specifications are at an annual frequency, and in those instances we use the annual average of $\omega_{i,o,t}$ across quarters. Lastly, we combine the topic's weight ($\omega_{i,o,t}$) with the topic's frequency ($TopicPipeline_{o,t}$) to generate our final firm×year measure, $RegPipeline_{i,t}$ (Equation (1)).

3 Understanding regulatory pipeline

In Section 2, we described our methodology to measure regulatory pipeline. In this section, we focus on the interpretation and validation of our new measure. We begin by studying the output of the LDA topic classifier, and then examine various aspect of the final product: firm-level measure for the quantity of the regulatory pipeline.

3.1 Patterns in regulatory topics

The LDA algorithm is unsupervised, except for the number of topics which must be selected by the econometrician. Thus, it is important to examine whether the output reasonably captures regulatory topics.

We start by examining the words with the highest frequency within each topic. This can be achieved by looking at the word clouds, where a larger font corresponds to a larger weight of the word in that topic. Figure 2 contains six examples and additional word clouds are in Figure A.1 in the Appendix (note that the topic numbers do not contain any information). The figures reveal how each topic is centered on a distinct set of keywords, which correspond to a potential area of regulation. For example, Topic 1 concerns regulations about food labeling and includes keywords such as "label," "dietary," and "content." Topic 2 corresponds to rules about fishing, with terms such as "fishery," "quota," and "Alaska." Topic 3 corresponds to urban boundary definitions with words such as "area," "county," "geographic," and "urban." As a last example, Topic 50 corresponds to regulations about government employees conduct with words such as "conduct," "OGE" (Office of Government Ethics), and "labor."

Next, we study the relative prominence of LDA topics within the government's rule-making pipeline. Each quarter we rank the topics from one to 100, based on their weights in the pipeline, where the topic with the highest weight is ranked one. We then count, for each topic and ranking, the number of quarters in which the topic has achieved the given ranking. Figure 3, Panel A, displays the total counts for all topic-ranking pairs. By comparing the shading within column, we can see whether the topic's importance fluctuates over time (entire column is lightly shaded), or whether the topic tends to have a fixed degree of importance (only a handful of ranks are darkly shaded). Most topics are characterized by light shadings, indicating that their dominance in the Unified Agenda varies greatly over time. However, a handful of topics are consistently either one of the most or least dominant in the Agenda. For example, the dark shaded rectangle at the bottom of the figure conveys the fact that Topic 35 had the top ranking in 63 of the 108 quarters. Looking at the most important keywords for Topic 35, we can see the reason for the topic's dominance: many of the keywords apply to rules from a broad set of agencies. On the other hand, the dark rectangle near the top and middle of the figure shows that Topic 45 is one of the least dominant topics in most periods, with a rank of 98 for 73 of the 108 quarters. Again, we can make sense of this result by looking at the keywords for Topic 45. Keywords such as "ocean," "fish", and "species" strongly suggests that this topic involves wildlife protection issues. Not surprisingly, this topic is frequently mentioned in rules promulgated by the National Oceanic and Atmospheric Administration (NOAA).

We can confirm the narrow applicability of Topic 45 across agencies in Figure 3, Panel B. We take the top 20 agencies in terms of the total number of rules in the publication history of the Unified Agenda. We then calculate, for each agency, the average weight of each topic across its history of rules and report the top and bottom five topics for each agency. We see that Topic 45 is one of the least dominant topics for more than half of the agencies, but one of the most dominant topics for NOAA. In contrast, Topic 35 is a top-five topic for several of the top-20 agencies. This demonstrates the uniqueness of Topic 45 versus the universality of Topic 35. Finally, we can also see that Topic 31 is the highest-ranked topic for the SEC, but is not in the top-five for any other of the top agencies. Looking at the keywords associated with Topic 31 (Figure 2), we can clearly see how many of those words align closely with the SEC's mission (for example, "investment", "disclosure", and "company").

We conduct a final cross-sectional validation of our topic classifications by analyzing the importance of topics across industries. We start with the topic weights for our firms each quarter and then calculate the average weight of each of the 100 topics for firms in the same Fama-French 48 industry. The resulting highest-ranked and lowest-ranked topics for each industry are illustrated in Figure 3, Panel c. Two topics, numbered 40 and 83, consistently rank as the highest and lowest, respectively, across industries. Again, we can validate this pattern by looking at the keywords for each topic. Topic 40's keywords, such as "rate", "percent", and "annual", should apply to a wide set of industries. In contrast, Topic 83 seems to be associated with immigrations issues ("immigration", "alien", and "visa"), which should apply only to firms that deal intensively with immigration policies. We can also see that Topics 26 and 27 are one of the most important topics only for the Healthcare and Banking industries, respectively. The keywords for the two topics are predominantly associated specifically with each of these two industries: "medicare", "medicaid", and "hospital" for topic 26, and "loan", "mortgage", and "soundness" for topic 27.

In sum, the LDA algorithm appears to reasonably identify distinct areas of regulatory activities. Close examination of specific topics reveals typical keywords associated with those areas, such as banking, fish and wildlife, and healthcare. The topics vary intuitively over time and across agencies and industries, suggesting that the LDA is a useful method to parse the federal government's rulemaking activities.

3.2 Patterns in regulatory pipeline

The previous section examined the building block of LDA topics, and we now turn to the final output: firm-level measure of regulatory pipeline. We begin with a simple variance decomposition, regressing $RegPipeline$ on a growing number of fixed effects and reporting the incremental increase in R^2. Our results are in Table 2, Panel A. Economy-wide factors (time FE) account for 65% of the variation in regulatory pipeline. Using the Fama-French 48 industry classification, time-invariant industry factors (industry FE) account for an additional 12%, while time-varying industry factors (industry$\times$time FE) add only 1%. Thus, about 21% of the variation in $RegPipeline$ plays out at the firm$\times$year level. For comparison, Kalmenovitz (2023) finds that one-third of the variation in compliance costs is at the firm-level, and Hassan et al. (2019) find that nearly 90% of the variation in political risk is at the firm-level. Recall that $RegPipeline$ explicitly includes a time-series component ($TopicPipeline$ in Equation (1)), and it is therefore not surprising that the time trend explains a larger fraction of the variation relative to those other measures.

Motivated by these findings, we study the properties of the aggregate regulatory pipeline. We report the quarterly distribution of regulatory topics in Table 2, Panel B. The average topic includes 36.9 rules with 83% fragmentation score (or 17% HHI score). Since there are 226 agencies in our sample, if all agencies regulate a topic equally, then the fragmentation is 99.6% ($1-\frac{1}{226}$). Next, we break down the pipeline by rule category.[13] The majority of rules are important (35.2), consisting primarily of substantive rules (21.8). For some of the analysis below, we remove from the sample actions which aim to reduce the

[13]The sum of components can be slightly lower than the baseline measure, since some rules miss relevant information.

economic burden on firms. That includes 1,031 deregulatory rules which use the phrase "deregulat" or "simplif" (for instance, "deregulation" or "simplifying"). The average topic includes 35.8 "burdensome" rules (those that are not flagged as deregulatory). In another test, we remove from the sample actions that have been announced for the first time on the Agenda. Those rules have lower probability of converting into a final rule, and additionally it is more difficult to identify distinct LDA topics due to the succinct textual description. The average topic includes 33.3 "mature rules", that have been in the pipeline in the previous quarter. Finally, in one test we construct a separate measure for rules that have been canceled at some point during the quarter. Those rules no longer pose a risk, and are essentially a semi-placebo test. We find that the average topic consists of 36.0 active rules, and the residual of 0.9 represents canceled rules.

Next, we study the commonality in regulatory pipeline across industries (à la Chen and Kalmenovitz (2020). We first residualize out the time variation of $RegPipeline$ and then, for each quarter, calculate the average regulatory pipeline for firms in the same Fama-French 48 industry. Finally, we calculate the correlation of $RegPipeline$ between each pair of industries and illustrate the correlations in Figure 4. The figure is a 48×48 square, where the shading of each square indicates the correlation of an industry pair. The industries have been ordered by their average correlation with the other industries, such that the first column on the left is the industry with the highest average correlation with the other industries, in this case Fama-French industry 34 (Business Services). There appears to be a wide variation in regulatory pipeline across industries. In addition, the correlation between industries' regulatory pipeline generally reflects how closely related the industries are. As an example, the top left square is the correlation of one for the regulatory pipeline of Fama-French industry 34 ($RegPipeline^{34}$) with itself. Moving from the top, the three squares directly below show the correlation between $RegPipeline^{34}$ and $RegPipeline^{36}$ (Computers), $RegPipeline^{35}$ (Communication), and $RegPipeline^{32}$ (Electronic Equipment), with correlations of 0.62, 0.78, and 0.69, respectively. Starting from the bottom left square and moving directly upward, the three squares show the correlation between $RegPipeline^{34}$ and $RegPipeline^{38}$ (Business Supplies), $RegPipeline^{15}$

(Construction Materials), and $RegPipeline^{17}$ (Rubber and Plastic Products), with correlations of -0.56, -0.47, and -0.63, respectively.

Finally, Panel C in Table 2 reports summary statistics. Each year we split companies within Fama-French 48 industries into five groups based on their exposure to the rulemaking pipeline, such that the level of exposure increases across quintiles. We calculate the average characteristic within each group and the difference between the top and bottom quintiles. Greater regulatory pipeline is associated with less fragmentation of regulatory pipeline across agencies and more political risk. Companies with higher exposure to the regulatory pipeline tend to be larger, spend less on capital investment, and have worse investment opportunities (Tobin's Q). They also have higher costs relative to their size (COGS and SGA as a percentage of total assets), and lower profitability and cash flows. Interestingly, there is no statistically significant difference in regulatory intensity for high- and low-regulatory pipeline firms. Taken together, the comparisons in Table 2 offer suggestive evidence that there are differences in firms based on their level of regulatory pipeline distinct from the effects of existing regulation.

3.3 Stock versus flow of regulation

Our measure of regulatory pipeline captures the flow of potential regulations. This flow could be related to the stock of effective regulations, those which are currently in place. To investigate this possibility, we correlate our measure with a host of measures from the literature that intend to capture the burden of effective regulations.

We start with the costs of compliance with federal paperwork regulations, as introduced by Kalmenovitz (2023). Based on an administrative dataset and machine-learning classification model, the author develops four measures of regulatory burden. They represent the number of paperwork regulations that apply to the company ($RegIn$) and the estimated compliance costs in terms of hours ($RegIn^{time}$), forms ($RegIn^{forms}$), and dollars ($RegIn^{dollars}$). Additionally, we follow Gong and Yannelis (2018) and Calomiris et al. (2020), who count the frequency of terms associated with regulation in corporate disclosure files. Their data is not publicly available, and we follow the procedure from the associated working papers. Using the corpus of annual 10-K reports, we count the number of regulation-associated terms in each report.[14] We then define the total count, divided by the total number of words in the 10-K, as another proxy for regulatory burden which we label $10K$. Finally, we use data from Al-Ubaydli and McLaughlin (2017), who identify which sections in the Code of Federal Regulations apply to each 2-digit NAICS industry. For each CFR part, the authors report the probability that it applies to industry j and the number of words in that part. By multiplying the probability with the number of words and aggregating across all CFR parts, we obtain the CFR burden on industry j at time t ($CFR_{j,t}$). We then define the firm-level CFR burden, denoted $CFR_{i,t}$, by taking into account the company's activities across different business segments. Formally:

$$CFR_{i,t} = \sum_{j \in J_t} \omega_{i,j,t} \cdot CFR_{j,t},$$

where J_t is the set of 2-digit NAICS industries in which firm i operates during time t, and $\omega_{i,j,t}$ is the share of firm i's revenues derived from industry j at time t (based on Compustat's business segment data). We also consider the measure of political risk from Hassan et al. (2019), labeled $PRisk$. The authors rely on transcripts of conference calls, and identify keywords that are associated with political risk. Scaling the number of those keywords by the total length of the transcript, they obtain a firm-specific measure of political risk.

