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Lobbying with Lawyers: Financial Market Evidence for Banks' Influence on Rulemaking

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Lobbying with Lawyers: Financial Market Evidence for Banks' Influence on Rulemaking

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Abstract

How do business firms shape regulation? Can firms use administrative procedures to influence the regulatory environment in which they operate, and how would we know if they were successful? We explore these questions by analyzing the commenting activity of financial entities in Dodd-Frank related rulemaking at the Federal Reserve. Using intra-day event-study methods, we find favorable market reactions around rule announcements associated with participation in rule-making. In response to a rulemaking event, and compared to non-participants, commenting banks obtain asset price returns at the 55th to 62nd percentile of ranked returns. Observed Federal Reserve rulemaking participation by publicly-traded banks accounts alone for $7 billion in excess returns in the post-Dodd-Frank era. The aggregated influence of firms in financial regulation may be far larger. Closer examination of two rules – Volcker Rule and the debit card interchange fee rule – suggests that these valuations are driven by changes in rules moved by comments. The results illuminate new dimensions of political inequality, namely the differential ability of interests to mobilize legal expertise. They also establish new measures of industry influence in regulatory politics, especially in rulemaking.

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1 Introduction

From early modern chartered corporations to the transcontinental railroads, and from modern industrial giants to Wall Street, business firms make money not only via markets but also through politics. The political activity of business takes manifold forms. Firms lobby by spending time and money, deploying human and reputational capital, and mobilizing bias, energy and expertise in an attempt to influence policy.

Yet as much as firms lobby, they "lawyer up." They hire attorneys internally, in offices of general counsel and in compliance departments, and they establish consulting arrangements with external law firms. In these activities, firms spend billions of dollars every year. Indeed, firms' activities often elide the distinction between legal work and lobbying, insofar as much of what legal experts do for firms is to navigate and shape their regulatory environments.

In the United States, business firms have long focused upon administrative rulemaking as a critical site of influence over policy (Haeder and Yackee 2015; Yackee and Yackee 2006). The work of business influence in rulemaking is, necessarily, the work of mobilizing legal expertise.[2] Congressional statutes often leave to administrative agencies the essential tasks of specifying content or clarifying statutory meanings (a practice known as *substantive rulemaking*). And even when statutes do not ask for agencies to engage in rulemaking, agencies can engage in this work on their own, using *interpretive rulemaking* to clarifying the applied meaning of a statute, or even previous rules. The Administrative Procedures Act (APA) of 1947 offers any citizen, whether an individual or an organization, the ability to comment upon a proposed rule, and then requires the rule-issuing agency to respond to the comment and possibly modify the rule in response to it before issuing a final rule.

Recognizing the essential importance of rules for their operations and their profitability, business firms spend vast resources trying to influence them. Only some of this influence

[2]Many comments contest the cost-benefit analysis of rules or other impact estimates, and in so doing draw upon the expertise of economists, natural scientists and field experts. Yet even these comments are often made with the help of lawyers, and as we demonstrate below, there is strong descriptive evidence of vast expenditures being made upon law firms in the notice-and-comment process.

activity occurs at the notice-and-comment stage, yet journalistic reports suggest that in one important case (financial regulation), businesses sometimes spend hundreds of thousands of dollars per comment, with thousands of comments being made annually.

What do business firms gain from commenting on rules? How would we know what they gained, and whether it would have been different from the case in which they had not tried to influence policy? Previous research aggregates observational evidence (Haeder and Yackee 2015; Yackee and Yackee 2006) that industry comments predict rules changes more so than do other comments. These studies have made important advances and have set research agendas, yet important questions remain. First, agencies may write rules in such a way as to create the appearance of compromise with certain commenters or interests (Elliott 1992). If so, the predictive association of business comments with rules changes may represent a reversion to the mean rather than a form of absolute inequality. Second, even if comments predict rules, it is difficult to get a sense of what firms spent and what they gain from this activity. Is every rule change the same, or do some matter more than others?

An Alternative Approach: Studying the Stock Prices of Participating Firms. In this paper we study administrative rulemaking by harnessing an important political-economic fact: *the entire administrative process is being watched by highly informed actors, investing in markets, who have immense financial stakes in the outcome.* Many of the firms that comment are publicly traded enterprises, and the publicly traded value of these firms changes by the second during trading hours. Using new data on firm commenting for an important recent statute – the Dodd-Frank Financial Reform Act of 2010 – and combining quantitative data with case studies, we investigate how financial firms shape rulemaking in the United States. Our empirical strategy proceeds in two stages. First, we use event study methods on intra-day trading data to estimate the effect of new rules on the expected future profitability of firms. Second, we explore the relationship between the rules' effect and a firm's decision to participate in the rulemaking process.

Drawing upon a vast new dataset of commenting activity by banks under the Dodd-

Frank law, we find that firms which participate in the rulemaking process under Dodd-Frank experience substantially higher returns both at the rule proposal and at the final rule announcement stage. We test for significance using both conventional regression methods and through bootstrapping against a set of randomly selected times. Using our regression estimates we calculate the total market value of excess returns associated with participation as between $3.2 and $7 billion.

Asset pricing studies have advantages and limitations. Among the advantages is that market traders' expectations will reduce the bias from strategic agency rule drafting. By the time a final rule is announced, traders will have expectations both about any bias built into the proposed rule as well as the resulting changes, with the result that these changes will already have been priced into the final rule. While subsequent changes do not capture the full value of business influence, they capture the attributed value of changes that were not previously expected, hence beyond the observable strategic dynamics. Another advantage to asset-price-based approaches is that the estimated benefit to firms can be compared across firms using measures – both capitalized value or firm-specific ranked returns – that are directly and meaningfully comparable. Finally, as we demonstrate here and in other research, these asset price changes can be explicitly linked to actual textual changes in the rule, permitting the measurement of value changes tied directly to comments and policy change.

We do not, however, regard stock-market evidence as any sort of final solution to the dilemmas of research in this area. Only firms that are publicly traded can be examined, and only those rules that are announced during market trading hours can be studied. Because we can focus only upon stock price changes in response to the "event" of rule issuance, moreover, there are important forms of influence that have already been priced in to each firm's stock that we cannot observe unless we can extend the analysis to observe those events. One such study examines business meetings with White House officials during the Obama Administration (Brown and Jiekun 2017) and produces evidence consistent with ours as well as with (Haeder and Yackee 2015).

Recognizing the partial analytic value of event study techniques, an important feature of our larger project is that it also marshals massive new data on participation and rules changes. Beyond this, our study draws upon case studies of firm participation of particular rules, combined with interviews, for a broader understanding of the administrative process.

The Phenomenon of Lawyers as Lobbyists. The key intuition guiding our research is that participation in rulemaking processes constitutes a form of *lawyerly-lobbying*, and that an important source of political inequality in the United States comes from the differential capacity to mobilize and deploy legal expertise. Existing theories of lobbying largely ignore the work of lawyers, while theories of the firm have lawyers in them only to the extent to which contracts need to be smoothed and legal uncertainty needs to be reduced. We do not offer a new model here, but we offer some intuitions and descriptions of the rulemaking process by which it might be further modeled.[3] Empirically, by showing that there are plausible returns to rulemaking participation by banks, and that there is abundant participation (likely of a sort that involves considerable cost), we can show that significant activity is occurring at the level of rulemaking. Indeed, insofar as banks are considered firms, we think that the political theory of the firm cannot be understood without reference to rulemaking and firms' attempts to influence it, attempts which occur primarily through the mobilization of legal expertise.

Illuminating the phenomenon of lawyerly-lobbying sheds further light on special interest influence or "capture" in regulation (Bernstein 1955; Stigler 1971; Carpenter and Moss 2013). Scholars have long recognized that regulation can be shaped by regulated entities in ways that push policy outcomes and benefits away from the public interest and toward that of the industry. Overwhelmingly, however, the activities of industry and firms in these studies – whether theoretical or empirical – are focused upon the electoral and legislative realms, and are focused on how firms exploit either their size or incumbency and the assets (monetary and relational) that these assets convey. Legal services figure little or not at all in these accounts.

[3]See Libgober (2017) for a model that studies these dynamics in some detail.

To the extent that existing studies of capture focus entirely upon legislative lobbying and electoral influence activity, they may vastly underestimate the degree of costly firm behavior in this realm.

One hitch in this approach is that we portray banks as "firms," which they are not in all of the usual senses. As is abundantly clear, bank operations have spillover effects, such that for banks more than for non-financial firms, companies can be "too big to fail" and negative capital shocks can concatenate to affect other industries. Entry, exist, and lay-up may also be different from financial firms than for traditional industrial producers. To the extent that banks do not resemble other firms in the landscape of industrial organization, our approach will be accordingly limited in what it can say about the political theory of the firm.

2 Lobbying and Administrative Procedures – Theoretical and Methodological Issues

Lobbying may be defined as the communication of information in private venues between interest groups or their agents and government officials regarding changes to public policy (Congress 1995). In the United States, the amount spent by interest groups on lobbying activities has historically been an order of magnitude larger than the amount of campaign donation (Tripathi, Ansolabehere, and Snyder 2002). PACs for firms in the finance, insurance, and real estate donated about 79 million dollars during the 2013-2014 federal election cycle, for example, while spending close to a billion dollars on lobbying over the same years (Politics 2016). The fact that firms spend so much more on lobbying than campaign expenditures suggests that they regard lobbying as a more important tool of influence, and indeed survey evidence indicates that firms do believe this (Baumgartner, Berry, et al. 2009). Many studies demonstrate that participation in lobbying is associated with positive policy outcomes (de Figueiredo and Richter 2014), although only a handful of which we are aware focus on lobbying within executive agencies (Haeder and Yackee 2015; Yackee and Yackee

2006; Brown and Jiekun 2017).

It is worth remaining circumspect about how much influence firms are able to gain through lobbying. Firms may spend billions of dollars per year on lobbying, but if the gains from influencing federal policy are larger, then the real problem is explaining why firms do not spend more (Ansolabehere, de Figueiredo, and Snyder 2003). Carpenter (2013) and de Figueiredo and Richter (2014) suggest that most of the empirical studies that measure capture or the gains from lobbying have not adequately addressed the major threats to causal identification, which they identify as endogenous selection into lobbying, high temporal auto-correlation or "stickiness", and the issue of omitted variables. Other issues include measurement, such as the "protection without capture" phenomenon (Carpenter 2004) that occurs when policies favor firms that lobby more, but not because of their lobbying activity or special influence. Tighter integration with formal models of lobbying may also help with causal identification.

The theoretical literature on how lobbying might influence policy has for the most part addressed itself toward legislative lobbying, although there is a small and growing literature on lobbying in executive agencies. Some common explanations for how lobbying may result in influence is through "quid pro quo" exchange (Stigler 1971; Groseclose and Snyder 1996), through transfer of information about the ideal policy (Grossman and Helpman 2001), through subsidizing friendly interests (Hall and Deardorff 2006), or as a signal of commitment to future resistance (Gordon and Hafer 2005). Explicit contracts over policy are clearly illegal, but implied or informal contracts might nonetheless have force and be established during lobbying. In the bureaucratic context, the most obvious kind of implied contract involves future employment, yet every study of the revolving door of which we are aware has produced null findings (Gormley 1979; Cohen 1986; Lucca, Seru, and Trebbi 2014; DeHaan et al. 2015; Cornaggia, Cornaggia, and Xia 2016). We remain sympathetic to more nuanced theories about how the revolving door shapes information processing by regulators and thereby produces influence (e.g. Kwak 2013). Regulators may be more likely

to take comments of employers past or future as raising more "salient" considerations than firms or groups that are less well-known, or may see the opinions of certain groups as more "informed" about the subject matter. Difficulties in empirical operationalization prevent a deeper engagement with such explanations here. The notion that agency lobbying is effective for informational reasons, either as a signal of optimal policy or interest group strength or threat, has been explored in several papers (Gordon and Hafer 2005; Yackee and Yackee 2006). Both articles would tend to support the "threat" view of what makes agency lobbying effective.

Scholars have added to a rich literature on rulemaking in recent years, led by Susan Yackee and colleagues who have pioneered quantitative methods that establish associations between participation at the notice-and-comment stage and changes in rules from proposal to final form. In an important article entitled "A Bias Toward Business," Yackee and Yackee (2006) establish that comments of business entities induce rule change with higher probability (and in a more deregulatory direction) than do comments of labor and consumer groups. These results are of course observational, and the content of the initial rule is not coded in these analyses, so one interpretation of the results is that the initial rule is for some reason (perhaps strategically) tilted against business groups, and the differential commenting influence may reflect a moderation of this initial tilt.