Table 3 reports the univariate correlations between $RegPipeline$ and the battery of regulatory burden measures. We find that regulatory pipeline is negatively correlated with most measures of regulatory burden: costs of compliance ($RegIn^{time}$, $RegIn^{forms}$, and $RegIn^{dollars}$), number of regulatory words in the 10-K, and share of restrictions in the Code of Federal Regulations. The only exception is its positive association with the number of paperwork regulations ($RegIn$), which is statistically significant but economically small (0.06). At the same time, regulatory pipeline is positively associated with political risk. Note that both measures use conference calls, and conceptually, political

[14]The words are: regulation; regulatory; legislation; legislative; compliance; restriction; restrictive; supervision; supervisory.

risk should have some overlap with the risk of regulations being added or modified in the future. The correlation is again statistically significant but economically small (0.03).

In sum, firms that face higher regulatory pipeline are in general subject to lower regulatory burden in the present while being concerned about future political risk. Those facts help sharpen the interpretation of our measure. It captures a distinct notion of regulatory burden, one that is focused on potential future changes in the regulatory environment, rather than the current regulatory environment the company is facing. We will rely on these insights to guide the empirical strategy (Section 4.1) and identify potential mechanisms (Section 5).

3.4 Quantity versus fragmentation

In recent work, Kalmenovitz et al. (2021) introduce the concept of regulatory fragmentation: when multiple federal agencies regulate a single topic. Following their methodology, we seek to measure not only the quantity of regulatory pipeline but also its fragmentation across agencies. To that end, we modify Equation (1) and define fragmentation as:

$$RegPipeline^{frag}_{i,t} = \sum_{o=1}^{O} \omega_{i,o,t} \cdot TopicPipeline^{frag}_{o,t}, \tag{4}$$

where $\omega_{i,o,t}$ are the same firm×topic weights from Equation (1). We interact those weights with $TopicPipeline^{frag}_{o,t}$, which represents the fragmentation of topic o rather than its quantity. To compute the fragmentation of the topic, we first identify the agency responsible for each rule. We then compute the fraction of topic o captured by agency a at time t, denoted as $Weight_{o,a,t}$. Finally, we compute the fragmentation of topic o at time t as the inverse of the HHI score:

$$TopicPipeline^{frag}_{o,t} = 1 - HHI_{o,t} = 1 - \sum_{a=1}^{A} (Weight_{a,o,t})^2 \tag{5}$$

Note that the fragmentation of the pipeline, on aggregate and at the firm level, is bound between 0 and 1 (similar to a standard HHI score). Higher values imply that topic o is fragmented, meaning that it is handled by a large number of federal agencies. In the remaining columns in Table 3 we investigate the relation between $RegPipeline^{frag}$ and other variables of interest. It is highly correlated with overall fragmentation (from Kalmenovitz et al. (2021)), but negatively correlated with our primary measure of pipeline quantity. In other words, when the regulatory pipeline increases, it tends to be concentrated among a small number of federal agencies.

4 Economic consequences of regulatory pipeline

4.1 Hypotheses and empirical strategy

The goal of this section is to probe how regulatory pipeline affects corporate-level outcomes. In the grand scheme of things, two competing theories of regulation come to mind. One theory, often labeled *public interest*, aims to explain and justify market regulation. Tracing back to Pigou (1938), it argues that regulation is a welfare-increasing institution designed to correct market failures. Examples include monopoly power, public goods, externalities, and asymmetric information (Demsetz (1974); Melody (2016)). The alternative theories, often known as *public choice*, *private interest* or *capture*, come in various shades but generally cast regulation as a rent-seeking process by which private actors advance their self-interests at the expense of the public good. Incumbent firms maintain their hold on power, while politicians and bureaucrats extract private benefits such as bribes and job offers (Tullock (1967); Stigler (1971); Krueger (1974); Posner (1974); Peltzman (1976); Becker (1983); Benmelech and Moskowitz (2010)).

Against this backdrop, a natural way to evaluate the new measure is to examine its impact on two sets of outcomes: does exposure to the rulemaking pipeline increase the expenses paid by companies in the course of doing business, and consequently does it affect the profitability of companies. Both theories of regulation would agree that regulation is costly, and therefore potential regulation should increase costs and force companies to forgo potential investment opportunities. In the context of regulatory pipeline, additional considerations should be noted. Firms may attach lower probability to rules clearing the pipeline, resulting in a muted impact on costs and profits. On the other hand, an increase in the number of potential regulations could create uncertainty, influencing firms as they evaluate potential business decisions.

Our workhorse specification is as follows:

$$y_{i,j,t+l} = \alpha + \beta \cdot RegPipeline_{i,t} + \gamma \overrightarrow{X}_{i,t+l} + \lambda_i + \lambda_{j,t} + \epsilon_{i,j,t+l}, \tag{6}$$

where $y_{i,j,t}$ is outcome for firm i at time t, and j denotes the company's Fama-French 48 industry. As explained, our primary outcomes are costs and profits. The main variable of interest represents the quantity of the regulatory pipeline ($RegPipeline_{i,t}$).

Regulation is not randomly assigned across companies, and the interpretation of β should be conducted with caution. To mitigate the concerns we use a rich set of controls and fixed effects. We add firm controls ($\overrightarrow{X}_{i,t}$) to account for factors which are likely correlated with both regulatory burden and company policies: total assets; market-to-book ratio, defined as the market value of equity divided by the sum of book value of equity, deferred taxes, and preferred stock; Tobin's q, defined as the market value of equity plus the book value of assets minus book value of equity plus deferred taxes; operating cash flow; and book leverage, defined as long-term debt (dltt) plus short-term debt (dlc). Tobin's q, cash flow, and book leverage are scaled by beginning-of-period total assets. We add increasingly tighter sets of fixed effects. Our tightest specifications includes firm FE (λ_i) and time×industry FE ($\lambda_{j,t+l}$), exploiting variation within firm over time, net of industry trends. Thus, the results cannot be attributed to the company's long-run regulatory environment, nor to the overall regulatory environment in the industry at a given time. Independent variables are lagged one period to limit concerns of reverse causality, and divided by their cross-sectional standard deviation to facilitate the comparison of their economic magnitudes. The baseline regressions are at a quarterly frequency and limited to the years 2008-2020, to match the availability of regulatory pipeline variables. We winsorize all variables at the 1% and 99% level to reduce the impact of extreme outliers and cluster standard errors at the firm level.

One important concern is that regulatory pipeline is correlated with the burden of effective regulations. As we show in Section 3.3, our measure is largely associated with lower regulatory burden. Thus, omitted variables would likely cause an attenuation bias. To further address this concern, we add a control variable for compliance costs from Kalmenovitz (2023). In the main text, we include the number of active regulations ($RegIn$), but our conclusions remain similar when we control instead for the estimated compliance costs in terms of hours, forms, and dollars. Additionally, we control for the level of political risk based on data from Hassan et al. (2019). Finally, we include the fragmentation of the pipeline ($RegPipeline^{frag}$) as an additional control variable. This helps us disentangle the impact of pipeline quantity from pipeline fragmentation. Our discussion will be focused on the former, but as the results show, regulatory fragmentation is a distinct phenomenon with material impact on corporate outcomes.

4.2 Main results: costs and profits

A surge in regulatory pipeline means that the firm will potentially have to comply with more regulations. Therefore, a natural first step is to test whether regulatory pipeline increases costs. We estimate Equation (6) with SGA (sales, general, and administrative) as a dependent variable, since the salaries of compliance-related jobs would likely show up under this line item (Kalmenovitz et al. (2021)). Additionally, some regulations could drive up the cost of goods sold (COGS). For example, compliance with the Federal Trade Commission's regulations on labeling and packaging could show up as COGS rather than SGA. Both COGS and SGA are scaled by beginning-of-period total assets.

Table 4 summarizes the results. Across all specifications, regulatory pipeline is associated with material increases in costs. The effect is identified within firm over time, net of industry trends (year×industry FE), and conditional on other determinants of costs. The effect is statistically significant and economically meaningful. Since all independent variables are divided by their standard deviation, we can directly compare their magnitudes. Looking at the tightest specification with time×industry fixed effects, a one-standard-deviation increase in $RegPipeline$ increases COGS and SGA by 0.38% and 0.21%, respectively (as percentage of total assets). In comparison, a one-standard-deviation increase in assets leads to 2.6% and 0.9% decline in COGS and SGA, due to economies of scale. Thus, the regulatory pipeline effect is between one-third to half of the size effect, in absolute value. We find a stronger impact on COGS than on SGA. The burden of effective regulations ($RegIn$) is also positive and significant, as is the fragmentation of the regulatory ($RegPipeline^{frag}$). Interestingly, political risk is associated with lower costs and turns insignificant in tighter specifications.[15]

In Table 5, we investigate the heterogeneous impact of various rules on firm expenses. Our strategy is to identify a subset of rules, calculate a version of $RegPipeline$ that includes only this subset, and then estimate our tightest specification using the newly-constructed $RegPipeline$. This exercise helps us better understand which factors have the largest impact on firms, and also serves partly as a robustness check. First, we remove from the sample actions which aim to reduce the economic burden on firms. We flag 1,031 deregulatory rules (out of 40,538 rules total) which use the phrase "deregulat" or "simplify," and calculate a version of $RegPipeline$ that excludes these deregulatory rules. The resulting coefficient is nearly identical to our baseline coefficient.[16] Next, we remove from the sample actions that have been announced for the first time in the Agenda. Those rules have lower probability of converting into a final rule, and additionally it is more difficult to identify distinct LDA topics due to the succinct textual description. Nevertheless, we obtain virtually similar results. Next, we construct a separate measure for top-tier and lower-tier rules (see Section 1.1). The coefficient on the former is four times larger than the latter, and the latter is statistically insignificant. This is consistent with the notion that routine and administrative rules should have little to no impact on firm policies. Our next test is to construct a separate measure for proposals that also have some output during the quarter, whether an interim rule or a final one. This subset indeed has a significantly larger impact on companies, more than twice the impact of rule proposals which do not have any output yet. Finally, we construct a separate measure for rules that have been canceled at some point during the quarter. These rules no longer pose a risk, and are essentially a semi-placebo test. Reassuringly, they have no

[15] When estimating our baseline specification without $RegPipeline$, the coefficient on political risk is positive and significant.