Important recent work by You (2014) examines the phenomenon of "ex-post lobbying," the idea that considerable lobbying activity takes place after a statute is enacted, when rulemaking, implementation and enforcement activity is ongoing, or when possible amendments to the legislation are occurring and oversight is occurring. You examines 76,641 lobbying reports that match bills from 1998 to 2012 and finds that a substantial portion of lobbying activity reflected in these reports 51.3% of all reports (Table 2), 44.3% of single-bill reports (Table 2), and 41% of expenditures by firms and trade associations (Table 3) targets the policymaking process after (ex post) the legislature's passage of a bill.

It is very difficult to ascertain what benefit firms and their associations derive from these

activities, especially given cross-policy comparisons. This remains an important research question.

Yet another phenomenon that has not been investigated is the vast scope of rule-shaping activity, which is not measured in existing lobbying reports. Because rulemaking is governed by the Administrative Procedures Act and the body of law developed there and in any particular field of regulation, those with legal expertise play a more pronounced role in these venues. And in the wake of several major regulatory laws passed in the past decade – the Affordable Care Act, the Credit Card Act, the Tobacco Control Act and Dodd-Frank – this legal activity is one of the most important, yet understudied, patterns of lobbying in the United States.

3 Some Patterns of Financial Rulemaking Influence After Dodd-Frank

The Dodd-Frank Financial Reform Act of 2010 is a massive statute that creates new regulations in a range of policy domains, ranging from systemic financial regulation to prudential regulation to consumer protection regulation (Moss 2009, Carpenter 2010, Carpenter 2011). The statute itself was the subject of vast lobbying activities not only in Congress but also in the Treasury Department, where much of the statute was written (Carpenter 2011). The involvement of the executive branch in Dodd-Frank is thus threefold – the drafting of the statute, the writing of rules, and the enforcement of both statutory requirements and rules. It is critical that our empirical analysis examines only the second of these, and here only the formal participation of publicly-traded banks in the rulemaking of one agency (to the exclusion of others forms of influence), and thus may severely underestimate the returns to lobbying.

Even in rulemaking alone, however, the scope of activity under Dodd-Frank is vast. The statute itself called for 398 rulemakings, and agencies will engage in many others as "inter-

pretive" activities. Whether "substantive" and charged by Congress or whether interpretive and done after-the-fact, all of these rulemaking activities are governed by the Administrative Procedure Act, all must pass through the notice-and-comment process, and all involve the deployment of legal services on the part of regulator and regulated.

Some notion of the depth of these activities can be gleaned from a 2011 story by Eric Dash in the *New York Times* entitled "Feasting on Paperwork" (`http://www.nytimes.com/2011/09/09/business/dodd-frank-paperwork-a-bonanza-for-consultants-and-lawyers.html`). The story detailed the breadth, depth and formidable cost of financial institutions' attempts to shape rules in the wake of the law. Several dimensions of "lobbying by lawyering" emerge in this portrait.

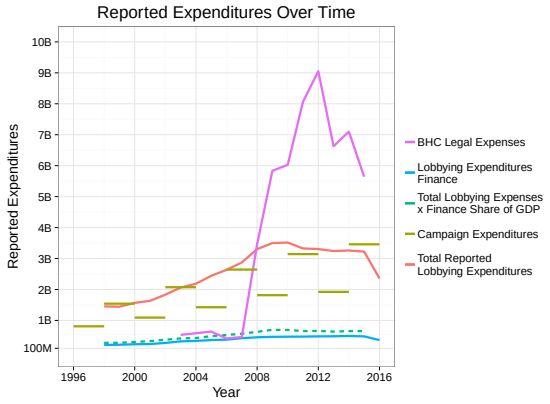
- **High Incremental Product Value**
  - "The amount billed by Debevoise & Plimpton to write a 17-page letter on a new rule intended to rein in risky banking – around $100,000 – would make most authors jealous. Thats the fee just for parsing the proper definition of a bank-owned hedge fund. Longer and more complex regulatory missives, weighing in on who should be deemed too big to fail or how derivatives are traded, can easily cost twice as much."
  - "Regulators from seven states including California, New Jersey and Pennsylvania have hired his firm, Mr. Mustafa said, and he is selectively signing up two to four new bank clients a month. Annual advisory fees start at $20,000 and can reach $100,000 or more."
  - "Davis Polk & Wardwell, for example, is offering a $7,500-a-month subscription to a Web site that tracks the progress of every Dodd-Frank requirement. So far, more than 30 large financial companies have signed up."
- **High Stakes and Vast Aggregate Activity**

- "These comment letters could save Wall Street banks billions of dollars if they help persuade policy makers to adopt a more lenient interpretation of the coming rules. And white-shoe law firms like Debevoise & Plimpton are cranking them out by the dozen."
- "No one yet is tracking all the money being spent to deal with Dodd-Frank (which in itself could be an entrepreneurial venture), but a back-of-the-envelope calculation puts it in the billions of dollars. And thats not even counting the roughly $1.9 billion spent by companies lobbying on financial issues since the regulatory overhaul was first proposed in early 2009, according to the Center for Responsive Politics."

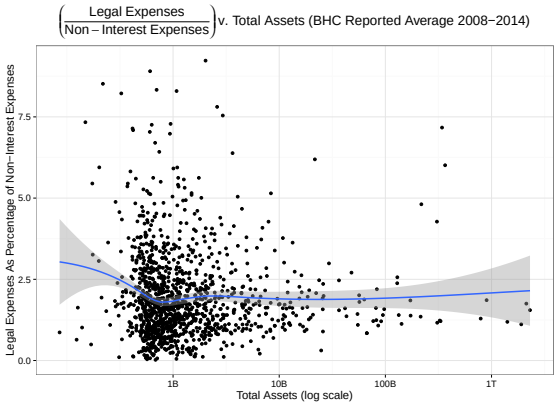
- **Professional Work**
  - "Besides the lawyers, there are legions of corporate accountants, financial consultants, risk management advisers, turnaround artists and technology vendors all vying for their cut."
  - "It is a full-employment act," said Gregory J. Lyons, a partner at Debevoise, where a team of a half-dozen lawyers has drafted 30-plus comment letters in the last six months. "The law is passed, but we are still reasonably early in the process," Mr. Lyons said. "There is still a lot to be written."

- **Ex Post Lobbying**
  - "The bulk of the lobbying tab was spent in the two years before Dodd-Frank took effect. Now firms are spending similarly eye-popping sums to comply with or battle against the rules emerging from the law. They are turning to existing companies that have started dedicated teams like the one at Debevoise & Plimpton, as well as start-ups like the Invictus Consulting Group."

A full monetary accounting of lobbying and legal activity has not been completed. Yet



(a) Bank Holding Company legal expenditures as reported on FR-Y9C compared with Open Secrets Data on lobbying and campaign spending. Campaign spending figures reported biannually have been annualized.



(b) Legal Spending as share of non-interest expenditures. All cost shares have been averaged over a six year period when there were consistent reporting standards.

Figure 1

the *Times* summary of suggests that billions of dollars may have been spent just on this one bill from 2010 to 2011. Six years have since passed, raising the possibility that according to the standard by which the *Times* aggregated $1-2 billion in legal spending in that year or two, up to $5 to $10 billion, perhaps more, has been spent on Dodd-Frank. Figure 1b provides some support for this estimate. It shows the amount of reported legal expenditures by Bank Holding Companies as compared with two other potential sources of influence production, money in elections and lobbying. In the Dodd-Frank era, the total reported legal expenditures by Bank Holding Companies topped nine billion dollars, while the entire lobbying expenditure of the financial sector - which includes other banks, insurance companies, and real estate firms - was spending only half a billion. Of course, much of these costs are purely incidental to business and not directly related to influencing policy, but some of these may not be. Figure 1b shows legal costs as a share of overhead, averaging over a six year period, plotted against firm-size. Firms appear to have a significant degree of differentiation in terms of how much they spend on lawyers, from almost nothing to upwards 10% of all overhead expenses.

But does this expenditure lead to identifiable returns for those who incur such immense

costs? We know of no quantitative study focused on rules that answers such a question. Cognizant of the fact that public equity traders watch these developments closely, we now outline a procedure for detecting some of the returns to lobbying with lawyers.

4 Methodology: Event Study and Estimating Equations

4.1 Using Stock Markets to Examine the Value of Influence with Endogenous Participation

Event study methodology was introduced in the late 1960s in order to study how stock prices responded to the release of new information such as income reports or stock splits (Ball, Ray; Brown 1968; Fama et al. 1969). Since then, hundreds if not thousands of event studies have been published in disciplines ranging from accounting and economics, to management, law, and so forth. MacKinlay (1997) provides a good introduction to event-study methodology, while Corrado (2011) presents an overview discussing how these methods have been applied in practice. To our knowledge event study methodology has not previously been used to study the efficacy of lobbying (de Figueiredo and Richter 2014).

Although the majority of event studies appear to use price data aggregated at a daily level or higher, high-frequency event studies have also been used to understand how long it takes markets to assimilate new information. Early studies found that equity prices adapt within five to fifteen minutes to announcements related to earnings and dividends (Patell and Wolfson 1984; Jennings and Starksf 1985), while a more recent study found that positive information revealed on cable news segments was fully incorporated after as little as one minute, although negative information took as much as fifteen minutes (Busse and Green 2002). To our knowledge, intraday returns have rarely been used in studies of the effect of regulatory or policy changes.

4.2 Measurement Strategy

A first-order requirement for our empirical approach is to obtain market measures that are meaningfully comparable across firms whose price-processes are potentially quite different. One possibility is to measure excess returns using t-statistics (Sharpe ratios), however we prefer an approach that makes fewer implicit parametric assumptions about market returns. In particular, we will use ranked returns, whose construction we will describe in this subsection.

We suppose that for each asset i, day d, and period t we are able to obtain measures of the price P_{idt} at that time.[4] Let $R_{idt} = P_{id(t+1)} - P_{idt}$ be the arithmetic returns of asset i from one period to the next on a given day. Then we regard each of these quantities as random variables and assume the following generating model:

$$R_{idt} = \alpha_i + \beta_i R_{mdt} + \epsilon_{idt}$$
$$\epsilon_{idt} \sim F_{it}$$

Hence, m is a sufficiently broad index fund that can serve as a market control.[5] If controls are not desired, assume $\alpha_i = \beta_i = 0$. It is a stylized fact that when dealing with intraday returns, the variance of ϵ_{idt} depends on the time of day t and that there is some correlation between periods (**Kolari2011**). This makes the assumption of i.i.d. normality underlying the use of t-statistics inappropriate. We may define the cumulative abnormal returns at time t on day d over k periods for asset i as

$$\mathrm{CAR}^k_{idt} = \sum_{i=1}^{k} \epsilon_{id(t+i)} \tag{1}$$

If market controls are not used, $\mathrm{CAR}^k_{idt} = P_{id(t+k)} - P_{idt}$. In other cases, it is analogous

[4] In our event study, periods are trading-minutes like 9:35AM, 2:04PM, etc. We derive prices using WRDS's NBBO database. The "price" at a time is calculated as the average of the best best and best offer at that time. In cases where the NBBO database does not have a bid or offer available, we assume the last prevailing price is the current price

[5] We used tickers RSP and VTI, which are an S&P 500 Equal Weight ETF and Total Market Equal Weight ETF respectively

to the difference in price after controlling for market movements. Then we wish to define Q^k_{idt} as the quantile of the corresponding CAR^k_{idt} against comparable days at the same time t and for the same number of periods k. Let $D(d)$ be a set of h consecutive trading days prior to d[6]. The most natural definition

$$\hat{Q}^k_{idt} = \frac{\left|\left\{CAR^k_{i\tilde{d}t} \leq CAR^k_{idt} : \tilde{d} \in D(d)\right\}\right|}{|D(d)|}$$

has a significant practical disadvantage. If all the CARs were the same, then we would estimate $\hat{Q}_{idt} = 1$. Some assets are not frequently traded and so the cumulative average returns may be 0 more frequently than one would like (or than makes sense given our assumption F_{idt} is continuous). Therefore we use the formula below, which would yield $Q_{idt} = 0.5$ in such circumstances.

$$\hat{Q}^k_{idt} = \frac{\left|\left\{CAR^k_{i\tilde{d}t} \leq CAR^k_{idt} : \tilde{d} \in D(d)\right\}\right|}{2 \cdot |D(d)|} + \frac{\left|\left\{CAR^k_{i\tilde{d}t} < CAR^k_{idt} : \tilde{d} \in D(d)\right\}\right|}{2 \cdot |D(d)|} \qquad (2)$$

For frequently traded stocks, ties are rare, and so the two equations would be the same. Assuming F_{it} is a continuous probability distribution, it follows that $Q^k_{idt} \sim \mathcal{U}\{0, \frac{1}{|D(d)|}, \frac{2}{|D(d)|}, \ldots, 1\}$.

4.3 Estimating Equations

Ultimately, we seek to examine the relationship between market reactions to rule announcements and participation in rulemaking procedures. We are interested in whether observed returns on the announcement of the proposed rule predict subsequent commenting behavior, and we are also interested in whether return quantiles are higher upon announcement of the final rule for commenting versus non-commenting firms. Our basic regressions take the following forms

[6]In early drafts of the paper we let $h = 100$, in the most recent drafts we use $h = 200$

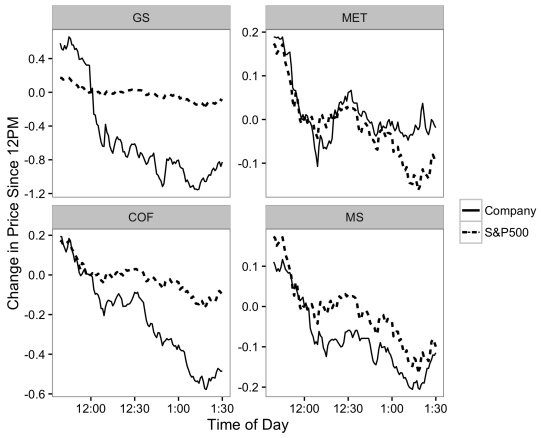
$$C_{ij} = \psi_i^C + \gamma_j^C + \theta^C \times \hat{Q}_{ij}^k + \beta' X_{ij} + \upsilon_{ij} \tag{3}$$

$$\hat{Q}_{ij}^k = \psi_i^Q + \gamma_j^Q + \theta^Q \times f(C_{ij}) + \beta' X_{ij} + \epsilon_{ij} \tag{4}$$

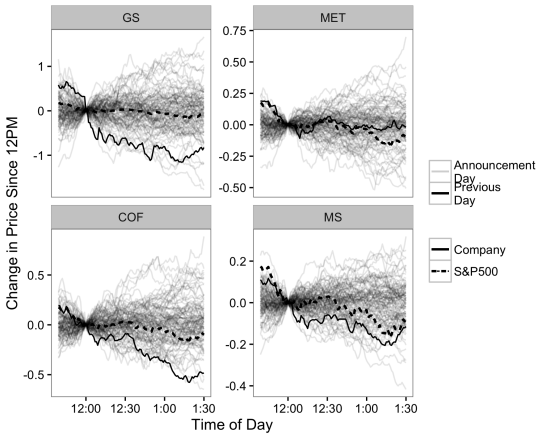
where $\hat{Q}_{ij}^k$ ($= \hat{Q}_{idt}^k$ for a given day-time combination of (d, t)) is the quantile-measured effect of the rule j on firm i, ψ_i and γ_j are fixed effects for firm and for rule, respectively, C_{tj} measures commenting activity for firm i participating in the notice-and-comment process related to rule j (where the function f allows for a more continuous measure of commenting activity or a simple binary measure of whether commenting occurred or not), and X_{ij} is a set of of other covariates related to the firm or the rule, and υ_{ij} and ϵ_{ij} are error terms.

For different days d, different times t, and different windows k, we obtain different estimates for $\hat{Q}_{ij}^k$ according the method outlined in the previous subsection. Since it is not clear which market index provides the best control, we calculate $\hat{Q}_{ijdt}^k$ in three ways: without a market control, controlling against an S& P 500 index fund, and a Total Market index fund. Because the movements we are interested in affect a number of highly-valued stocks that are components of the S&P 500, we use equal weight ETFs that ensure the influence of these component stocks is as small as possible.

Another issue involved with estimation of $\hat{Q}_{ijdt}^k$ is the size of the event window k. Should we look at the difference in excess market returns after one minute, one hour, or some other time period. In general a shorter period is preferable to decrease the risk of confounding interventions, although if too short a period is taken then the information contained in the announcement will not be fully incorporated into the share price. The mathematical comment in the Appendix formalizes these tradeoffs for a general asset price process, the Lévy process. Existing financial market literature suggests that earnings announcements are fully incorporated in as little as a minute or as long as fifteen minutes. While rules may not be equally as interpretable as earnings announcements, press releases and news (e.g., Bloomberg) reports do tend to highlight the most important spoints. Longer durations do,



(a) For asset i, illustrates $P_t - P_{t_0}$ where P_{t_0} is the price at 12:00PM.



(b) Same as the left, but with $P_t - P_{t_0}$ paths for the last 100 days superimposed (i.e. September 22nd, September 21st, and so forth).

Figure 2

moreover, have the effect of winnowing the set of eligible rules. Focusing on returns after six hours, for example, would only allow us to examine rules published between 9:30AM and 10:00AM. In the absence of strong priors, our approach is to look at a variety of time-domains: 5 minutes, 20 minutes and an hour. We also consider the average of all available intervals from 1 to 60 minutes for a particular rule, as a way of decreasing sensitivity of our rule estimates to transitory shocks.

4.4 Illustrative Example

We now provide an illustrative example showing how the estimation of $\hat{Q}^k_{ijdt}$ works in practice. These examples also have the salutary purpose of providing a sanity check to show that rule announcements can indeed work as we expect they should.

At 12:00PM on September 23, 2016, the Federal Reserve Board published a proposed rule limiting the kind of physical commodities that can be owned by a financial holding company. Figure 2a shows the stock price of four financial companies - Goldman Sachs, Capital One Financial, Morgan Stanley, and Met Life - around the time of the announcement. For ease of comparison, we have normalized each price path by subtracting the price of each stock

at 12:00PM, and also super-imposed the path of an S&P500 index fund normalized in the same fashion. At the time of announcement, many banks were thought to participate to some degree in commodity holdings. Among the two most heavily involved were Goldman Sachs and Morgan Stanley, as a memo included with the press release notes. Another firm that may have had significant exposure was Capital One Financial. At the time of the rule announcement, over 50% of Capital One's 88 billion dollar consumer banking portfolio involved auto loans, more than 50% of that coming from consumers with FICO scores below 660. Capital One's exposure to sub-prime auto loans was obvious from publicly available financial statements and had received coverage in financial papers. If a auto loan consumer defaulted on their loan, Capital One would usually become the owner of their car.[7] Although it is hard to guess from financial statements how many cars Capital One owned at the time of the rule announcement, the rule would appear to entail potential exposure for the firm, especially as the new accounting rules would force Capital One to apply a 1250 percent risk weight to physical assets like these.[8] By contrast, insurance companies were not subject to these rules, although earlier indications from the Federal Reserve showed that they were at least considering provisions that might have applied to such companies. Met Life is one of the largest insurance companies and an officially designated systemically important financial company.

Figure 2a is suggestive of unusual downward movement for the three banks around 12:00PM, but not the insurance company. In particular, the market value of Goldman Sachs fell over one billion dollars in five minutes; the shocks to Capital One and Morgan Stanley also look unusual but less striking. In order to make this assessment more rigorous,

[7]The proposed rule itself mentions such repossession as one of the primary reasons banks might own physical commodities. "BHCs may take possession of physical commodities provided as collateral in satisfaction of debts previously contracted in good faith"

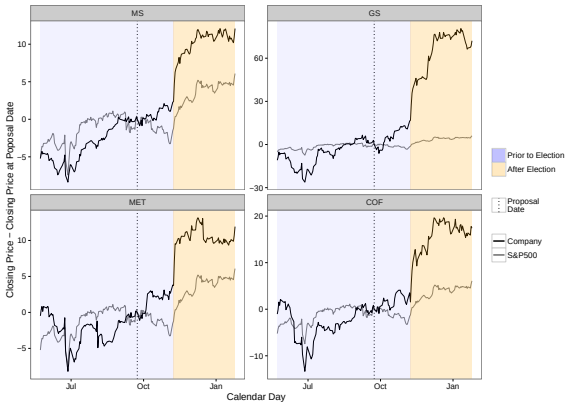
[8]We do feel it is important to mention that application of the rule to automobiles does require an act of legal interpretation. In making this rule, the Federal Reserve Board was apparently seeking to ensure that firms make adequate preparation for exposure to costly environmental disasters. Although it is hard to envision how cars sitting on a lot could pose Exxon-Valdez level environmental risk, the rule was drafted in such a way as to cover not only hazardous physical commodities but also those physical commodity that contain "components" which are hazardous. A car battery alone contains many such chemicals, and there are still other car components which are environmentally hazardous (Barry 2012).

Table 1: Illustration of Measures

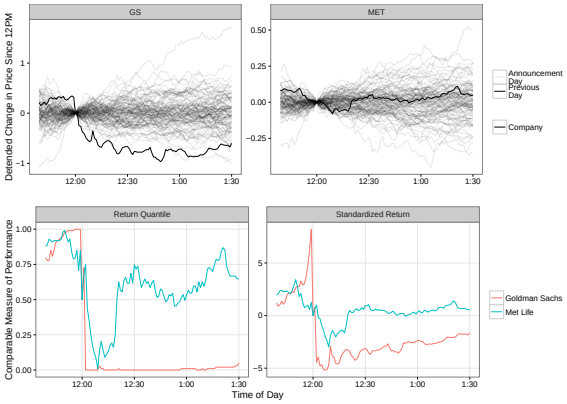
	Measure	MS	GS	COF	MET
1	Tp5	0.01	0.00	0.00	0.32
2	Tp20	0.08	0.07	0.14	0.53
3	Tp60	0.06	0.06	0.01	0.48
4	Mean	0.10	0.04	0.05	0.45

one can compare the returns for each asset to what was observed on previous days around the same time. The comparable returns are displayed in Figure 2b. It is apparent that the precipitous declines observed on September 23rd around 12:00PM were unusual: only a few of the past hundred days were worse for these banks over the hour time frame. Yet an hour later the returns for Met Life could hardly be less remarkable. Table 1 presents the computed values of $\hat{Q}^k_{ijdt}$ that we would use in subsequent regressions. A careful eye could calculate the entries in the table by counting the number of grey lines below the black line, and dividing by the total number of lines in each graph.

While the mid-day changes presented here are unusual, as time marches on these movements become less surprising. The average daily change in market value for Goldman Sachs is, at present writing, a little over one billion dollars; on a daily scale what was demonstrated in this section would not appear very unusual. One might hope that looking for a longer-term effect would work, but it seems that equally significant events from a firm standpoint happen with such frequency that disaggregating the effect of rules would be very difficult. The Federal Reserve has published over one-hundred new regulations in the past 6 years, on average once every three weeks. Over the weekend following the commodity rule announcement, Goldman announced it was laying off seventy-five of its bankers in Asia, and the decline in its stock price on September 26th was similar to that it experienced on September 23rd, the day of the rule announcement. Figure 3a shows trends in each stock price over a time-scale typically used in the daily event study literature. There was no apparent level-shift around September 23rd, and in the Appendix we present a regression table showing that there was not one. By contrast, around the date of the Presidential election there was a clear level-shift



(a) For asset i, illustrates $P_t - P_{t_0}$ where P_{t_0} is the price on September 23rd and P_t is the price on some other day.



(b) The top panels present the same information as Figure 2b, but after removing the market trend in each days returns. The bottom panels illustrate the evolution of our quantile returns measure over the course of the hour, as well as standardized returns. Both measures are evidently similar.

Figure 3

for both these particular firms and the market as a whole.

These results suggest that intra-day returns can sometimes capture the expected effect of a rule on a firm, where using daily returns would not. A single illustration can hardly prove that this measurement strategy is valid in all cases. Rather the goal at this stage is to give some flavor of the content analysis methods underlying the regressions we present in the following section. One important caveat is that we will use excess market returns wherever possible, although most of the illustrations have used simple returns that do not control for market movement in any way. In Figure 3b we illustrate the benefit of controlling for market by presenting detrended data: the effect on Goldman Sachs is more pronounced and stable than in the previous figures, while the effect for Met Life is less. We also show that standardized returns and quantile returns are substantially similar.

It is also worth dwelling for a moment on the threat of leaks and what the rising and falling pattern in the bottom panel of Figure 3b reveal. The proposed physical commodity rule was released by the Federal Reserve at 12:00PM September 23rd and for this reason we measure all returns relative to this time t_0. According to our research, none of the major

financial news outlets such as Bloomberg or the Federal Reserve itself released the news until noon. If this adverse regulatory news were to be released earlier, however, and the sell-off began ϵ minutes before, one would have that $P_{t_0} < P_{t_0-\epsilon}$. As the graphs in all cases show $P_t - P_{t_0}$, if an abnormal downturn started before the time we expect, we would have $P_{t_0-\epsilon} - P_{t_0}$ be large and positive. Indeed, this is the case both for Met Life and for Goldman. Thus, the effect on both Met Life and Goldman appears to have been attenuated by our decision to use the official publication time rather than, say, a few minutes earlier when the sell-off apparently began. It is not clear how to address this problem in a principled way so that the p-values we report remain meaningful, however. Principled strategies for dealing with this problem seem to us an appropriate avenue for future research.