[16] Note that deregulatory proposed rules can also increase COGS and SGA, due to adjustment costs firms will undertake or because those actions can be repurposed and turn into burden-increasing rules.

statistically significant impact on firm costs.

Since costs are rising in the face of regulatory pipeline, a reasonable prediction is that firm profits will decline. We examine two primary profit margins: operating income and net income. Operating income is defined as operating income before depreciation (OIBDP), scaled by beginning-of-period total assets. Alternatively, we replace OIBD with net sales minus COGS and SGA, also scaled by lagged total assets. The former definition is often known as return on assets or ROA, while the latter is often referred to as EBITDA. Lastly, we compute net income over lagged total assets. We estimate our workhorse specification (Equation (6)) with those three outcome variables and report the results in Table 6. We find that regulatory pipeline reduces both operating income and net income. The adverse effect is statistically significant and large. In the tightest specification with time×industry fixed effects, a one-standard-deviation increase in *RegPipeline* reduces EBITDA, ROA and net income by 0.9%, 0.15%, and 0.22%, respectively (as a percentage of total assets). In comparison, a one-standard-deviation increase in assets reduces profit margins by 0.60%, 0.58%, and 0.32%. Thus, the regulatory pipeline effect is at least half of the size effect. We find a stronger impact on ROA and even stronger one on net income. The fragmentation of the regulatory pipeline also reduces profit margins, nearly one-third of the *RegPipeline* effect. Political risk is associated with lower profits, but the magnitudes are small and insignificant in some specifications.

In sum, regulatory pipeline leads to a significant rise in spending with a knock-on effect on profits. Data limitations preclude us from pointing to specific spending on compliance, but these results are in line with the main theories of regulation and the intuition about anticipated regulatory burden. From another perspective, the findings in this section could be viewed as a validation exercise for the efficacy of the new measure of regulatory pipeline, which is indeed associated with a material rise in spending and shrinking profit margins. While the results are consistent with a causal interpretation, causal inference is challenging since regulatory pipeline is not randomly assigned across companies. The non-random assignment could bias the estimated effect in different directions. On one hand, future regulations could generate efficiencies and positive externalities, especially according to *public interest* theories, which will reduce costs and improve profitability. In that case, the reported coefficients are attenuated. On the other hand, an adverse productivity shock could drive up both costs and planned regulatory changes. Struggling companies may face surging costs, and at the same time initiate more contact with regulators (for example, apply for financial support) and attract more attention from regulators (for example, if they wish to protect the industry).[17] In that case, the reported coefficients would be inflated. The current framework does not distinguish between the two possibilities, and we leave the causality question for future work.

4.3 Managing regulatory pipeline

In Section 4.2, we find that regulatory pipeline increases costs and reduces profits. In this section we investigate potential operational changes firms might undertake, which could explain the rising costs and declining profits. Our overarching strategy uses Equation (6) with a full set of controls and the tightest set of fixed effects (firm and time×industry), but with an alternative set of outcome variables.

Capital investment - A long pipeline of potential regulations increases uncertainty, which is known to be detrimental for capital investment. Additionally, if the company is specifically worried about rising compliance costs, that would affect the NPV calculations and lead to cancelation of marginally profitable projects. On the other hand, regulation could generate positive externalities which will improve investment opportunities and encourage more investment. Moreover, a subset of regulations could require investment in physical equipment (for example, to monitor emission of toxic chemicals).[18] To test the competing predictions, we introduce three measures of investment from the literature: capital expenditures scaled by beginning-of-period total assets, quarterly change in capital expenditures, and change in PPEGT plus change in inventories scaled by beginning-of-period total assets. Following the standard practice in this literature, we remove from the sample financial firms (SIC codes 6000-6999), utilities (SIC codes 4900-4999), and

[17] Indeed, several studies argue that bad economic conditions increase the public demand for regulatory intervention (Rajan and Zingales (2003); Povel et al. (2007); Zingales (2009); Romano (2012)).

[18] We disentangle specific channels in Section 5.

government entities (SIC codes greater than or equal to 9000). The first three columns in Table 7 summarize the results, showing a significant negative impact of regulatory pipeline on the amount and growth rate of capital investment. Consequently, the firm's physical assets (PPEGT plus inventories) grow at significantly lower rates.

In-house compliance - The rise in regulatory pipeline could incentivize companies to shore up their in-house compliance systems: hire more compliance officers and develop technological solutions to streamline compliance efforts. On the other hand, companies may have to abandon potential projects for the reasons mentioned above. In this case, the pace of hiring may in fact slow down when more regulations are in the pipeline. We investigate this aspect with three alternative outcomes: hiring (change in number of employees), wages (change in staff expenses), and R&D expenses. All variables are scaled by beginning-of-period total assets. The results in columns 4-6 of Table 7 provide some evidence for the first hypothesis: regulatory pipeline appears to incentivize more hiring for higher salaries, and also increase spending on R&D. Note that these data are available only in annual frequency and for a small subsample, and thus their external validity is potentially limited.

Political investment - a growing literature documents how companies invest in political connections in order to shape regulatory decisions in their favor (Bertrand et al. (2014); Blanes i Vidal et al. (2012); Borisov et al. (2015)). In our context, a company with higher exposure to the regulatory pipeline could spend more on lobbying to reduce future regulatory burden, turning the "political investment" into a positive NPV project. This is particularly consistent with *regulatory capture* theories, which emphasize the power struggles and rent-seeking aspects of the regulatory process. To test this possibility, we match the Compustat sample to lobbying data from Kim (2018). The information is collected from mandatory filings, published regularly by the Secretary of the U.S. Senate. Our outcome variable is dollar expenses on lobbying per $1,000,000 in assets. We find that regulatory pipeline increases lobbying spending, but the effect is not statistically significant at conventional levels. Interestingly, the fragmentation of the pipeline seems to have a much bigger impact on lobbying, economically and statistically. Overall, this is consistent with the political investment channel, whereby companies invest more in lobbying activities to reduce or manage their regulatory exposure.

In sum, we find that regulatory pipeline significantly reduces capital investment and incentivizes firm to spend more on lobbying. There is also some evidence that the rising costs are driven partially by more hiring and R&D spending. Combined with our findings earlier on shrinking profit margins, this evidence suggests that companies choose to pass on positive NPV projects, and reallocate the resources toward compliance-related tasks.

4.4 Financial policies

The results so far point to a significant rise in costs due to higher regulatory burden, accompanied by material changes in the firm's operations. A natural follow-on question is whether these changes are also associated with different financing policies.

To investigate this possibility, we again adopt the tightest specification from Equation (6) but use a different set of outcome variables. Our results are reported in Table 8. We start with $Cash$, which is cash holdings scaled by beginning-of-period total assets. We find that regulatory pipeline leads to significant build-up of cash reserves. This suggests that regulatory pipeline acts as a source of uncertainty, motivating companies to set aside cash to handle future regulatory developments. Next, we examine changes in market leverage, defined as long-term debt (dltt) plus short-term debt (dlc) scaled by the market value of assets.[19] We find that greater regulatory pipeline leads to a significant increase in the firm's market leverage. Breaking down the leverage into its three components, we find that the effect is driven primarily by an increase in short-term debt. In contrast, there is no significant change in either long-term debt or the market value of assets. Lastly, we find that regulatory pipeline leads to deterioration in the firm's debt-to-EBITDA ratio. This effect is driven jointly by rising debt, as shown in the previous columns, and by declining profit margins, as shown in Section 4.2.

[19] The latter is the sum of the market value of common shares (prcc_f×cshpri), long-term debt (dltt), short-term debt (dlc), and preferred stock liquidating value, minus deferred taxes and investment tax credit (txditc).

5 Mechanisms

Our main results in Section 4 suggest that regulatory pipeline leads to a material increase in costs, with a knock-on effect on profits. In this section, we investigate potential mechanisms that either mitigate or amplify the effect.

5.1 Current regulatory burden

Our measure aims to capture the quantity of regulatory pipeline. A natural concern is that the results are driven not by anticipatory effects of future regulatory changes, but rather by the burden of effective regulations. As explained, our baseline specification includes controls for the number of paperwork regulations ($RegIn$) and political risk ($PRisk$). Moreover, regulatory pipeline is generally associated with lower regulatory burden across a broad range of measures (see Section 3.3). Thus, if current burden is an omitted variable (and is also likely associated with higher costs), then our estimated coefficients are attenuated.

To further address this concern, we estimate a version of Equation (6):

$$y_{i,t+l} = \alpha + \beta_1 \cdot RegPipeline_{i,t} + \beta_2 \cdot \theta_{i,t} \cdot RegPipeline_{i,t} + \overrightarrow{X} + \epsilon_{i,t+l}, \tag{7}$$

where the dependent variable is costs (we focus on COGS for brevity but the results are similar for SGA). We use the tightest set of fixed effects, firm and time×FF48 industry, and all the control variables from before. The difference is that we sort companies based on measures of regulatory burden, which we also add to the vector of firm controls. Each quarter, we assign firms from the same Fama-French 48 industry into two groups based on whether a firm's measure of burden lies above or below the industry's median. If the firm lies above the median, then $\theta_{i,t} = 1$; otherwise, $\theta_{i,t} = 0$. The coefficient of interest, β_2, represents the differential impact of regulatory pipeline on companies as a function of their regulatory burden.

The results are summarized in Table 9. The coefficient on β_2 is statistically insignificant and economically small, regardless of how we sort companies. It is evident that regulatory pipeline increases costs across the board, regardless of how burdensome the current regulatory environment is for the company. This is reassuring, because it shows that the rising costs are not due to compliance with effective regulations, but are instead driven by the need to handle potential future regulatory changes.

5.2 Economies of scale

One possibility is that large companies are less susceptible to the rising costs. If compliance requires mainly a large fixed cost and fewer variable costs, then large firms are in an advantageous position due to economies of scale. For example, a company with an existing compliance division can absorb several more potential regulations, while a small company might struggle. To test this possibility, we replace $\theta_{i,t}$ from Equation (7) with an indicator for large companies. Each quarter, we assign firms from the same Fama-French 48 industry into two groups based on whether the firm's total assets lie above or below the industry's median. If it is higher than the median, then $\theta_{i,t} = 1$; otherwise, $\theta_{i,t} = 0$. The results are reported in Table 10, columns 1-3 (for COGS) and columns 5-7 (for SGA). Across all specifications, the effect of regulatory pipeline is 30% lower for large companies. This conclusion applies both for COGS and for SGA and remains similar in the tightest specification. We further test whether the decline in costs is linear. Instead of an indicator variable, we use a category variable for the five quintiles within the quarter×industry. The results are in columns 4 and 8 of Table 10. We find that the effect of regulatory pipeline declines monotonically across size quintiles. For companies in the top quintile, the effect is not distinguishable from zero.

5.3 Financial constraints

Suppose a surge in regulatory pipeline requires expensive compliance-related expenses. A financially healthy firm could absorb the costs while still investing in positive NPV projects. A financially constrained firm, on the other hand, cannot afford that. It must divert a portion of its budget toward the mandatory compliance-related expenses, and possibly pass on some positive NPV projects (Giroud and Mueller (2017)). Thus, we expect the effect on profits to be particularly strong among constrained firms.