4.5 Will The Estimates Understate or Overstate the Causal Impact of Commenting?

After estimating equation 4, will the estimates we observe are likely to understate or overstate the true causal impact of commenting on rule? Moreover, how should we think about these results given that our outcome-measures arise from financial data? Let us ignore for the moment the fact that we are looking at the effect of commenting on multiple rules and imagine that we were just interested in a single one. We have shown a strategy for measuring the quantile return Q_i of a given actor following a rule. We are interested in how that outcome changes as a result of a particular binary action choice, commenting or abstaining. The reasons that firms make one choice or the other is not fully known, but our sense is that it has something to do with the costs of commenting and the expected difference in regulatory outcomes. Thus, the empirical task we are engaged with is fundamentally unlike a randomized experiment. Nevertheless, it is useful to borrow the potential outcomes framework widely used in analyzing experimental data. If i had commented then it would get one outcome $Q_i(1)$ and if i had not commented then we would have observed another outcome $Q_i(0)$. The causal impact of commenting on firm i is $Q_i(1) - Q_i(0)$, in other

words the difference in potential outcomes. Although hypothetically one can suppose that $Q_i(i) - Q_i(0) < 0$, so that commenting causes harm to the firm that comments, we have not in our reading observed anyone advancing a credible instance where that seems to have occurred. It is thus better to focus our attention on the more reasonable case where commenting at worst does nothing to change potential outcomes, in other words $Q_i(1) \geq Q_i(0)$.

Our regression estimates pool across rules and firms and tell us the average of some, but not all of the hypothetical market outcomes. We can think about our regressions as producing the following reduced potential outcomes table

	Comments	*Abstains*
Commenters	$\overline{Q_C(1)}$	?
Abstainers	?	$\overline{Q_A(0)}$

Here we define $\overline{Q_C(1)}$ as the average quantile return of commenters when they comment and $\overline{Q_A(0)}$ as the average quantile return of abstainers when they abstain. The fundamental problem of causal inference is that we cannot observe $\overline{Q_C(0)}$, the quantile returns that would have been observed for commenters if they had abstained, and we cannot observe $\overline{Q_A(1)}$, the quantile returns that would have been observed for abstainers had they commented. In particular, while we would like to know the average effects of commenting for commenters $\overline{Q_C(1) - Q_c(0)}$ and the effect of commenting for abstainers $\overline{Q_A(1) - Q_A(0)}$, it is impossible for us to do this because we cannot rewind history and observe what would have happened if each firm had acted differently. Thus, causal inference depends on assumptions for how what we can observe relates to what we cannot.

The simplest causal interpretation of the regression estimates naively assumes that the commenters would have received outcomes like the abstainers had they abstained, $\overline{Q_C(0)} = \overline{Q_A(0)}$, and that abstainers would have received outcomes like the commenters had they commented, $\overline{Q_A(1)} = \overline{Q_C(1)}$. This assumption is doubtful, although it would seem to follow if participation were "random" and unrelated to influence. However, the substantively

important question is *in which direction* is the naive causal assumption wrong?

Since we are mainly focused on the regulatory benefits of commenting for commenters, as opposed to the potential unrealized regulatory gains of commenting for abstainers, the primary risk for our empirical conclusions is that $\overline{Q_C(0)} > \overline{Q_A(0)}$. In plain English, the effects we observe are only overstated if, on average, the firms that did comment would have done better than the abstainers even if they had not. In other words, the assumption necessary to undercut our estimates would require us to still presume a difference between two groups of firms that is related to commenting. Moreover, if one considers how sharp the estimate of Q is around rule announcement times, and the fact that Q implicitly controls for each firms movements against itself, one has to believe that any difference we are observing is due purely to chance, which we can quantitatively assert is unlikely, or is related in some fashion to both the firm's commenting decision and the rule announcement times. The only reasonable ways to interpret the significant difference we observe are basically as follows: firms either win following rule announcements because they comment or they comment because they're the ones that win at those times.

As far as we can tell there is only one theory developed in existing scholarship that supports the second, no commenter-influence interpetation of our data: *participation during the pre-rulemaking stage* (Krawiec 2013b). Agencies often develop rules after extensive consultation with potentially affected actors. These efforts are often couched as helping promote the legitimacy and quality of regulation (Coglianese), yet there are obvious advantages to being able to inform a regulator before their mind is made up. Firms that participate in crafting a rule prior to its proposal may have a higher propensitiy to submit comments on it after it is proposed. Indeed, we know that regulators sometimes encourage their consultees to write and submit comments in order to help reviewing courts better understand their decision-making (Eliott1992). If we assume that this pre-proposal outreach shapes the rules and results in an increased propensity to participate, then we might well get data that looks like what we collected even if commenting changed nothing.

Other reasonable-sounding criticisms of the influence interpretation of these results often, on more careful inspection, support the notion that the effect we observe is actually underestimated. Consider, for example, the possibility that the market is able to forecast to some degree the content of the rules. The effect of the rule on the firm i is like a random variable γ_i with some prior. Assuming this prior is correct, the tighter the prior is, the *smaller* the market movement we should usually observe in the price of asset i after uncertainty about this value is resolved. In the limit, if traders could perfectly forecast the content of the rule, or if traders already knew the content of rules because of leaks, then we should not observe *any* movement following rule announcements, even if the regulatory impact were large. The fact that we do observe movement means that market forecasting is imperfect or the relationships we observe are due to chance whose probabilities we can quantify. And indeed, we have many reasons why market forecasting is particularly hard in this context. Administrative policymaking is sometimes described as following a "garbage can model" of decision-making (Kingdon 1984). In rulemaking, preferences are problematic since policymakers respond to different facts on the ground and the changing fortunes of other external actors. Different teams of officials work on different rules, so that participation is fluid. Although policy documents describe the rule production process in some length, these policies also allow significant adjustment as situations warrant it, so that even the production technology is unclear. Coupled with extensive procedures aimed at ensuring the privacy, integrity and independence of rulewriters decision-making process, predicting what rulemakers are going to do is necessarily an exercise in informed matter of informed but imperfect speculation.

Still different concerns relate to the other end of the predictability spectrum. How can the market processes rule announcements so quickly, especially given the extraordinary length and complexity of financial regulation? Traders may be smart, but it's hard to imagine that – over the course of an hour – anyone could read hundreds of dense pages of legal and economic reasoning and completely understand how every firm in the market is effected. Nevertheless, it is important to remember that detectible price changes need not reflect the resolution of

all uncertainty, only that *enough* uncertainty is resolved in a consistent enough direction. Second, informed observation of some kind is a less scarce resource than one might think. According to the *Financial Times*, the annual expenditure for equity research is about $16 billion.[9] About half of this research is produced by large investment banks and freely given out to their clients as a perk (Economist), much of it in the form of research reports but also sometimes in the form of emails to clients. Almost 6,000 analysts work at the 12 largest banks alone (FT). Over a hundred analysts may cover a single stock, and that does not include the many analysts working at smaller firms or independent research shops (Frost). Less frequently traded assets have fewer analysts, but then again their businesses are usually simpler. These researchers produce detailed reports unpacking how the rules might turn out and what to look for that matters. For example, the first paragraph of a 25 page report by Nomura Equity Research, issued five days before the Volcker rule was proposed, contains the following cliffsnotes summary,

> "The main battleground will be market-making and hedging, where the Dodd-Frank statute is more ambiguous... We are particularly interested in how the regulators treat "investing and lending" activities that use bank balance sheets. We also believe that the CEO attestation requirement will be a strong deterrent if adopted."

The end of the report shows how to to use publicly available bank balance sheet information to determine the extent of an entities exposure to various revenue streams associated with the Volcker rule, and concludes by discussing the relative impact on the big financial firms, including Goldman, Morgan Stanley, Bank of America, and so forth. This particular report was discussed by Bloomberg reports prior to Volcker rules actual announcement, along with several others. Many other reports were likely produced or were kept in house.

Besides the existence of widespread proprietary information, there is also an abundance of

[9]For the sake of comparison, the combined salaries of social science academics is about $8 billion according to data from the Bureau of Labor Statistics (https://www.bls.gov/oes/current/naics4_611300.htm).

public information that observers can use to quickly become informed about the likely impact of regulation. The press releases accompanying issuance usually include concise statements about how rules are changing, including the text of the press release, speeches by Federal Reserve governors, fact sheets, and of course the preamble of the rule itself. Such simplifying texts may try to "spin" rules changes a certain way, but informed observers are likely able to read through these and observe what they need to know.

Journalistic accounts also rapidly circulate after rule announcements, providing yet another mechanism for well-informed judgments on a short-time scale. According to Bloomberg reporters we have spoken with, such stories are frequently based on actual copies of the rules that are circulated prior to announcements. The accounts produced by reporters, while not as detailed as the proprietary data, are nonetheless informed by consultation with financial analysts and regulation experts.

The observation that copies of rules are circulated shortly before actual announcement raises questions about leaks and how these effect the interpretation of our results. Of course, trading on any leaks is criminally prohibited, so there are disincentives to using this information prior to official announcement. Moreover, even when a leak passes into the public domain, it does not necessarily reach every analyst nor do analysts necessarily view those leaks as fully credible (Nomura, p. 9). The most likely effect of leaks is to decrease uncertainty on the market about the effect of the rule, which should make assimilation of the impact of the rule faster and attenuate the estimated difference between commenters and abstainers.

5 Data Sources

The three major data sources used in this study are intra-day stock prices, information about the time of rule announcements, and identification of which firms participated in rulemaking procedures. All 1,013 publicly traded firms that the NASDAQ identifies as

"Finance Companies" were considered eligible for inclusion in our study, although a number of these firms were so infrequently traded that inclusion was impossible.

Asset prices were derived from the National Best Bid Offer database available from Wharton Research Data Services (WRDS). Because these data are reported at higher frequency than is necessary for our purposes, we aggregated to the minute-by-minute level by separately averaging the best bids and best offers, and then taking the median between the two as the asset price. If a stock was not traded in a given minute, this procedure is unable to measure the asset price at that time. To deal with this problem, we imputed the price of the asset be using the most recent asset price available.

Crucial to our study is precise identification of the time when rules were announced. Official publication of rules in the *Federal Register* typically occurs after the rule and its text have been revealed to the public via press release. Usually, the difference is a matter of days, but could be up to a few weeks. Occasionally, the press release itself contains information about when it was released, but usually it does not. In order to ascertain this time, we used two strategies. First, we extracted a server imprinted publication time from RSS data originally published by the Federal Reserve and archived by either Feedly, the Wayback Machine, or the Library of Congress's Web Archive. Second, we filed a FOIA request with the Federal Reserve for information about the time their press release were published to the Web. In all cases, the two times were identical or differed by a few minutes. For the cases of disagreement, we took the earlier time. In order to ensure that these web publication times provided a good estimate of when information hit the market, we selected several rules at random and checked web publication time against the timestamp on the first story about each rule on Bloomberg.