To test this, we replace $\theta_{i,t}$ from Equation (7) with a measure of financial constraints. Concretely, we rely on the KZ index (Kaplan and Zingales (1995)), which we also add to the vector of firm controls. Each quarter, we assign firms from the same Fama-French 48 industry into two groups based on whether a firm's measure of financing constraints lies above or below the industry's median. If the firm's measure of financing constraints lies above the median, then $\theta_{i,t} = 1$; otherwise, $\theta_{i,t} = 0$. The coefficient of interest, β_2, represents the differential impact of regulatory pipeline on companies as a function of their financial constraints. The results are summarized in the first three columns of Table 11. The profit margins of constrained firms shrink 41%-89% more than non-constrained ones, and the differences are statistically significant at the 1% level.[20] These results are consistent with the idea that constrained firms struggle to finance the rising costs of regulation, and do so at the expense of potential investment opportunities.

Finally, we showed earlier (Section 4.3) that regulatory pipeline reduces capital investment, and explained that this could be one channel contributing to the lower profits. If so, we would expect the decline in capital investment to be stronger among financially-constrained firms. We confirm this prediction in the remaining three columns of Table 11. We find that all firms reduce their capital expenditures, but financially-constrained ones cut an additional 4.6% ($\frac{0.009}{0.196}$). The differences are more pronounced for the growth rates of capital expenditures ($\Delta CAPX$ or $\Delta PPEGT$), where financial constraints amplify the effect by 10% and 33% respectively.

6 Conclusions

We develop the first firm-level measure of regulatory pipeline. It counts the number of rule proposals, which are currently pending in the federal government's rulemaking pipeline, and will apply to the individual firm if converted into a final rule. The measure is based on a novel administrative data set, which tracks all 41,000 rule proposals since

[20] For instance, with EBITDA as outcome variable, the coefficient on $RegPipeline$ is -0.035 and the interaction coefficient is -0.039, so the effect on constrained firms is $\frac{0.039}{0.035} = 114\%$ larger.

1995 and allows us to reconstruct the precise timeline of each proposal. On an average day, the pipeline consists of 3,500 rule proposals. One-third of the proposals end up being defeated, and the rest successfully convert into a final rule after spending nearly two years (on average) in the pipeline.

To develop a firm-specific measure of regulatory pipeline, we assign rules from the pipeline to firms based on linguistic similarities (a machine-learning algorithm known as LDA). We find that exposure to the regulatory pipeline has significant anticipatory effects. Firms with higher exposure express more concerns about future political risk (based on data from Hassan et al. (2019)), increase their overhead costs (SGA and COGS), and suffer from lower profits. The effects are identified within industries and are independent of the firm's current regulatory burden, proxied by *RegIn* (from Kalmenovitz (2023)) and *CFR* (based on Al-Ubaydli and McLaughlin (2017)), which we add as control variables to all our regressions. Moreover, anticipating future regulatory changes, firms spend more on lobbying, build up cash reserves, and reduce capital investment. This is strongly suggestive of regulatory pipeline acting as an independent source of uncertainty, motivating companies to invest in political connections and prepare for potential future shocks. Financially constrained and small firms are especially responsive to the regulatory pipeline, highlighting the role of budget constraints and economies of scale.

Overall, our results are the first to consistently document substantial anticipatory effects across all federal regulations. The main innovation is to focus on potential regulations and shed light on a relatively unknown aspect of regulatory burden: the amount of potential future regulations which are relevant to the firm. Future studies can dig deeper into the origins and consequences of anticipatory effects, tactics adopted by companies to mitigate these effects, and potential heterogeneity across firms and rules.

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Appendix: Variable definitions

The table describes the main variables used in the paper. Firm-level variables are based on Compustat, unless noted otherwise. To define financial constraints (*Const.*), we rely on the KZ index from Kaplan and Zingales (1995), calculated based on the parameters outlined in Giroud and Mueller (2017):

$$KZ = -1.0019 \cdot CashFl + 0.2826 \cdot TobinQ + 3.1392 \cdot Debt$$
$$- 39.3678 \cdot Dividend - .3148 \cdot Cash$$

TobinQ is defined below. *Debt* is long-term plus short-term debt (DLTT and DLC), divided by long-term and short-term debt plus stockholder's equity (SEQ). *CashFl* is net income (IB) plus depreciation and amortization (DP). Dividend (DVT), cash (CHE), and *CF* are divided by beginning-of-period property, plant, and equipment (PPEGT).

Variable	Description
$10K$	Share of words in the firm's 10-K associated with regulation.
AT	Total assets.
$CAPX$	Capital expenditures, scaled by AT_{t-1} (beginning-of-period AT).
$\Delta CAPX$	Quarterly change in CAPX.
$Cash$	Cash and short-term investments, scaled by AT_{t-1}.
CF	Operating cash flows, scaled by AT_{t-1}.
CFR	Share of restrictive words in the Code of Federal Regulations which are relevant to the company (data from Al-Ubaydli and McLaughlin (2017)).
$COGS$	Costs of goods sold, scaled by AT_{t-1}.
$Const.$	Financial constraints. Equals one if the company's KZ index is above the Fama-French 48 industry median.
$Debt^{LT}$	Long-term debt divided by total assets.
$Debt^{ST}$	Short-term debt divided by total assets.
$EBITDA$	Sales minus $COGS$ minus SGA, scaled by AT_{t-1}.
Emp	Number of employees, scaled by AT_{t-1}.
ΔEmp	Percentage change in Emp.
$Leverage$	Sum of long-term and short-term debt, divided by the sum of total assets and market equity minus book equity.
$Lobby$	Lobbying expenses per $1,000,000 in total assets. The mandatory threshold for disclosure is $10,000 in annual expenses.
MTB	Market-to-book ratio: market value of equity divided by the sum of book value of equity, deferred taxes, and preferred stock.
$NetIncome$	Net income, scaled by AT_{t-1}.
$\Delta PPEGT$	Change in PPEGT plus change in inventories, scaled by AT_{t-1}.
$PRisk$	Political risk, based on how often firms discuss their risk in conference calls (from Hassan et al. (2019).
$R\&D$	Research and development expenses, scaled by AT_{t-1}.
$RegIn$	Burden of federal paperwork regulations, based on the number of active regulations, hours ($RegIn^{time}$), responses ($RegIn^{forms}$), and dollars ($RegIn^{dollar}$; from Kalmenovitz (2023)).

Variable	Description
RegPipeline	The primary measure we develop in this paper. Represents the number of rule proposals, which are in the federal rulemaking pipeline and are relevant to the firm.
$RegPipeline^{frag}$	The secondary measure we develop in this paper. Represents the fragmentation of rule proposals that are relevant to the firm ("how many federal agencies").
ROA	Operating income before depreciation, scaled by AT_{t-1}.
SGA	Sales, general, and administrative expenses, scaled by AT_{t-1}.
TobinQ	Market value of equity plus the book value of assets minus book value of equity plus deferred taxes, scaled by AT_{t-1}.
$\Delta Wages$	Annual change in labor expenses, scaled by AT_{t-1}.

Figure 1: **Rulemaking process**

The figure describes the federal rulemaking process. Reproduced from "The Federal Rulemaking Process: An Overview" by the Congressional Research Service.

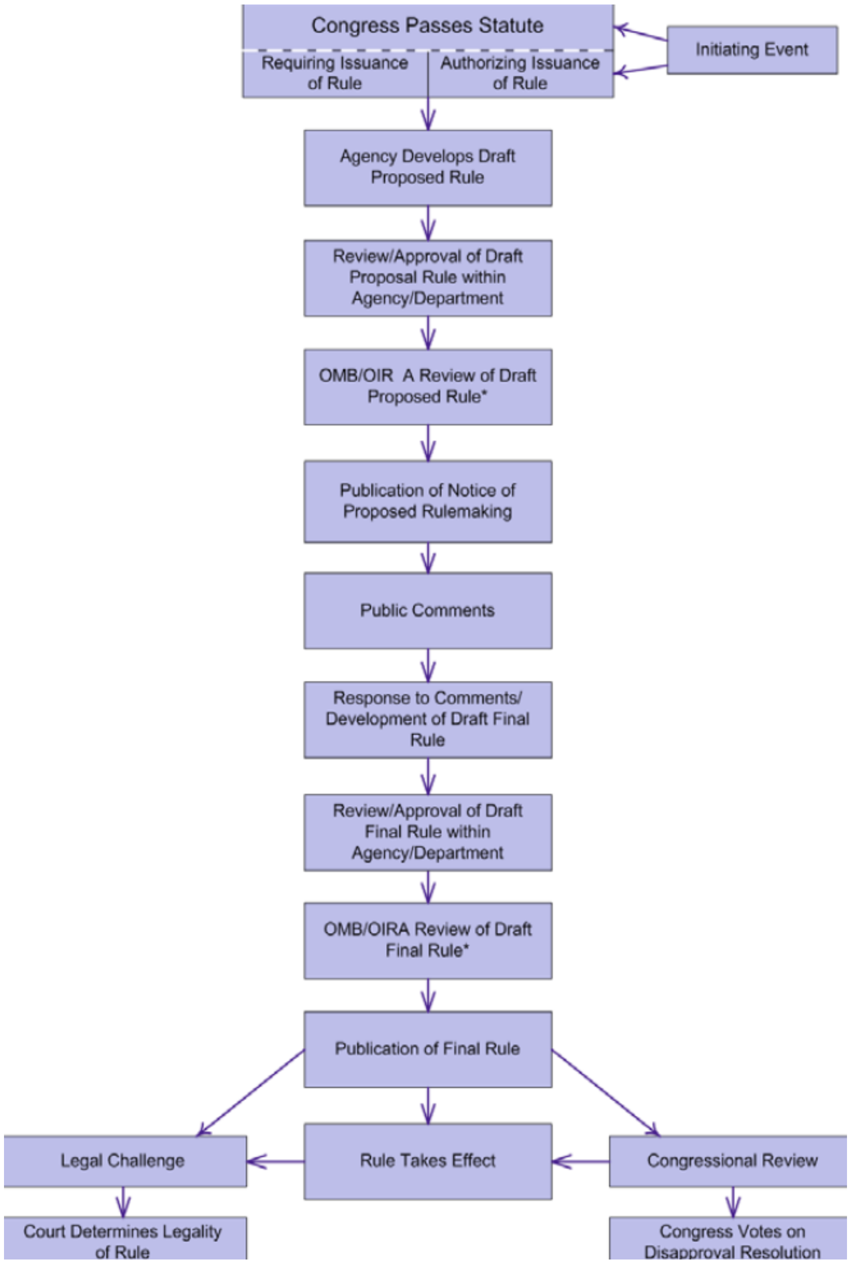


Figure 2: **Examples of regulatory topics**

Word clouds depicting selected topics. Font size reflects the relative frequency of the word within the topic. The topics, from left to right, are 1, 26 and 27 (top row); and 31, 45, and 83 (bottom row).

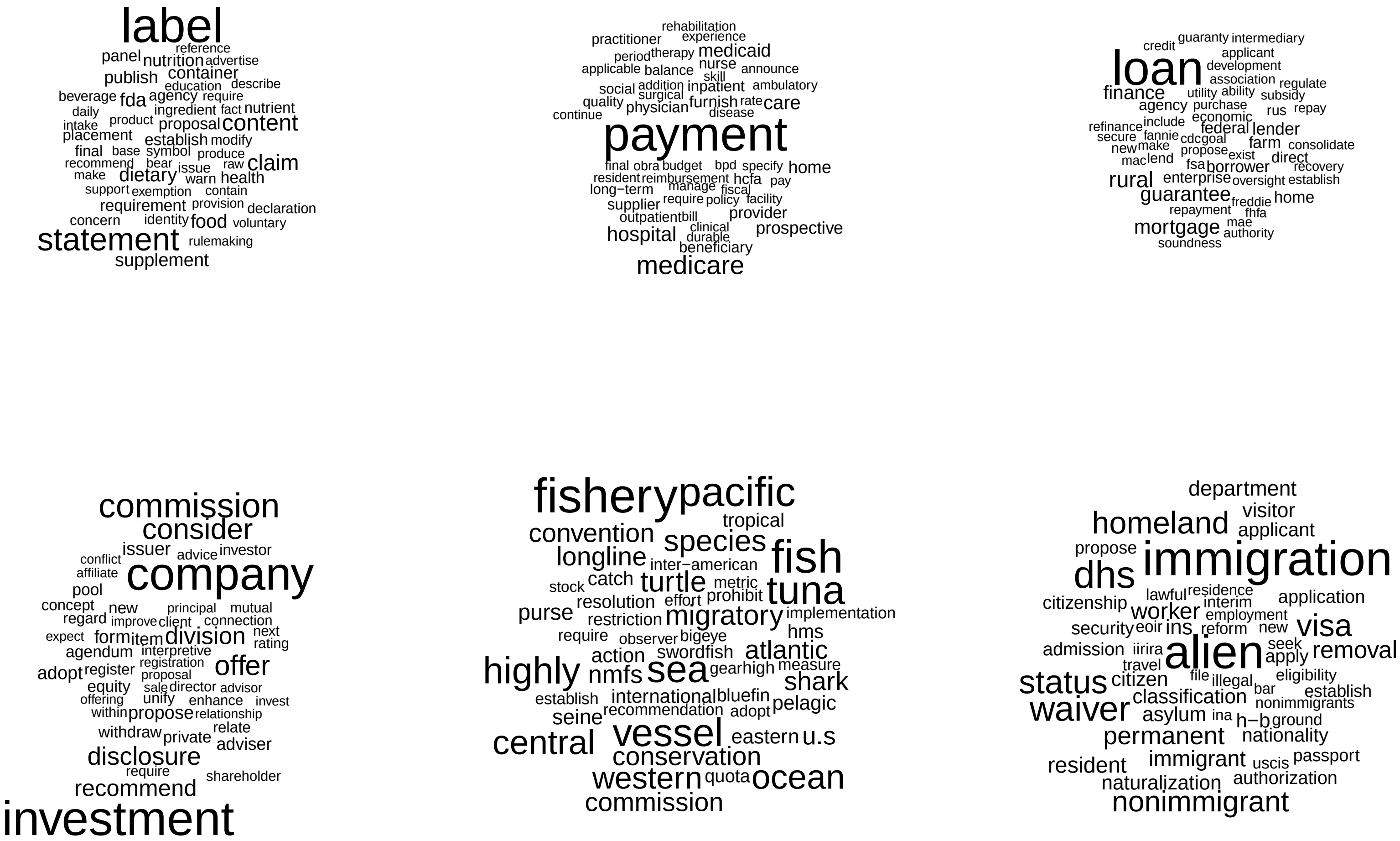
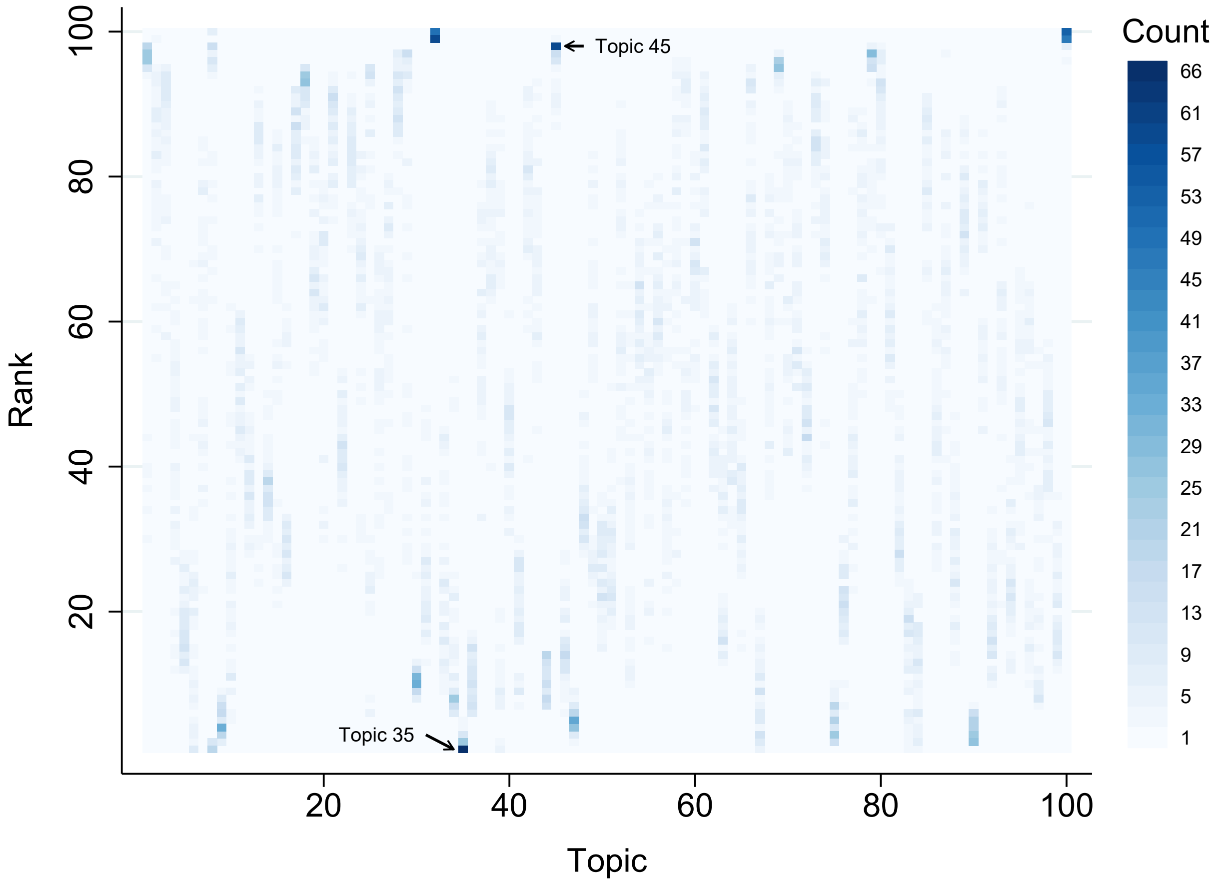
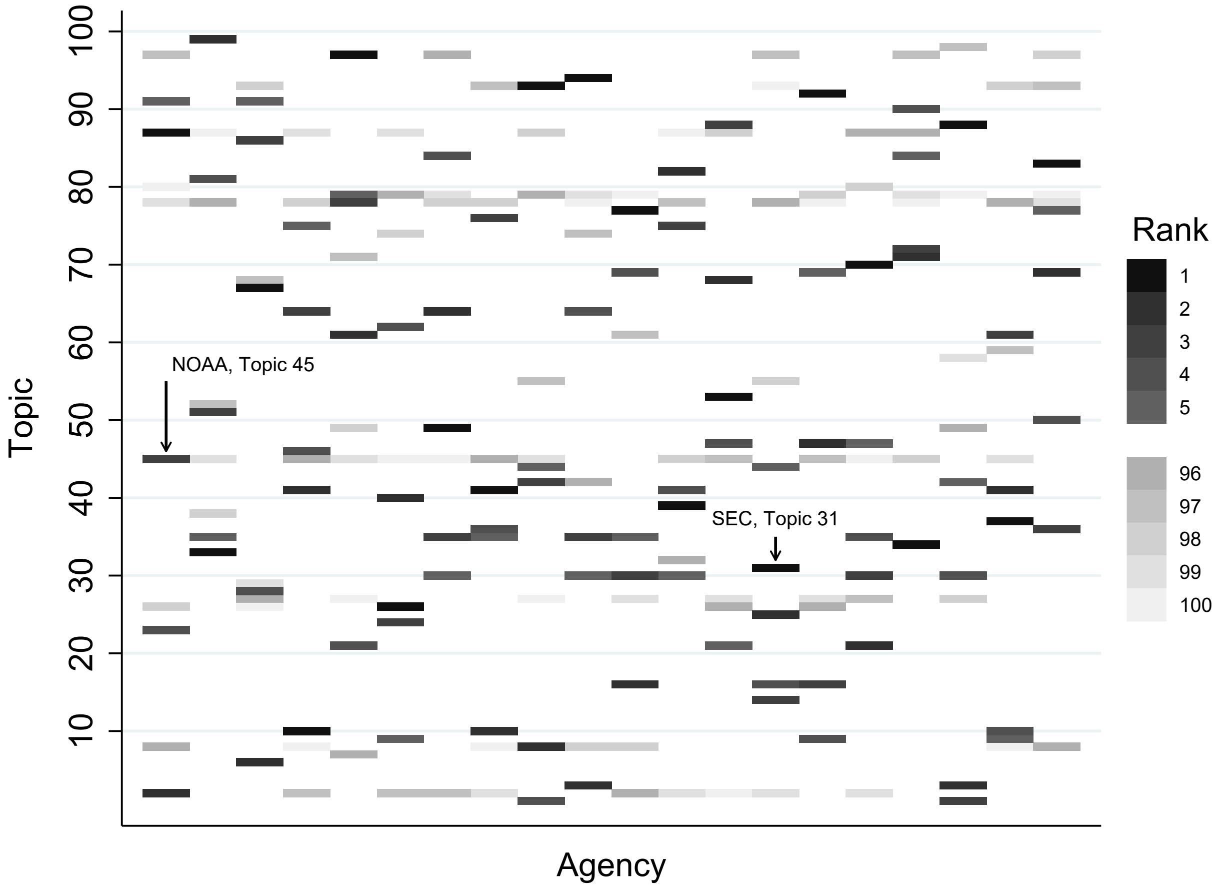


Figure 3: **Topic distribution**

Panel A. This figure plots the frequency of each topic's ranking throughout the history of the federal rulemkaing pipeline. Each quarter we rank the topics from one to 100 based on their weights in the rulemaking pipeline, where the topic with the highest weight is ranked one. We then count, for each topic and ranking, the number of quarters in which the topic has achieved the given ranking.



Panel B. This figure plots the most and least dominant topics for the top 20 agencies in terms of the total number of rules in the Unified Agenda from 1995-2021. For each of the top 20 agencies, we calculate the average weight of each topic across the agency's history of rules and report the top and bottom five topics for each agency. A rank of one indicates the most dominant topic for the agency.