Figure 4 provides a calendar representation of the days at which rule announcements were made. Unfortunately, not all announcements were made during active trading hours, and in these cases the announcements must be dropped. In other cases, multiple rules were announced at the same exact time, which creates confounding. All told, there were

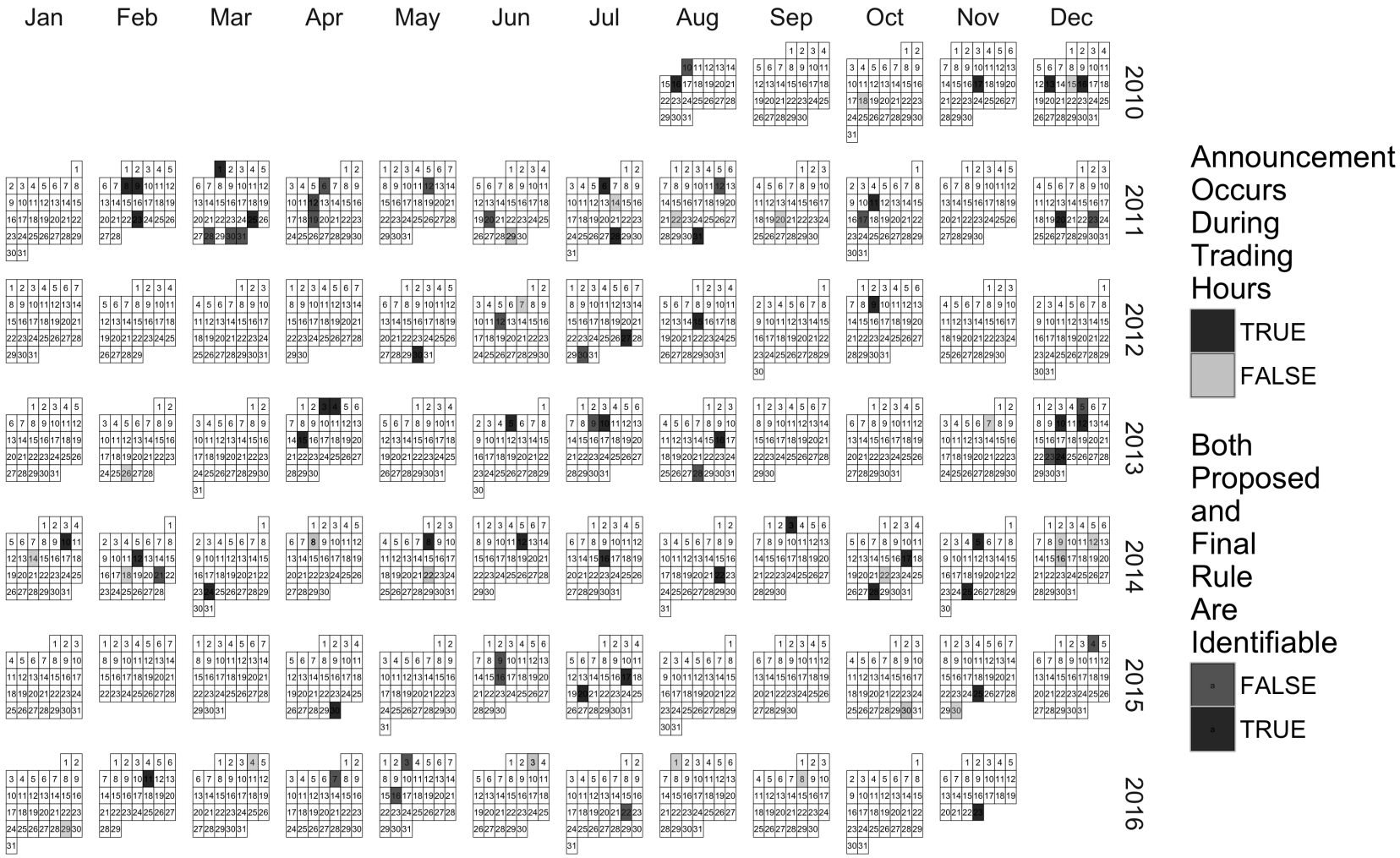


Figure 4: Calendar of Regulatory Events

50 proposed rules or notices of proposed rulemaking, 34 final or interim final rules, and 22 proposed-final rule pairs that could be used for our study.

Information matching firms to their participation in notice-and-comment rulemaking procedures was gleaned from the Financial Agency Rulemaking Dataverse, a collaborative effort between us and several other scholars that is still in early stages. Information about each comment submitted to the Federal Reserve as part of Dodd-Frank rulemaking was human coded by two separate individuals recruited through Amazon's Mechanical Turk platform. An RA then compared this first wave of human data collection to the source material, made corrections as necessary, and matched firms to the SEC's CIK identifiers. These were matched to firms using data from WRDS and RankedAndFiled.

6 Results

Our first regression in Table 2 shows an OLS regression of participation on market reactions with firm and rule fixed effects. It is desirable to consider that returns may be of two types, favorable and unfavorable, and therefore we measure the magnitude of these deviations separately.[10] We find that positive reactions are significantly associated with an increased tendency to participate, but the result is not stable over various time domains.

Our second regression in Table 3 examines whether there is a relationship between participation and final rule outcomes (quantile-based returns). We find that there is such an association, and it is consistently sized over the period of asset [rice measurement. All tests of significance use Huber-White standard errors.

Because stock returns are noisy and cross-sectionally correlated, a natural concern is that the standard errors from these regressions may be underestimated and therefore the deviations reported are not truly as surprising as appears. To protect against this possibility,

[10]Formally, positive response is defined as $\max\{0, Q_{ij}^k - 0.5\}$ while negative response is defined as $\max\{0, 0.5 - Q_{ij}^k\}$. Here Q_{ij} is the quantile return for firm i after announcement j and is given separately in each column

Table 2: Market Reaction to Rule Proposal Does Not Predict Participation

	Dependent variable:			
	participated			
	Tp5	Tp20	Tp60	T.bar
Negative Response	−0.001	−0.003	0.001	0.003
	(0.005)	(0.005)	(0.005)	(0.005)
Positive Response	−0.005	0.004	0.017**	0.011*
	(0.005)	(0.005)	(0.007)	(0.006)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Rule Fixed Effects	Yes	Yes	Yes	Yes
Observations	29,164	27,832	23,137	29,164

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3: Participation in Rulemaking Predicts Superior Market Reaction to Final Rule

	Dependent variable:			
	earliest_RSP_Tp5	earliest_RSP_Tp20	earliest_RSP_Tp60	earliest_RSP_T.bar
	Tp5	Tp20	Tp60	T.bar
Participated	0.063**	0.065***	0.069***	0.053***
	(0.025)	(0.022)	(0.023)	(0.019)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Rule Fixed Effects	Yes	Yes	Yes	Yes
Observations	21,030	20,530	19,436	21,030

Note: *p<0.1; **p<0.05; ***p<0.01

and also provide a kind of placebo test, we bootstrap participant returns using the following strategy. First, we select trading times at random since the passage of Dodd-Frank and imagine that our announcements had been taken from this pool instead of their true times. Next, we replace the true participants at random from the pool of financial sector stocks. This two stage randomization procedure preserves the clustering that is present in the real data. Thereafter, we calculate the mean return for these "pseudo-participants" after an hour. The histograms are displayed in Figure 5.

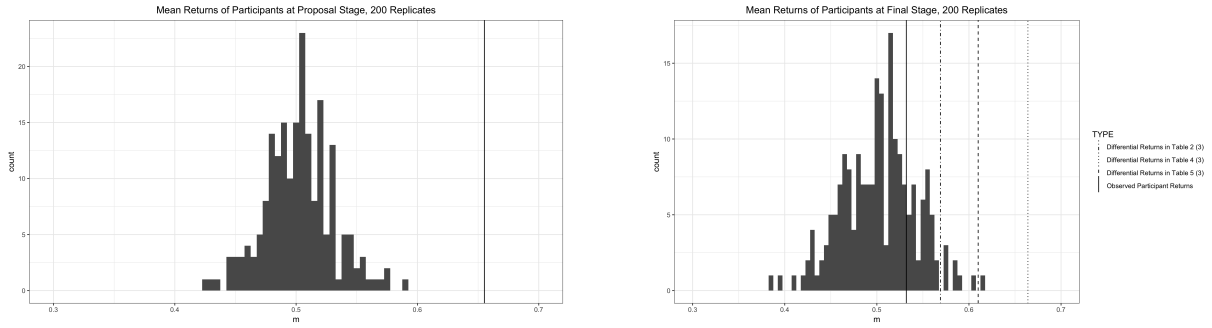
The most noteworthy observation that emerges from this analysis is that the returns participants receive at the proposal stage are much higher than one would expect due to chance. The 54th percentile return of participants to final rules which we observed here is not as surprising according to this measure as the conventional standard errors suggest, however this is in part because the exercise only evaluates the significance of absolute returns while the regression looks at differential returns. Differential returns of 0.07 would be quite significant

according to these figures tests, since theoretically we should expect non-participants to have returns at 0.5, and any deviations among random non-participants should be correlated with deviations of random participation. Bootstrapping differential returns is computationally intractable since one needs to estimate returns for all 681 participants in 38 rules many, many times, while for the procedure performed here only 274 acts of pseudo-participation must be estimated per replicate.

The regressions above considered differential returns following rule announcements among U.S. financial firms according to participation in notice and comment, but what about foreign banks, or firms that are on the consumer side of finance? We present two further regressions exploring whether there are differential returns by commenting depending on commenter type. Table 4 shows that participation by foreign financial firms was associated with much smaller gains than participation by domestic financial firms, indeed on average the returns were negative. Table 5 shows that the gains associated with notice-and-comment participation also appear to be reserved for financial firms, and on average consumers did not see much benefit to participation. Given the fact that non-U.S. firms and consumers did in fact participate, these differential estimates are consistent with two potentially complementary hypotheses, namely that (1) U.S. financial firms were more informative in their commenting than non-U.S. financial firms and non-financial U.S. firms, and (2) U.S. financial firms may enjoy rents or particular influence in the commenting process.

7 Discussion

The regressions described in the previous section demonstrate correlations between participation in financial rulemaking and outcomes in the equity markets. One possible interpretation is causal, that if a firm decides not to participate it receives a less favorable market reaction than if it had participated. A number of considerations make us wary about over-interpreting our results in this fashion, especially absent further investigation into possible alternative



(a) Proposed Rules (b) Final Rules

Figure 5: Results of two-stage procedure where we replace actual rule announcement times with random times in the post-Dodd-Frank era and also randomly reassign participation among financial firms, respecting the fact that some rules received more participation than others and therefore preserving the clustering present in our actual data. The histograms reflect the mean of pseudo-participant returns from pseudo-announcements. The solid lines indicate the mean of participants given true announcements. The solid line in (b) likely understaets the final returns understates the market impact because regulatory announcements also produce fairly large negative effects for non-participants. Other lines indicate the implied returns of the coefficient estimates.

Table 4: Market Reaction to Rule Proposal Predicts Superior Market Reaction Only for Domestic Banks

	Dependent variable:			
	earliest_RSP_Tp5	earliest_RSP_Tp20	earliest_RSP_Tp60	earliest_RSP_T.bar
	Tp5	Tp20	Tp60	T.bar
Participated	−0.045	−0.051	−0.047	−0.018
	(0.043)	(0.052)	(0.040)	(0.037)
participatedcommenter:us.financial.firm	0.109**	0.117**	0.117**	0.071*
	(0.049)	(0.056)	(0.046)	(0.042)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Rule Fixed Effects	Yes	Yes	Yes	Yes
Observations	24,816	24,230	22,940	24,816

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5: Participation in Rulemaking Predicts Superior Market Reaction Only for Financial Firms

	Dependent variable:			
	earliest_RSP_Tp5	earliest_RSP_Tp20	earliest_RSP_Tp60	earliest_RSP_T.bar
	Tp5	Tp20	Tp60	T.bar
Participated	−0.046	−0.002	−0.029	−0.022
	(0.035)	(0.041)	(0.041)	(0.033)
participatedcommenter:financial.firm	0.091**	0.048	0.081*	0.063*
	(0.041)	(0.045)	(0.045)	(0.037)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Rule Fixed Effects	Yes	Yes	Yes	Yes
Observations	28,454	27,774	26,291	28,454

Note: *p<0.1; **p<0.05; ***p<0.01

mechanisms.

Prior studies examining the gains from participating in rulemaking have struggled with the fact that only those who decide to participate are observed (Haeder and Yackee 2015). Although our design observes the effect of rules on both participants and non-participants, strategic considerations and selection effects still pose threats to causal identification. For example, we initially considered it possible that firms most adversely effected by certain rules would be more likely to participate, and that the first order effect for the market would be how soon the enabling statute provisions would be enforced rather than the details of how that enforcement would work. If this were so, one might expect that announcements, which necessarily hasten the date of enforcement, might trigger participation and negative market reactions to both proposed and final rules, even if the effect of participation were net positive. This particular story is not consistent with our evidence. If anything it seems that firms participate in response to rules that create expected benefits. Yet other selection stories might bias our results in one way or another. More work modeling the participation decision itself is necessary to address such reasonable concerns.

Another problem clouding inference is that regulators may position their rules strategically. Some formal models of regulatory policy-making suggest that the regulator should take an extreme position to one side of the regulated firms, in order to provoke a reaction and generate the greatest incentives for firms to reveal private information (Grossman and Helpman 2001). Our discussion with lawyers active in this space suggested that regulators may also take an extreme position with an eye toward the courts, since the regulator may feel that the appearance of having "compromised" with the affected parties will better protect the rule. Whatever strategy the regulators use, if their approach is predictable, the market may account for it to some degree. If it does not perfectly account for this information then there are plausible explanations for how strategic positioning could explain positive correlations between participation and regulatory outcomes.