Panel C. This figure plots the most and least dominant topics for each of the Fama-French 48 industries. We start with the topic weights for our firms each quarter and then calculate the average weight of each of the 100 topics for firms in the same Fama-French 48 industry. A rank of one indicates the most dominant topic for the industry.

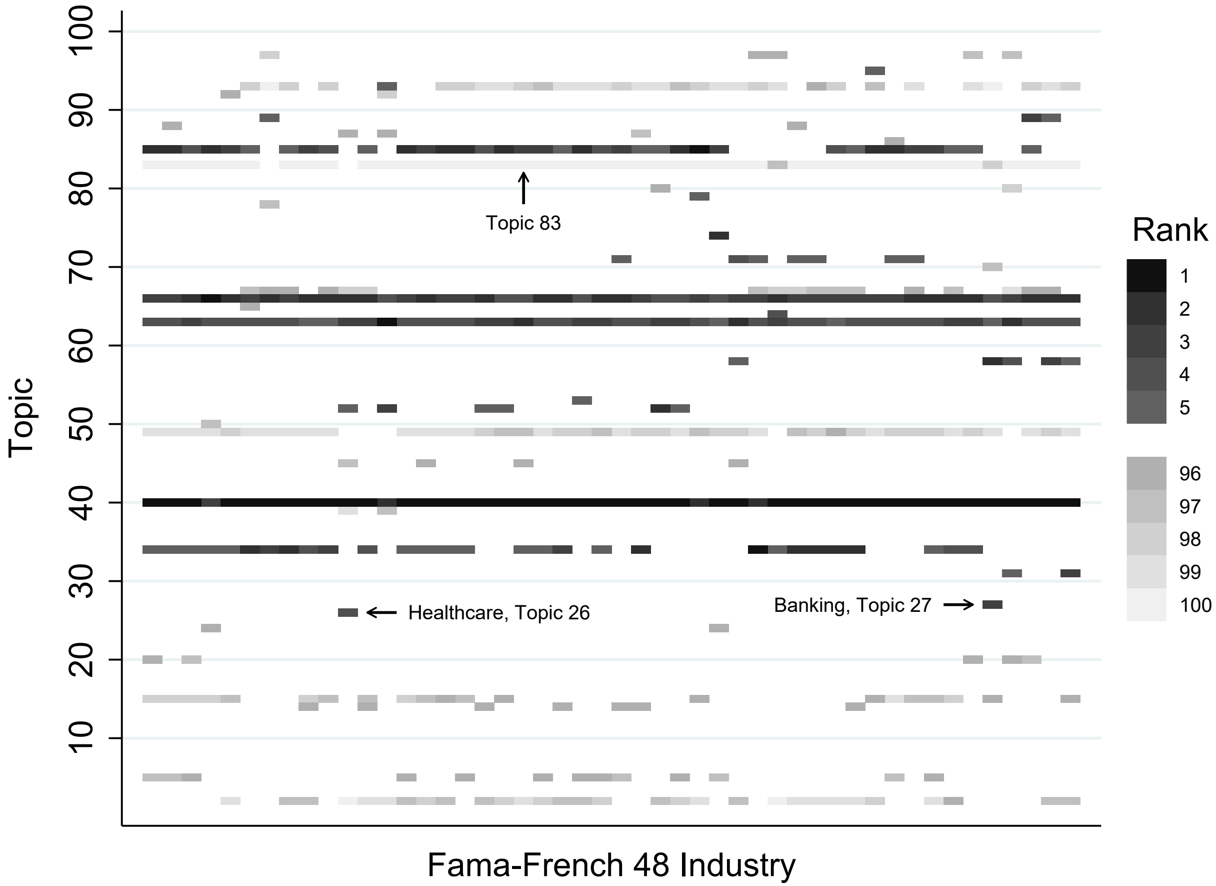


Figure 4: **Commonalities in regulatory pipeline**

This figure illustrates the the pairwise correlations of *RegPipeline* for the Fama-French 48 industries. We first residualize out the time variation of *RegPipeline* and then, for each quarter, calculate the average regulatory pipeline for firms in the same Fama-French 48 industry. We then calculate the correlation of *RegPipeline* between each pair of industries. The figure is a 48×48 square, where the shading of each square indicates the correlation of an industry pair. The industries have been ordered by their average correlation with the other industries, such that the first column on the left is the industry with the highest average correlation with the other industries.

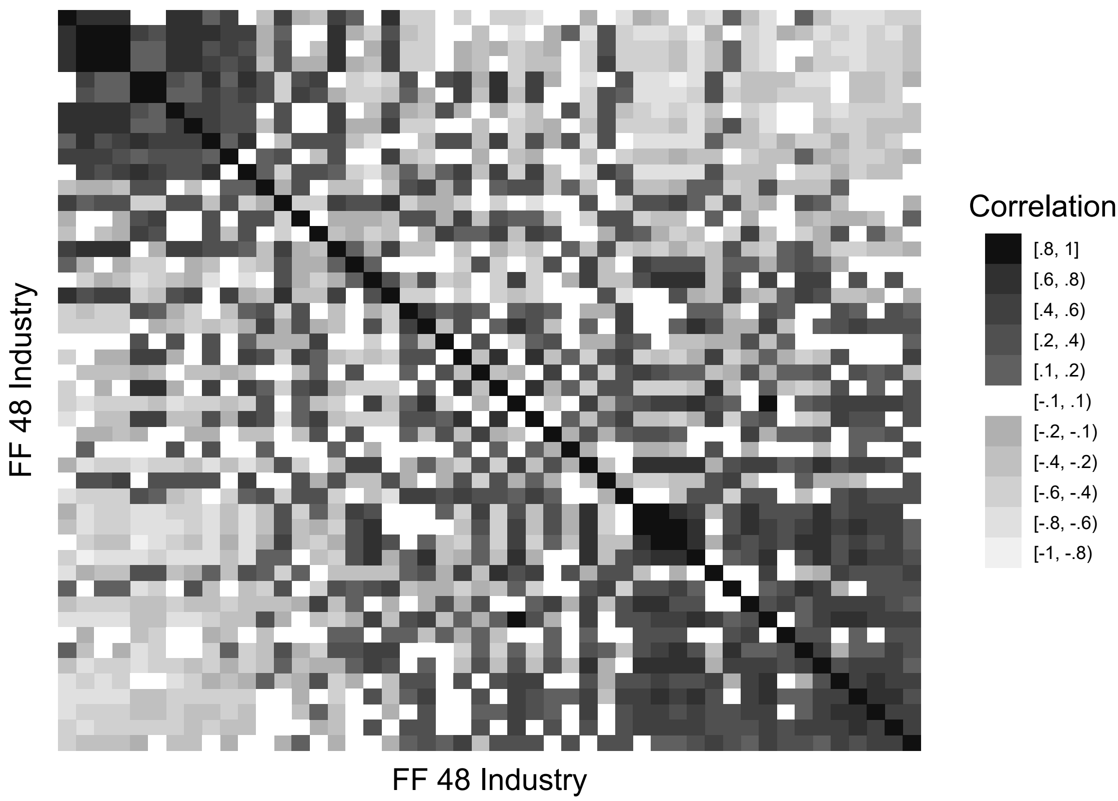


Table 1: **Summary statistics: rulemaking pipeline**

The sample includes all federal regulations being developed between 1995 and 2021. A regulation is identified by its unique RIN. $Alive = 1$ if the RIN was still under development by the end of 2021. Conditional on $Alive = 0$, $Rule = 1$ if the RIN successfully converted into a rule; $Repeal = 1$ if the RIN was officially withdrawn before any rule was published; and $Mixed = 1$ if the RIN was partially successful (part of it was codified into a rule while part of it of withdrawn). $Frozen = 1$ if the RIN was put on hold ("long-term action") at least once. $PendingTime$ is the number of days the rule has been in the pipeline (or still is, if $Alive = 1$). Tier 1 includes significant rules, economically or otherwise, and substantive rules (there is occasional overlap); and Tier 2 includes administrative and routine rules.

	Mean	**SD**	**Min**	**Max**	**Obs.**
Outcome:					
Alive	8.1	27.4	0.0	100.0	40,529
Rule	67.9	46.7	0.0	100.0	37,227
Repeal	30.5	46.0	0.0	100.0	37,227
Mixed	1.6	12.4	0.0	100.0	37,227
Frozen	26.3	44.0	0.0	100.0	37,227
Pending Time	882.1	1,087.6	0.0	5,969.0	40,317
If Rule=0:	1,223.7	1,359.0	0.0	7,121.0	11,897
If Rule=1:	683.9	832.7	0.0	4,656.0	25,118
Importance:					
Tier 1	93.0	25.5	0.0	100.0	40,529
Significant	33.4	47.2	0.0	100.0	40,529
Substantive	63.5	48.2	0.0	100.0	40,529
Tier 2	7.0	25.5	0.0	100.0	40,529

Table 2: **Decomposing regulatory pipeline**

Panel A. Variance decomposition. We regress our primary measure of firm-level regulatory pipeline on a growing number of fixed effects, and report the resulting R^2.

	(1)	(2)	(3)	(4)
Industry Classification	FF48	2-digit SIC	3-digit SIC	4-digit SIC
Time FE	65.33%	65.33%	65.33%	65.33%
Industry FE	12.33%	11.96%	15.43%	16.83%
Industry × time FE	1.01%	0.70%	2.14%	2.84%
Subtotal	78.68%	78.37%	82.90%	85.00%
Firm-specific (one minus subtotal)	21.32%	21.63%	17.10%	15.00%
Time-invariant (Firm FE)	12.04%	12.04%	8.73%	7.24%
Firm-specific variation (residual)	9.28%	9.28%	8.37%	7.76%
Number of industries	48	67	246	380

Panel B. Distribution of aggregate pipeline. Each quarter, we decompose the rulemaking pipeline into 100 topics. *TopicPipeline* is the fraction of the pipeline devoted to the topics, measured in units ("how many rules"). $TopicPipeline^{frag}$ is the fragmentation of the topic across agencies, measured in percentage points (the inverse of the HHI score). In the remaining rows, we identify subsets of rules and calculate a version of *TopicPipeline* based only on those subsets. We exclude proposed rules that aim to reduce the economic burden on firms (*Burdensome*); exclude proposed rules that have been announced for the first time on the Agenda (*Mature*); include only proposed rules from Tier 1 (economically significant, other significant, and substantive); include only proposed rules from Tier 2 (routine and administrative); include only proposed rules that resulted in either interim or final rules (*Output*); and exclude proposed rules that were officially withdrawn (*Active*).