Finally, we have the problem of confounding due to leaks. We have already discussed

the problem of unofficial leaks and insider-trading and how that might cause attenuation bias. A second problem, potentially even more serious, is that officials occasionally make public statements about the content of the rules that are being announced. In some cases the market reaction we estimate may not reflect the difference between rule and no rule, but rather the difference between early indications and final draft. The set of such public statements is ascertainable, but we have not collected sufficient data on it to provide a thorough accounting.

In any event, even despite these concerns, it is worth characterizing what the impact of commenting on market returns would be if the regression coefficients estimated in Tables 2 through 5 did capture the average causal impact of participation for US financial firms. The smallest such coefficient implied an average difference of about five percentiles, while the largest was around twelve. The market impact may be roughly calculated using the following procedure. First, use the inverse cdf of the normal to convert q-scores of 0.55 and 0.5 to equivalent z-scores. The difference in z-scores that results is about 0.12. If returns have mean 0, then we may multiply this difference by the standard deviation of each stock's returns after an hour to get the implied change in share price. For each participant firm and each act of participation, multiply this change in share-price by the number of shares currently outstanding. The sum total estimates the associated counter-factual difference in market value obtained through participation. This procedure yields a grand total of $3.2 billion. If the effect were 12 percentiles, the implied estimate is 7.8 billion. The biases mentioned above could of course lower that estimated impact of commenting, while consideration of the fact that we only observe a subset of rules where announcements happened during trading hours would suggest a much higher figure. These estimates are also restricted only to publicly traded firms commenting on their own, not including trade association activity, nor the activity of privately held firms.

8 Case Studies of Two Rules – Proprietary Trading Restrictions and Debit Card Interchange Fees

While suggestive, the empirical results here admit of manifold interpretations. The "black-box problem" confronted in our event study, like any event study, is that it is difficult to attribute changes in firm value to commenting activity without knowing how the comments in question might have shaped the rules. This question becomes even more difficult to address because of a commensurability problem. Even within a single agency, and especially in financial regulation, rulemaking covers a wide ambit of particular policy issues. Detecting that a bank's comments may have moved a rule about credit card fees is quite different from detecting whether a bank's commenting activity changed rules about capital adequacy standards. While quantitative techniques are being developed in this direction to be used across rules (Rashin 2017), we opt here for a more granular description of two rules, linking comments to rules changes, and then linking these changes to immediately observed movements in firm value upon release of the Final Rule. The two rules we examine are those that attracted heavy commenting activity from banks and non-bank interests alike, one of which (the Volcker Rule) concerns systematic or prudential financial regulation, the other of which concerns consumer financial regulation.

8.1 Proprietary Trading Restrictions on Banks: The Volcker Rule

Section 619 of the Dodd-Frank Act calls for federal agencies to write what is known as the "Volcker Rule," so named after former Federal Reserve Chairman Paul Volcker. The Volcker Rule sought to limit the activity of certain large financial institutions to engage in proprietary trading – firms investing their own capital to conduct financial transactions, in highly speculative trades that take positions in complex financial products such as derivatives. The Volcker Rule was one of the most far-reaching parts of the Dodd-Frank law, designed (according to its sponsors) to limit the financial risk of large institutions and to create a better

alignment of incentives between banks' capital provision functions and their activities in speculative trading in complex financial instruments.

8.1.1 From Proposed to Final Rule

The Proposed Rule implementing Section 619 was published in the *Federal Register* on Monday, November 7, 2011 (*FR* 76 (215) 68846-68792). The Rule attracted a large number of comments, over 500 individual comments and over 18,000 form letters. Just as important, the Volcker Rule probably attracted more media attention (including from specialty trade journals in the finance field, such as the American Banker) than any other rulemaking under Dodd-Frank.

As an examination of mechanisms by which comments might lead to rulemaking changes, and by which traders and other observers might see plausible gains in these changes, we worked 'backwards' by first examining the most important changes in the Volcker Rule from Proposed Rule to Final Rule stage, then by asking which commenting firms asked for those changes, and then by asking whether those firms saw appreciable gains in firm value in the first hour after the release of the Final Volcker Rule on December 10, 2013.

To gauge the most important changes in the Volcker Rule from proposed to final stage, we examined the analyses of top law and consulting firms that provided their clients with published overviews of the proposed and/or final rule announcements. The firms were Arnold & Porter, Davis Polk, Debevoise & Plimpton, KPMG, Mayer Brown, Morgan Lewis, Oliver Wyman, Simpson Thatcher, Skadden Arps, Sullivan & Cromwell, and WilmerHale. From these we identified the most important changes from proposed to final rule stage, attempting to rank-order them in order of emphasis placed upon the changes by the law and consulting firms.[11]

[11]We used the following documents: Arnold & Porter, "Advisory: Volcker Rule – Final Implementing Rules," February 2014, `https://www.apks.com/en/perspectives/publications/2014/02/volcker-rule--final-implementing-rules` ; Davis Polk's collection of resources at `http://volckerrule.com`, including redline of changes from proposed to final rule, as well as flowcharts; Debevoise & Plimpton, "Client Update – The Volcker Rule: An Overview," December 13, 2013, `https://www.debevoise.com/insights/publications/2013/12/the-volcker-rule-an-overview` ; KPMG, "The Volcker Rule:

While there were slight differences among the various law firms' assessments of the final Volcker Rule and the ways in which it had changed from the proposed rule, the following themes emerged clearly in the interpretations of informed observers:

- permitted market-making-related activities under the proprietary trading restrictions
- the definition of "covered funds"
- the deadlines for conformance with the Rule
- the definition of "reasonably expected near-term demands" of clients (RENTD)
- compliance and quantitative trading measures

Of these five inter-related themes, the first – the exemption for market-making activities in the proprietary trading prohibition – occupied a central place in the commentaries of law firms. The law and consulting firms noted that the Final Rule eliminated an Appendix (Appendix B of the Proposed Rule) that had sought to clarify appropriate market making-related activities, and the Final Rule also reduced the number of quantitative measurements, including revenues criteria, for measuring market making activities. In WilmerHale's slid-edeck explaining the Final Rule, the only reference to modifications from the proposed rule

A Deeper Look into the Prohibition on Sponsoring or Investing in Covered Funds," https://assets.kpmg.com/content/dam/kpmg/pdf/2016/05/volcker-covered-funds-pov.pdf; Mayer Brown, "Final Regulation implementing the Volcker Rule," December 13, 2013, https://m.mayerbrown.com/files/Publication/f95121f8-0c01-40f8-b14b-46379c2b118d/Presentation/PublicationAttachment/ddaf0395-d75d-4456-b143-6a026db6be71/Final-Regulation-Implementing-the-Volcker-Rule.pdf ; Morgan Lewis, "A Review of, and Insights into, the Volcker Rule Regulations, January 2014," http://documents.jdsupra.com/75903cde-9eb3-4a6a-ae61-4f94ac65aa47.pdf ; Oliver Wyman, "The Volcker Rule: Reality," December 2013, http://www.oliverwyman.com/our-expertise/insights/2013/dec/the-volcker-rule--reality.html ; Simpson Thatcher, "Regulations Proposed to Implement the Volcker Rule," October 13, 2011, http://www.stblaw.com/docs/default-source/cold-fusion-existing-content/publications/pub1275.pdf (this file was used to examine prominent issues with the proposed rule); Skadden, "Insights: Volcker Rule," January 16, 2014, https://www.skadden.com/insights/publications/2014/01/proprietary-trading-restrictions-under-the-final-v ; Sullivan & Cromwell LLP, "Volcker Rule: U.S. Agencies Approval Final Volcker Rule, Detailing Prohibitions and Compliance Regimes Applicable to Banking Entities Worldwide," January 27, 2014, https://www.sullcrom.com/Volcker-Rule-01-27-2014/ ; WilmerHale, "Navigating the Final Volcker Rule," June 2014, http://www.wilmerhale.com/uploadedFiles/Shared_Content/PDFs/Services/Navigating-Final-Volcker-Rule-Eff-19Feb2014.pdf.

was for market making-related trading activities (slide 11). Debevoise & Plimpton listed the conformance deadlines before other changes, but spent more space (pp. 3-4) on market making activities and their latitude under the Final Rule. Oliver Wyman summarized the changes similarly, writing that "The final rules are lengthy and complex, but they address many of the key concerns raised on both sides of the debate during the public comment period – exemptions for permitted activities (e.g. market making) have been clarified, metrics have been streamlined and simplified, and the structure of the compliance program has been spelled out in exhaustive detail."

Morgan Lewis remarked (p. 10) that "The Regulations no longer include Appendix B from the Proposed Rules. This is a significant accommodation to industry concerns over the requirements and impact of the proposed Appendix B. While Appendix B purported to clarify what types of activities would be considered permissible market making-related activities, it contained a number of troublesome presumptions of activities that would be considered impermissible proprietary trading unless the banking entity could convince its regulators otherwise."

8.1.2 The Market-Making Exception to Proprietary Trading

The expressed permission given to market making re-lated activities composed one of the most important and complex sections of the Volcker Rule and related guidance and supervision. The difficulties faced by the Federal Reserve and other agencies were material and substantial. In theory, proprietary trading involves speculative trading of the firm's own capital, obtaining profits from changes in the value of the investment, while market making aims to obtain revenue from fees. If a customer approaches the market-making firm with a demand for a derivative, the firm either finds a counterparty immediately or, if a counterparty is not available (a mismatch), takes a position in the financial product while a counterparty is sought. The customer's fee compensates for the brokerage work on the transaction and the firm's risk taken on during period of mismatch.

The rationale for banks and brokerages engaging in such activity is that it provides liquidity to the financial system. If every customer had to wait for a counterparty, there would be correspondingly greater instability and uncertainty in financial markets. The firm's ability to take a position in the product allows it to facilitate client trades, but also allows it to accumulate positions to an inventory, which can generate a profit if the assets in question have been oversold elsewhere, or if the firm trades up with inventory. Appendix B of the Proposed Rule attempted to use factors such as "revenues relative to risk," "source of revenues," "customer-facing activity" and "payment of fees and commissions" as criteria distinguishing proprietary trading from market making (Proposed Rules, *FR* 76 (215), 68961-68962).

8.1.3 Firms' Comments on Market-Making Activities

A number of prominent firms complained of the Proposed Rule's attempt to impose a rigid structure upon the measurement and permission of market making-related trading activity. Goldman Sachs, in its comment letter on the proprietary trading section of the rule, emphasized market-making activities and their regulation as the first area of concern. "Without substantial revisions, the Proposed Rule will define permitted market making-related, underwriting and hedging activities so narrowly that it will significantly limit our ability to help our clients – business and investors in the United States and around the world – invest their wealth and generate liquidity from their holdings." Goldman called for a more adaptive approach to Volcker Rule implementation, especially on market making-related activities, one which evinced "an iterative process that the Agencies will approach with open minds over the multi-year conformance period." Getting to that adaptive point would be difficult, Goldman warned, "unless the final rule is a more neutral and adaptable construct without negative presumptions or undue restrictions on permitted activities."[12]

[12]The Goldman Sachs Group, Inc., to OCC, FRB, FDIC, SEC and CFTC, "Re: Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds," (hereafter "Goldman Comment Letter"), February 13, 2012, p. 3.

Morgan Stanley was even more direct in its criticism, requesting that the agencies "Delete Appendix B" in a section header printed in italicized, bold text: "Appendix B should be deleted from the final rule. ... The Agency should use the conformance period to analyze and develop a body of supervisory guidance that appropriately characterizes the nature of market making-related activities."[13]

A common theme in these comments was the wish for the Agencies to avoid specificity in rulemaking and instead adopt a more adaptive approach, one that would emphasize relational supervision between regulators and banks, would develop regulations via guidance documents and principles rather than hardwiring them into rules, and would permit firms more time to conform to the rules as they became clearer. One plausible interpretation of this expressed wish was that it would allow large bank-holding companies and investment firms to shape the development of these guidance documents and the supervisory practices. Because Appendix B of the Proposed Rule expressed the kinds of "negative presumptions" and "undue restrictions on permitted activities" that Goldman lamented, it was a chief target of the commenters.

8.1.4 Associated Returns in the First Hour after Final Rule Announcement

The importance of changes related to market making-relate activities from Proposed to Final Volcker Rule is reflected in the variable returns experienced by commenters in the first hour after the Final Rule announcement in December 2013. The thirty firms that commented upon the Volcker Rule witnessed returns at the 55th percentile of ranked returns (55.4 relative to a baseline of 50) in the first hour after the Final Rule's announcement. One way of examining whether firms observably focused upon market making-related activities in their commenting is whether their comments were cited by the Agencies in the Final Rule (footnotes 517 to 554 of the Final Rule). Compared to all firms in the sample, firms that commented and had their comments cited in the market-making section of the rule experienced one-hour returns in the

[13]Morgan Stanley, "Comment Letter on the Notice of Proposed Rulemaking Implementing the Volcker Rule – Proprietary Trading," February 13, 2012, p. 4.

64th percentile of ranked returns ($\hat{\beta} = .1437$, $p = 0.048$).[14] Compared to other firms that commented, firms that were cited by the Agencies had, relative to other that commented, 8.2 points greater ranked returns in that first hour ($\hat{\beta} = .0823$, $= 0.237$). This difference is not statistically significant, but with only thirty firms (all of whom commented on other aspects of the rules), the size of the differential in an hour of trading is rather remarkable.

A different look at how traders interpreted the rule in the first hour after its announcement comes from looking at the difference between immediate post-announcement changes (say, at 5 minutes) and more durable changes that unfolded in the hour after the announcement. Reactions after five minutes would not likely have permitted a reading of the rule and its changes from the proposed, and would be more likely to have been driven by emotional reactions. Reactions after an hour are more likely to have incorporated a reading of the basic differences between the Final Rule and the Proposed Rule. The difference between the 60-minute and the 5-minute market reactions – $R_{t=60} - R_{t=5}$ – thus serves as a measure of the difference between an "educated" read of the rule and an "immediate" read. If we then regress this differential upon whether a firm was cited at all in the footnotes to the Final Rule, we retrieve a coefficient of essentially zero ($\beta = 0.0006$, $p = 0.996$). In other words, firms whose comments were cited by the Agencies experienced no differential change from $t = 5$ to $t = 60$. Yet when the differential is regressed upon an indicator for whether the firm's comment was cited in the market making-related activities section (footnotes 517 to 554), the resulting differential return is immense ($\beta = 0.1266$, $p = 0.254$), albeit still statistically insignificant in a small sample. In summary, the comments that plausibly moved the firm's value the most were those directed at the "market making-related activities" section of the Volcker Rule, and the value ascribed to firms by traders did not accrue immediately but only after a period of interpretive digestion.

[14]The estimated effect of being cited at all in the final rule, but *not* in the market-making exemption section, is nine ranked percentage points less, and statistically insignificant ($\hat{\beta} = .0526$, $p = 0.58$).

8.1.5 The Pre-Proposal Stage

The data available on the Volcker Rule also permits us to observe changes in the rule (and associated firm value) that are "net" of the activity of firms that occurs before the Proposed Rule is drafted. The drafting of the proposed Volcker Rule has been the subject of important study by Krawiec (Krawiec 2013b). Krawiec examines the "sausage-making" of the proposed Volcker Rule by collecting systematic data on which firms, associations and interests met with different regulators from the passage of the Dodd-Frank Act to the proposed rule. It was widely detected that the statute's prohibitions on banks owning hedge funds (capping these assets at three percent of the bank's Tier 1 Capital) were clearer than the market making-related exemptions to the proprietary trading restriction. Analysts followed the development of the Volcker Rule, including a Bloomberg story on September 26, 2011, which reported on a possibly leaked version of the draft rule document.[15]

Using Krawiec's data for the Volcker Rule permits an examination of firm influence upon the drafting of the rule. Regressing the one-hour ranked returns after the release of the proposed rule upon a firm's number of meetings with rule-writing agencies yields a positive and statistically significant coefficient of $\hat{\beta} = 0.02$ (0.006), implying that for every meeting a firm had with an agency before the draft of the rule, it's immediate ranked return upon release of the proposed Volcker rule was two ranks higher in the returns distribution. Taking these estimates literally would imply that Goldman Sachs, which had 27 such meetings, would experience returns at the top of its distribution, and in fact Goldman's ranked returns for the hour after the proposed Volcker Rule was announced were at the top of the ranked distribution($R^{GS}_{t=60} = 1.00$).[16] As evidence that the market had priced in these effects at the time of the Final Rule announcement, we observe essentially zero correlation ($\rho = -0.04$ ($p = 0.30$)) between one-hour ranked returns after the Proposed Volcker Rule and one-hour

[15]Cheyenne Hopkins and Phil Mattingly, "Trader Pay May Face Restrictions Under Draft Volcker Rule," *Bloomberg*, September 26, 2011; `https://www.bloomberg.com/news/articles/2011-09-26/trader-pay-may-face-restrictions-under-dodd-frank-s-volcker-rule`.

[16]Caution is advised in interpreting these linear estimates and especially any extrapolations, as they can exceed the constructed bounds of the index computed.

ranked returns after the Final Rule.

Hence the methods here illuminate Krawiec's argument that pre-NPRM activity is arguably influential in shaping proposed rules, but that *even net of that activity*, important rules changes occur in the notice-and-comment process. The elimination of Appendix B occurred only during the notice-and-comment process, not before. Controlling for the first hour of returns after the proposed Volcker Rule announcement, as well as for firms that were cited outside of the market-making section, first-hour returns for firms cited in the market-making section of the final Volcker Rule were fully 15 percentage points higher in the distribution of ranked returns ($\hat{\beta} = .1521$, $p = 0.036$).

In summary, a review of the Volcker Rule suggests that large bank-holding companies and investment firms sought, and obtained, critical changes in the Final Rule from the Proposed Rule, and that these changes were associated with large differentials in ranked returns in publicly traded firm value. The case shows the importance of looking not only at textual similarities in comments and rules changes (as has been done generally by Yackee and more recently by Rashin), but also at humanly observed differentials (plagiarism detection algorithms would not, as currently implemented, have picked up on the deletion of Appendix B from the Proposed Rule). The case also shows that critical regulatory changes do in fact occur in rulemaking and in the notice-and-comment process.

8.2 The Debit Card Rule (a.k.a. "Durbin Amendment Rule")

An important and last-minute statutory change to the Dodd-Frank Act came in the addition of the "Durbin Amendment," which targeted debit card exchange and routing fees. Offered by Illinois Senate Democrat Dick Durbin, the Durbin Amendment offered an intended consumer protection measure. The issues raised by the rule were complex and debated heavily in political, think tank and academic circles. In part because the debit card rule concerned not only consumers but also merchants, it attracted more unique comments than any other rule issued by the Federal Reserve under Dodd-Frank.

The Durbin Amendment amended the Electronic Fund Transfer Act (EFTA) by adding a new section (Section 920) that regulated interchange transaction fees and adding rules for payment card transactions. The idea was to limit the degree to which payment processors could charge, and to impose requirements for fraud prevention upon card issuers and payment processors. Not unlike the debate over the minimum wage, much of the debate over the interchange fees boiled down to a number: what would be the maximum allowable interchange fee for debit card transactions? Payment processors such as American Express, Capital One, Discover Financial, Visa and MasterCard preferred no restriction on the interchange fees charged. If a restriction would be imposed, the processors preferred a higher number. Consumers' immediate interest, as well as vendors' interest, was in a lower number. Similarly, conservative and libertarian think tanks weighed in against what they saw as an act of price-setting by the federal government, while consumer protection groups argued that a lack of competition among payment processors along with other sources market power put vendors and consumers at a disadvantage.[17]

In the proposed rule, issued December 16, 2010, the FRB suggested a maximum interchange fee of 12 cents per debit card transaction. Payment processor firm stocks fell by seven percent immediately after the announcement. Comments soon flooded the FRB from payment processors. The letter of American Express (sent February 22, 2011) was indicative of financial institution comments. It combined a dual legal argument (that the EFTA did not give the Fed authority to impose a price cap upon debit card transactions, along with the argument that no cost-benefit analysis or economic impact analysis had been done) with an economic argument that the price caps would be inefficient, damaging both to consumer welfare as well as producer welfare. Here firms mobilized not only legal expertise but also industrial organization expertise. American Express contracted with Princeton economist Robert D. Willig, who wrote a memorandum arguing that "if the price-setting

[17]Consumer Federation of America, "Comments of Travis B. Plunkett, Legislative Director, to The Federal Reserve Board of Governors," February 22, 2011; urlhttps://www.federalreserve.gov/SECRS/2011/March/20110301/R-1404/R-1404_022211_67845_571585657428_1.pdf.

or price-capping mechanism described in the NPRM were applied to American Express, the result would be seriously damaging to the Company's prepaid business and...ultimately to merchants and consumers."[18].

The final rule, announced June 29, 2011,[19] represented a medium among the competing demands. A price cap upon interchange fees was kept, but was raised from 12 cents to 21 cents, as well as five basis points of the transaction amount. Payment processor firms immediately saw a five percent increase in stock price. Regressing one-hour ranked returns upon the act of commenting suggests that, in the immediate aftermath of the Final Rule announcement, commenters experienced returns at the 64th percentile of ranked returns ($\hat{\beta} = 0.1481$ (0.04345), $p = 0.001$). While there does not appear to be any added explanatory power from the number of comments (or a logged comments variable), the distribution of comments was not highly variable across commenters.

In part because the fundamental outcome was partially capturable in a number, and the number was released in the rule announcement and not buried in the text of the rule, the market reaction to the debit card rule was immediate and sustained. Average returns over the first hour were correlated at $\rho = 0.55$ ($p < 0.001$) with the returns in the first five minutes. Indeed, the differential returns experienced by commenting firms are observable very quickly after final rule announcement, as commenters saw returns at the 60th percentile of ranked returns after just five minutes ($\hat{\beta} = 0.1000$ (0.0374), $p = 0.008$). American Express and other payment processor companies had five-minute returns at the 95th percentile or above of ranked returns. Analysts noted that the final rule moderated the proposed rule, a pattern which was used to build expectations about other Dodd-Frank rules.[20]

[18]Willig, "Avoiding Misapplication to American Express of the Proposed Debit Card Interchange Fee Rules: An Economic Assessment," February 22, 2011, p. 3; `https://www.federalreserve.gov/SECRS/2011/March/20110303/R-1404/R-1404_022211_67230_584162046602_1.pdf`. The Willig memorandum and other entries into this debate examined a number of more specific issues, including the difference between regulation under three-party and four-party payment networks, which we set aside for purposes of space.

[19]Board of Governors of the Federal Reserve System, "Federal Reserve issues a final rule establishing standards for debit card interchange fees and prohibiting network exclusivity arrangements and routing restrictions," June 29, 2011; `https://www.federalreserve.gov/newsevents/pressreleases/bcreg20110629a.htm`

[20]Glenn Schorr, "Volcker Rule Due Out Soon: Hopefully More Bark Than Bite," October 6, 2011; `http:`

The debit card interchange fee rule again demonstrates that commenting on rules is associated with significant changes to the rule, and that these changes are associated with near-term gains in firm value for the commenting firms. Just as important, the relevant changes to the rule (the rise of nine cents in the transaction fee cap) came during the rulemaking process, and the relevant improvements in firm value were realized immediately upon the rule's release, not during the pre-NPRM process. While we agree with arguments of Krawiec and others that the pre-NPRM stage is an important site of influence in rulemaking, the case studies laid out here suggest that there is considerable activity aimed at the notice-and-comment process, and that public equity markets apparently reveal that this activity yields substantial returns. It was after the rulemaking on the Durbin Amendment concluded that analysts began to detect a pattern of influence whereby the proposed rule would be stringent, industry comments would arrive, and then the final rule would be more moderate.[21] What is crucial is that even embedding this expectation, public equity markets consistently assigned added value to commenting firms upon the release of Dodd-Frank final rules, not only for the Volcker Rule but also for the larger Fed-authored sample we examine. This suggests that *public equity markets detect commenter influence even net of strategic rule drafting*, and points again to the particular advantages of an event study methodology for studying these phenomena.

9 Conclusion

This paper has considered the relationship between market reactions to rule announcements and comment-based participation in financial rulemaking. We use an intra-day event study methodology in order to establish several findings: (1) proposed and final rules often provoke a statistically significant market reaction for the stock price of financial firms, (2) those firms that eventually participate observe a statistically differentiable superior return upon

//xa.yimg.com/kq/groups/17389986/555239495/name/NOmura+US+Bank+%26+Brokers.pdf

[21] Ibid.

the announcement of the Proposed Rule, and (3) those firms that comment experience significantly higher average returns in the first hour of trading after Final Rule announcement relative to those firms that do not comment. Closer analysis of two particular rules – the Volcker rule on proprietary trading restrictions for systemically important firms and the debit card interchange fee rule – suggest that the changes in firm value were correlated with meaningful and firm-requested policy changes in the rules.

Three critical interpretive remarks are in order. First, the "participation" we describe here occurs during the rulemaking process and does not qualify as traditional lobbying. Indeed, rulemaking participation represents activity that eludes customary measures of lobbying. It is, instead, the result of banks and bank holding companies hiring lawyers (within or outside of the firm) to offer comments on regulations and to shape rules.