	Mean	**SD**	**Min**	**Max**	**Obs.**
Primary variables:					
$TopicPipeline$	36.9	16.4	3.4	94.1	10,800
$TopicPipeline^{frag}$	83.1	18.7	6.3	98.2	10,800
Heterogeneity:					
Burdensome	35.8	15.8	3.4	89.7	10,800
Mature	33.3	15.0	2.6	85.0	10,800
Tier 1	35.2	15.5	3.4	87.1	10,800
Economic Significant	1.8	1.6	0.0	9.3	10,800
Other Significant	11.1	6.2	0.4	30.4	10,800
Substantive	21.8	11.5	2.2	62.3	10,800
Tier 2	1.5	1.7	0.0	10.1	10,800
Output	2.8	1.8	0.0	9.5	10,800
Active	36.0	16.0	3.4	91.0	10,800

Panel C. Sample companies. Each year we split companies within Fama-French 48 industries into five groups based on their exposure to the federal rulemaking pipeline (our primary measure of *RegPipeline*), such that the exposure increases across quintiles. We calculate the average characteristic within each group and the difference between the top and bottom quintiles.

	Q1	Q2	Q3	Q4	Q5	Q5-Q1
$RegPipeline$	41.28	42.25	42.90	43.55	44.95	3.676***
$RegPipeline^{frag}$	85.81	85.50	85.26	84.99	84.52	-1.290***
$RegIn$	109.16	109.20	109.24	109.36	109.29	0.127
$PRisk$	118.89	123.18	125.62	136.29	142.73	23.845***
$COGS$	34.03	34.03	34.37	34.95	35.62	1.589***
SGA	21.29	22.78	23.98	25.07	26.10	4.817***
ROA	8.36	7.74	7.59	6.58	5.53	-2.825***
$CAPX$	5.37	4.69	4.37	4.06	3.89	-1.480***
$Assets$	14,907	16,524	17,063	18,261	16,476	1,569*
$TobinQ$	2.10	2.06	2.00	1.97	1.91	-0.183***
MTB	3.76	3.63	3.56	3.49	3.25	-0.518***
CF	6.54	6.08	5.76	4.99	3.85	-2.697***
$Leverage$	27.78	27.24	26.50	25.45	23.86	-3.921***
Observations	10,456	10,395	10,415	10,308	10,558	21,014

Table 3: **Stock and flow of regulations**

We report univariate correlations between our primary measure, *RegPipeline*, and a host of measures from the literature related to regulation: costs of compliance with paperwork regulations (four versions of *RegIn* from Kalmenovitz (2023)); share of restrictions in the Code of Federal Regulations (*CFR*, based on data from Al-Ubaydli and McLaughlin (2017)); share of regulatory keywords in the firm's 10-K (10*K*); and discussion of political risk in the firm's conference calls (*PRisk* from Hassan et al. (2019)). We also report the correlations with the fragmentation of the pipeline ($RegPipeline^{frag}$) and regulatory fragmentation (*RegFrag* from Kalmenovitz et al. (2021)).

	$RegPipeline$	$RegPipeline^{frag}$	$RegFrag$	$RegIn$	$RegIn^{forms}$	$RegIn^{time}$	$RegIn^{dollar}$	$PRisk$	$10K$	CFR
$RegPipeline$	1.000									
$RegPipeline^{frag}$	-0.245***	1.000								
$RegFrag$	0.421***	0.258***	1.000							
$RegIn$	0.059***	-0.108***	-0.097***	1.000						
$RegIn^{forms}$	-0.179***	0.047***	-0.209***	0.654***	1.000					
$RegIn^{time}$	-0.170***	0.088***	-0.164***	0.690***	0.918***	1.000				
$RegIn^{dollar}$	-0.301***	0.061***	-0.318***	0.366***	0.579***	0.603***	1.000			
$PRisk$	0.031***	0.065***	0.027***	0.003	-0.012*	-0.018***	-0.004	1.000		
$10K$	-0.164***	0.179***	-0.187***	-0.050***	0.091***	0.059***	0.065***	0.052***	1.000	
CFR	-0.026***	0.069***	0.134***	-0.091***	-0.059***	-0.079***	-0.012*	-0.019***	0.166***	1.000

Table 4: **Costs of regulatory pipeline**

Results from estimating Equation (6) at a quarterly frequency. *SGA* (*COGS*) are sales general and administrative (cost of goods sold) scaled by beginning-of-period total assets and multiplied by 100. *RegPipeline* is our primary measure of potential regulations relevant to the firm. *Assets* is total assets, *CF* are operating cash flows, *MTB* is market-to-book ratio, *TobinQ* is Tobin's Q, *Leverage* is book leverage, $RegPipeline^{frag}$ is the fragmentation of regulatory pipeline, *RegIn* is regulatory intensity from Kalmenovitz (2023), and *PRisk* is political risk from Hassan et al. (2019). See variable definitions in the appendix. Independent variables are lagged and divided by their standard deviation. Standard errors, clustered by firm, are in parentheses.

Outcome:	*COGS*			*SGA*		
RegPipeline	0.171**	0.390***	0.388***	0.132***	0.232***	0.210***
	(0.076)	(0.107)	(0.108)	(0.040)	(0.050)	(0.051)
Assets	-1.240***	-2.465***	-2.557***	-0.747***	-0.988***	-0.910***
	(0.301)	(0.851)	(0.838)	(0.172)	(0.247)	(0.257)
TobinQ	0.603***	0.637***	0.653***	0.622***	0.633***	0.680***
	(0.088)	(0.110)	(0.112)	(0.067)	(0.075)	(0.074)
MTB	0.841***	0.884***	0.844***	0.432***	0.473***	0.470***
	(0.069)	(0.077)	(0.077)	(0.044)	(0.045)	(0.045)
CF	-0.459***	-0.553***	-0.561***	-0.524***	-0.468***	-0.482***
	(0.060)	(0.086)	(0.087)	(0.040)	(0.048)	(0.049)
Leverage	-1.475***	-1.670***	-1.557***	-0.710***	-0.764***	-0.721***
	(0.117)	(0.149)	(0.151)	(0.056)	(0.068)	(0.067)
$RegPipeline^{frag}$		0.169**	0.164**		0.149***	0.150***
		(0.072)	(0.071)		(0.031)	(0.032)
RegIn		0.327***	0.518***		0.134***	0.184*
		(0.085)	(0.192)		(0.037)	(0.106)
PRisk		-0.085***	-0.084***		-0.005	-0.009
		(0.027)	(0.028)		(0.012)	(0.012)
Obs.	123,492	67,251	67,176	104,079	65,009	64,932
R^2	.889	.904	.913	.905	.908	.913
Firm FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	-	YES	YES	-
Time×FF48 FE	-	-	YES	-	-	YES

Table 5: **Heterogeneity across rules**

We replicate our tightest specification, with COGS as the outcome variable, using multiple versions of *RegPipeline*. Column 1 is our baseline measure (similar to column 3 in Table 4). In each of the next columns we identify a subset of rules and calculate a version of *RegPipeline* based only on this subset. We exclude proposed rules that aim to reduce the economic burden on firms (column 2); exclude proposed rules that have been announced for the first time on the Agenda (column 3); include only proposed rules from the top-tier (significant and substantive; column 4); include only proposed rules from the lower tier (routine and administrative; column 5); include only proposed rules that resulted in either interim or final rules (column 6); include only proposed rules that have no such output (column 7); exclude proposed rules that were officially withdrawn (column 8); and include only proposed rules that were officially withdrawn (column 9).

Outcome:	*COGS*								
Rules:	All	Burdensome	Mature	Tier 1	Tier 2	Output	No output	Active	Canceled
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RegPipeline	0.388***	0.389***	0.381***	0.387***	0.106	0.846***	0.340***	0.409***	0.113
	(0.108)	(0.110)	(0.113)	(0.106)	(0.116)	(0.166)	(0.105)	(0.113)	(0.197)
Obs.	67,176	67,176	67,176	67,176	67,176	67,176	67,176	67,176	67,176
R^2	.913	.913	.913	.913	.913	.913	.913	.913	.913
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time×FF48 FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 6: **Profit margins and regulatory pipeline**

Results from estimating Equation (6) at a quarterly frequency. $EBITDA$, ROA, and $NetIncome$ are revenues minus COGS minus SGA; operating income before depreciation; and net income, all scaled by beginning-of-period total assets and multiplied by 100. $RegPipeline$ is our primary measure of potential regulations relevant to the firm. $Assets$ is total assets, CF are operating cash flows, MTB is market-to-book ratio, $TobinQ$ is Tobin's Q, $Leverage$ is book leverage, $RegPipeline^{frag}$ is the fragmentation of regulatory pipeline, $RegIn$ is regulatory intensity from Kalmenovitz (2023), and $PRisk$ is political risk from Hassan et al. (2019). See variable definitions in the appendix. Independent variables are lagged and divided by their standard deviation. Standard errors, clustered by firm, are in parentheses.

Outcome:	$EBITDA$		ROA		$NetIncome$	
$RegPipeline$	-0.066*	-0.093**	-0.086**	-0.152***	-0.104**	-0.223***
	(0.036)	(0.047)	(0.037)	(0.052)	(0.041)	(0.064)
$Assets$	-0.546***	-0.596***	-0.405***	-0.577***	-0.257***	-0.319***
	(0.096)	(0.129)	(0.065)	(0.128)	(0.051)	(0.116)
$TobinQ$	0.713***	0.798***	0.607***	0.714***	0.730***	0.827***
	(0.053)	(0.066)	(0.054)	(0.069)	(0.055)	(0.073)
MTB	0.080**	0.100**	0.053	0.069*	0.066*	0.077*
	(0.031)	(0.039)	(0.035)	(0.041)	(0.034)	(0.043)
CF	0.831***	0.639***	0.872***	0.721***	0.962***	0.873***
	(0.050)	(0.063)	(0.046)	(0.067)	(0.047)	(0.064)
$Leverage$	-0.196***	-0.093*	-0.129***	-0.062	-0.348***	-0.290***
	(0.045)	(0.055)	(0.049)	(0.060)	(0.050)	(0.064)
$RegPipeline^{frag}$		-0.053*		-0.080***		-0.116***
		(0.028)		(0.030)		(0.037)
$RegIn$		0.010		0.018		-0.053
		(0.083)		(0.096)		(0.101)
$PRisk$		-0.029**		-0.036***		-0.026
		(0.012)		(0.013)		(0.017)
Obs.	104,004	64,884	118,824	65,544	124,091	67,533
R^2	.712	.727	.744	.74	.605	.578
Firm FE	YES	YES	YES	YES	YES	YES
Time FE	YES	-	YES	-	YES	-
Time×FF48 FE	-	YES	-	YES	-	YES

Table 7: **Operational changes due to regulatory pipeline**

Results from estimating Equation (6). $CAPX$ is capital expenditure; $\Delta CAPX$ is quarterly change in capital expenditures; $\Delta PPEGT$ is change in PPEGT plus change in inventories; ΔEmp is annual change in number of employees; $\Delta Wages$ is annual change in labor expenses; $R\&D$ is R&D expenses; and *Lobby* is dollar spending on lobbying. All outcomes are scaled by beginning-of-period total assets and multiplied by 100. $RegPipeline$ is our primary measure of firm-level regulatory pipeline and $RegPipeline^{frag}$ is the fragmentation of regulatory pipeline. Firm controls are $Assets$, $TobinQ$, CF, MTB, $Leverage$, $RegIn$ from Kalmenovitz (2023), and $PRisk$ (from Hassan et al. (2019)). Independent variables are divided by their standard deviation and lagged. Standard errors, clustered by firm, are in parentheses. See variable definitions in the Appendix.

Outcome:	$CAPX$	$\Delta CAPX$	$\Delta PPEGT$	ΔEmp	$\Delta Wages$	$R\&D$	*Lobby*
$RegPipeline$	-0.212***	-1.706**	-0.203**	1.606**	1.732**	0.397**	2.257
	(0.046)	(0.697)	(0.088)	(0.750)	(0.840)	(0.167)	(4.019)
$RegPipeline^{frag}$	-0.130***	-2.489***	-0.191***	2.085***	1.310*	-0.015	7.501***
	(0.030)	(0.434)	(0.054)	(0.460)	(0.769)	(0.108)	(2.528)
Obs.	63,082	51,823	35,041	19,867	1,255	12,119	20,020
R^2	.726	.559	.324	.237	.957	.909	.764
Firm FE	YES	YES	YES	YES	YES	YES	YES
Firm controls	YES	YES	YES	YES	YES	YES	YES
Time×FF48 FE	YES	YES	YES	YES	YES	YES	YES

Table 8: **Financial policies under regulatory pipeline**

Results from estimating Equation (6). *Leverage* is the sum of long-term and short-term debt, divided by the sum of total assets and market equity minus book equity, and $Debt/EBITDA$ is the sum of long-term and short-term debt divided by EBITDA. Additionally, $Debt^{LT}$ ($Debt^{ST}$) is long-term (short-term) debt; and *Cash* is cash holdings, all divided by total assets. All outcomes are multiplied by 100. *RegPipeline* is our primary measure of firm-level regulatory pipeline and $RegPipeline^{frag}$ is the fragmentation of regulatory pipeline. Firm controls are *Assets*, *TobinQ*, *CF*, *MTB*, *Leverage*, *RegIn* from Kalmenovitz (2023), and *PRisk* (from Hassan et al. (2019)). Independent variables are divided by their standard deviation and lagged. Standard errors, clustered by firm, are in parentheses. See variable definitions in the Appendix.

Outcome:	*Cash*	*Leverage*	$Debt^{ST}$	$Debt^{LT}$	*Market*	$\frac{Debt}{EBITDA}$
RegPipeline	0.477**	0.936***	0.268***	-0.060	110.074	0.894***
	(0.211)	(0.213)	(0.085)	(0.226)	(190.399)	(0.335)
$RegPipeline^{frag}$	-0.023	0.703***	0.197***	0.096	-431.699***	0.746***
	(0.134)	(0.131)	(0.054)	(0.148)	(133.315)	(0.207)
Obs.	72,446	67,473	67,633	72,047	72,797	58,478
R^2	.847	.839	.608	.837	.967	.433
Firm FE	YES	YES	YES	YES	YES	YES
Firm controls	YES	YES	YES	YES	YES	YES
Time×FF48 FE	YES	YES	YES	YES	YES	YES

Table 9: **Regulatory burden**

Each quarter, we assign firms from the same Fama-French 48 industry into two groups based on whether the firm's regulatory burden lies above or below the industry's median. If it is higher than the median, then $High = 1$; otherwise, $High = 0$. We then add the interaction of $High$ with our measure of regulatory pipeline. In each column we use a different measure of burden to sort the companies: fragmentation of regulatory pipeline ($RegPipeline^{frag}$); costs of compliance with paperwork regulations (four versions of $RegIn$ from Kalmenovitz (2023)); discussion of political risk in the firm's conference calls ($PRisk$ from Hassan et al. (2019)); share of regulatory keywords in the firm's 10-K ($10K$); and share of restrictions in the Code of Federal Regulations (CFR, based on data from Al-Ubaydli and McLaughlin (2017)). Firm controls are $Assets$, $TobinQ$, CF, MTB, $Leverage$, $RegPipeline^{frag}$, and the sorting variable. Independent variables are divided by their standard deviation and lagged. Standard errors, clustered by firm, are in parentheses. See variable definitions in the Appendix.

Outcome:	$COGS$							
Burden:	$RegPipeline^{frag}$	$RegIn^{reg}$	$RegIn^{forms}$	$RegIn^{time}$	$RegIn^{dollars}$	$PRisk$	$10K$	CFR
$RegPipeline$	0.383***	0.414***	0.392***	0.386***	0.380***	0.393***	0.385***	0.538***
	(0.108)	(0.108)	(0.108)	(0.109)	(0.108)	(0.108)	(0.110)	(0.159)
$High \cdot RegPipeline$	0.003	-0.016*	-0.003	0.002	0.006	-0.004	0.013	0.032
	(0.006)	(0.009)	(0.008)	(0.009)	(0.007)	(0.004)	(0.010)	(0.024)
Obs.	67,176	67,176	67,176	67,176	67,176	67,176	65,626	35,358
R^2	.913	.913	.913	.913	.913	.913	.914	.927
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm controls	YES	YES	YES	YES	YES	YES	YES	YES
Time×FF48 FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 10: **Economies of scale**

Each quarter, we assign firms from the same Fama-French 48 industry into two groups based on whether the firm's total assets lie above or below the industry's median. If it is higher than the median, then $Large = 1$; otherwise, $Large = 0$. We then add the interaction of $Large$ with our measure of regulatory Results from estimating Equation (6) in quarterly frequency. Alternatively, we assign firms within the same industry to five quintiles, where Bin1 (Bin5) includes the smallest (largest) firms. Firm controls are $Assets$, $TobinQ$, CF, MTB, and $Leverage$. Regulation controls are $RegIn$ from Kalmenovitz (2023), $PRisk$ (from Hassan et al. (2019)), and $RegPipeline^{frag}$. Independent variables are divided by their standard deviation and lagged. Standard errors, clustered by firm, are in parentheses. See variable definitions in the Appendix.

Outcome:	*COGS*				*SGA*			
$RegPipeline$	0.333***	0.512***	0.515***		0.256***	0.322***	0.300***	
	(0.078)	(0.107)	(0.109)		(0.041)	(0.051)	(0.051)	
$Large \cdot RegPipeline$	-0.126***	-0.107***	-0.112***		-0.095***	-0.077***	-0.079***	
	(0.016)	(0.016)	(0.017)		(0.007)	(0.007)	(0.008)	
$Bin1 \cdot RegPipeline$				0.492***				0.291***
				(0.107)				(0.050)
$Bin2 \cdot RegPipeline$				0.315***				0.163***
				(0.107)				(0.049)
$Bin3 \cdot RegPipeline$				0.199*				0.076
				(0.108)				(0.048)
$Bin4 \cdot RegPipeline$				0.126				0.011
				(0.110)				(0.049)
$Bin5 \cdot RegPipeline$				0.040				-0.039
				(0.111)				(0.049)
Obs.	123,492	67,251	67,176	67,176	104,079	65,009	64,932	64,932
R^2	.889	.905	.913	.914	.907	.909	.914	.917
Firm FE, controls	YES	YES	YES	YES	YES	YES	YES	YES
Regulation controls	-	YES	YES	YES	-	YES	YES	YES
Time FE	YES	YES	-	-	YES	YES	-	-
Time×FF48 FE	-	-	YES	YES	-	-	YES	YES

Table 11: **Financial constraints**

Each quarter, we assign firms from the same Fama-French 48 industry into two groups based on whether the firm's KZ-index lies above or below the industry's median KZ-index. If it is higher than the median, then $Const. = 1$; otherwise, $Const. = 0$. We then add the interaction of $Const.$ with our measure of regulatory pipeline. Firm controls are $Assets$, $TobinQ$, CF, MTB, $Leverage$, $RegIn$ from Kalmenovitz (2023), $PRisk$ (from Hassan et al. (2019)), $RegPipeline^{frag}$, and the firm's KZ index. Independent variables are divided by their standard deviation and lagged. Standard errors, clustered by firm, are in parentheses. See variable definitions in the Appendix.

Outcome:	$EBITDA$	ROA	$NetIncome$	$CAPX$	$\Delta CAPX$	$\Delta PPEGT$
$RegPipeline$	-0.035	-0.091*	-0.099	-0.196***	-0.986	-0.172**
	(0.048)	(0.052)	(0.065)	(0.048)	(0.708)	(0.087)
$Const. \cdot RegPipeline$	-0.039***	-0.042***	-0.073***	-0.009**	-0.376***	-0.013**
	(0.004)	(0.004)	(0.005)	(0.004)	(0.048)	(0.007)
Obs.	62,765	64,165	65,087	62,180	51,172	34,630
R^2	.727	.742	.583	.727	.561	.326
Firm FE	YES	YES	YES	YES	YES	YES
Firm controls	YES	YES	YES	YES	YES	YES
Time×FF48 FE	YES	YES	YES	YES	YES	YES

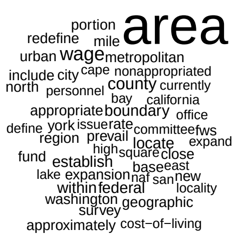
Internet Appendix

A.1 Rulemaking Timeline: additional

The first step in the paper is to identify rules that are inside the pipeline, that is, rules still under development. To determine which rules are currently in the index we apply the following methodology. A rule enters the pipeline when it was first officially reported. This happens when the RIN is mentioned for the first time in the Agenda or in the Federal Register, the earliest. A rule exits the pipeline based on the last activity reported in the Agenda. This is typically when the final draft is published or when the agency announces in the Agenda that the proposed rule has been rescinded. Note that we exclude RINs which were concluded before 1995.

Figure A.1: **Examples of regulatory topics: additional**

Word clouds depicting selected topics. Font size reflects the relative frequency of the word within the topic. The topics, from the left, are topic 2, 3, and 35 (top row); and topic 40 and 50 (bottom row).



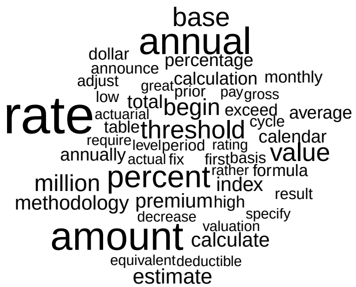


Table A.1: **Summary statistics: additional**

Top 20 agencies, by number of rules under development.

Rank	**Agency**	**Rules**	**(%)**
1	National Oceanic and Atmospheric Administration	2,826	7.0
2	Internal Revenue Service	2,291	5.7
3	U.S. Fish and Wildlife Service	1,979	4.9
4	Department of Defense	1,702	4.2
5	EPA, Office of Air & Radiation	1,566	3.9
6	General Services Administration	1,308	3.2
7	Centers for Medicare & Medicaid Services	1,283	3.2
8	Department of Veterans Affairs	1,023	2.5
9	Food and Drug Administration	809	2.0
10	Office of Personnel Management	734	1.8
11	Bureau of Industry and Security	732	1.8
12	Department of Energy	716	1.8
13	National Highway Traffic Safety Administration	715	1.8
14	Securities and Exchange Commission	711	1.8
15	Federal Aviation Administration	672	1.6
16	Nuclear Regulatory Commission	578	1.4
17	Federal Communications Commission	555	1.4
18	Alcohol and Tobacco Tax and Trade Bureau	503	1.2
19	Department of State	472	1.2
20	U.S. Coast Guard	460	1.1