This fact implies that traditional measures of business influence upon politics may grossly under-measure business expenditure and benefit. Indeed, we admit that our own measures substantially underestimate firm participation and influence activity, as much of that activity occurs "informally." Our own analysis of the Volcker Rule using data from (Krawiec 2013b) suggests that pre-NPRM meetings for the Volcker rule were associated with large and identifiable near-term improvements in firm asset prices. Recent evidence of meetings at OIRA by (Haeder and Yackee 2015) and among White House offices (Brown and Jiekun 2017) also point to important policy changes occurring outside the traditional notice-and-comment process that follows the proposed rule. Our analysis of the Volcker Rule does suggest, however, that significant gains were gained by firms that met with the agencies before the proposed rule, and that net of these gains, additional gains were realized for commenting firms upon the release of the Final Rule. These patterns point to the joint significance of pre-NPRM activity and commenting activity.

Second, the limits of financial market data point to further research questions. An important implication of our results is that markets expect firms to gain from rulemaking comments. This is different from saying that commenting firms do in fact realize these

gains. More assessment of possible mechanisms is needed in order to justify the claim that rulemaking participation has caused firms to receive these benefits, but nevertheless the evidence is consistent with the intuitive explanation that firms participate in rulemaking because it helps them secure more favorable regulatory outcomes.

Third, the empirical patterns documented here have implications for the study of business influence in regulation, for the study of rulemaking and for the study of political inequality. These include but are not limited to the following questions:

- What rationale is there for firms to hire lawyers beyond that of smoothing contracts, or reducing legal uncertainty? Does the political firm need lawyers, and why?
- Why is so much lobbying "ex post lobbying" (You 2015), that is, targeted toward policymaking after statutes are passed?
- If post-statute influence activities involve considerable expenditures upon lawyers and legal expertise, how much do customary measures undercount or underestimate firm political activity in this domain?
- Are lobbying and lawyering complements or substitutes, and what are their equilibrium convex combinations in different sub-industries?
- How do firms engage in the "make or buy" decision with respect to shaping national-level financial regulatory rules?
- Given the increasing "financialization" of economic activity in advanced industrial economies, do financial firms differ from non-financial firms in their influence over rulemaking, and in their reliance upon lawyers for lobbying and shaping rules?

Two clear next steps are to generalize the implicit method of our case studies and to examine rules changes and ask whether among those firms that participate, whether those whose comments moved the rules more experience differentially larger asset returns, and second,

whether these commenting activities are associated with other, non-commenting activities as measurable in lobbying and contact data. Once these political and legal mechanisms are described and outlined, scholars can being to address the question of how "lobbying with lawyers" is organized in ways different from that of other lobbying and that of other legal service activity in industries.

10 Comment on the Non-monotonicity of the Optimal Event Study Window, with Remarks for Multi-Product Firms and Volatility Clustering

An investor observes the unfolding of asset value on a space Ω (with elements or experimental realizations ω), which is structured by a set of σ-algebras $\Im$, and a probability measure $\wp$. In addition, $\Im$ can be ordered and expressed as a filtration $(\Im_t)_{0\leq t\leq\infty}$, which is a family of σ-algebras that is increasing in its index, hence $\Im_s \subset \Im_t$ if $s \leq t$. The filtration sequentially collects and orders all realizations $\omega = \omega_t$ on a time dimension from 0 to t. The collection $(\Omega, \Im, \Im_t, \wp)$ constitutes a filtered probability space. This filtered probability space supports a standard one-dimensional Brownian motion $Z(t)$, and we assume that a set of "usual hypotheses" hold. These hypotheses are standard in the analysis of stochastic differential equations see Protter (2005: Chapter I, esp. pp. 34-36) for a clear explanation).

10.1 Lévy Asset Price Process

The investor observes a stochastic process $\{X_t\}_{t\geq 0}$ with a deterministic trend (with slope $m \in \Re$) and with three random components, a continuous diffusion (a Brownian motion $B(t)$) and the combination of two jump processes, one (J^+) positively valued and the other (J^-) negatively valued. For each jump process, we represent the jumps with a compound Poisson process, such that arrival time of events is exponentially distributed, with parameters λ^+ and λ^-, respectively. This implies that the number of events that have occurred by time t, $J^+(t)$ and $J^-(t)$, are each Poisson distributed with rate parameter $\lambda^+ t$ and $\lambda^- t$. Conditional on an event occurring, we suppose that the size of the jump is a draw from a concomitant distribution $G^+(Z)$ for the positive shocks and $G^-(Z)$ for the negative ones. For the positive shocks, let the expected size of this jump be given by $\phi^+ = \int_{\Re_+} Z dG^+(Z)$, and for negative jumps the (possibly asymmetric) reflection obtains, $\phi^- = \int_{\Re_-} Z dG^-(Z)$ If $G^+(Z)$ and $G^-(Z)$ are degenerate, placing all probability on one value of Z, then the shocks arrive according

to a standard Poisson process.[22] Then the density of the jump distribution is given by $h(z)$, where[23]

$$h(z) = \frac{\lambda^+}{\lambda^+ + \lambda^-} g^+(z)\mathbf{1}_{\{z>0\}} + \frac{\lambda^-}{\lambda^+ + \lambda^-} g^-(z)\mathbf{1}_{\{z<0\}} \tag{5}$$

We then compose the stochastic *fundamental* process as

$$X_t = mt + \sigma B_t + \sum_{k=1}^{J(t)} Z_k \tag{6}$$

The process is thus a Lévy process, with the variable $X_t - X_s$ independent of the σ-field $\Im_s$ for $0 \leq s \leq t$ and with a distribution that depends upon $(t - s)$ alone.

10.2 Lévy Market

We follow other scholars (Mordecki 2002; Boyarchenko 2004; Abbring *Econometrica* 2012; Boyarchenko and Levenduskii 2014) in modeling a simple Lévy market, so called because its stochastic asset is driven by a Lévy process (6). The financial market has two assets, one a deterministic savings account $D = \{D\}_{t\geq 0}$ and the other a stock $S = \{S\}_{t\geq 0}$. Valuations are given by

$$D_t = e^{rt} \qquad r \geq 0 \tag{7}$$

$$S_t = S_0 e^{X_t} \qquad S_0 > 0 \tag{8}$$

We consider a derivative asset introduced to this market with a perpetual American option. The holder of this option purchases the right to receive from the seller, at time τ, an amount $G(S_\tau)$. The investor can call the option with reward function given by $R_c(S) = (S - K)^+$ and can put the option with reward $R_p(S) = (K - S)^+$ respectively, where $K > 0$ is a fixed and invariant cost, symmetric to both put and call options.

Consider then $\mathcal{T}$ the class of all stopping times relative to $\Im$, and let τ be a stopping time if $\tau : \Omega \to [0, +\infty]$ and $\{\tau \leq t\} \in \Im_t \quad \forall t \geq 0$. Let the reward function R be a Borel function incorporating the Lévy process $X(t)$, and let the discount rate be $r \geq 0$. Then the investor faces an optimal stopping problem, which consists in finding a real function V and a stopping time τ^* such that

$$V(S_0) = \sup_{\tau\in\mathcal{T}} \mathcal{E}(e^{-r\tau} R(S_\tau)) = \mathcal{E}(e^{-r\tau^*} R(S_{\tau^*})) \tag{9}$$

[22]Suppose that $G^+(Z)$ and $G^-(Z)$ have support for $Z \neq 0$. Further, suppose that a finite first moment exists. Our proofs require no other assumptions

[23]For similar but distinct set-ups, see Mordecki (2002), Section 4.1, and, later, Boyorchenko and Levendorskii (2014), equation (2.2). To avoid abuse of notation, all parameters and variables in this section refer only to the quantities examined in these proofs and not that of the text.

This model has been solved elsewhere (Mordecki 2002), and for generalized Lévy process, the solution for the case with $r > 0$ and existing stopping times $\tau^* < 0$ is as follows. Define $\theta(r)$ as an exponential random variable independent of X_t (with $\theta(0) = \infty$) and

$$M = \sup_{0 \le t \le \theta(r)} X_t \qquad \text{and} \qquad I = \inf_{0 \le t \le \theta(r)} X_t \tag{10}$$

Then the optimal policy for a call option is

$$\begin{aligned} V_c(S_0) &= \frac{\mathcal{E}[S_0 e^M - K\mathcal{E}(e^M)]}{\mathcal{E}(e^M)} \\ \tau_c^* &= \inf\{t \ge 0 : S_t \ge S_c^*\} \\ S_c^* &= K\mathcal{E}(e^M) \end{aligned} \tag{11}$$

and that for the put option is

$$\begin{aligned} V_p(S_0) &= \frac{\mathcal{E}[K\mathcal{E}(e^I) - S_0 e^I]}{\mathcal{E}(e^I)} \\ \tau_p^* &= \inf\{t \ge 0 : S_t \le S_p^*\} \\ S_p^* &= K\mathcal{E}(e^I) \end{aligned} \tag{12}$$

Note that by the policies (12) and (13), the option value V is increasing in the divergence of realized from expected supremum $(e^M - \mathcal{E}(e^M))$ and decreasing in the value of realized from expected infimum $(e^I - \mathcal{E}(e^I))$. This is important in the adjustment of the market value to a shock from rules.

10.3 Introduction and Valuation of an Exogenous Rule

We assume that a rule is released that may affect the fundamental state variable and hence the stochastic asset but not the savings account. Neither the value nor the time of realization is "anticipable" in the stochastic sense. Let the event be denoted by A_t, which is the agency rule, which occurs at t^A. The rule may have positive or negative effects, and these value implications are given α, which is unknown to the investor by a normal distribution with mean a and variance υ_a.

10.3.1 Continuous Time Evidence of Rule Value

The investor collects continuous-time evidence about a rule's value according to Brownian motion with drift, where the drift is determined by the (unobserved) value (α) of the rule for the asset under consideration. Formally, the Agent observes readings about the the realized value of the rule Y, which is separable and independent from X_t, and which evolves according to the following stochastic differential equation.

$$dy(t) = \alpha(y(t))\, dT(t) + \xi(y(t))\, dw(T(t)); t > 0 \tag{13}$$

where T_y ($= 0$ when $t = t^A$) is the learning time for the rule, w is a standard normal distribution with mean zero and variance t_y. The parameter ξ encodes the amount of information Equation 13 contains for the investor: if $\xi = 0$ then the investor can immediately infer the value of the rule by examining the slope of Equation 13 and as $\xi \to \infty$ the SDE contains no information about a rule's implications for the asset.

10.3.2 Estimating Rule Value From Readings

Given that the Investor only observes $Y(t_y)$ we first prove that the learning problem is identified: the Agent is able to disentangle the contribution of the value of the rule to $Y(t_y)$.

Identification of Learning Problem and Sufficient Statistics. We assume fixed coefficients and adopt the technology of Herman Chernoff (1968), who presents closed-form Bayes posteriors of a Brownian motion with drift.[24] Without loss of generality, then, for any $Y(t)$, the history of $Y(t)$, $\mathbf{H}(t)$ can be expressed by its sufficient statistics, namely the dual $(t_y, Y(t_y)^*)$. The posterior mean of the rule's value is then

$$\mathcal{E}_{y,t_y}(\alpha) = \hat{a}_{t_y} = \frac{a/v_a + y/\xi^2}{1/v_a + t_y/\xi^2} \tag{14}$$

while the posterior variance is

$$V(t_y) = \frac{1}{1/v_a + t_y/\xi^2} \tag{15}$$

10.4 Filtered Evidence and Value Functions

The Investor seeks to define an optimal continuation rule for the *filtered rule-value evidence process* $\hat{\alpha}(t_y)$ found by combining Equations (14) and (15). The Investor faces a convex function $\hat{\alpha}(t_y) \times t_y \mapsto \Psi(\hat{\alpha}(t_y), t_y)$, that is twice differentiable with respect to both $\hat{\alpha}(t_y)$ and t_y. This function is a map from the current state of the filtered rule-value process and time to the value experienced by the investor. For a strictly positive quitting cost ξ and for any rule, the Investor wishes to do the following

$$\sup \mathcal{E} e^{-rt_y} \left[\xi - \mathcal{E} \int_0^\infty e^{-r(q-t_y)} \alpha^*(q, \omega) dq \right] \tag{16}$$

where q is a variable of integration. For the following analysis we will replace y with $\hat{\alpha}$, without loss of generality due to the scale-invariance property of $Y(t_y)$.

Using the scale-invariance of diffusions (Karatzas and Shreve 1991: 66-71), the Investor's optimal policy will be to observe the first passage of the evidence process $\hat{\alpha}(t)$ through a border that encodes the tradeoff between continuation of readings and the value of incorporating stopping the readings for incorporation into a call or put. Then the investor can consult and compute a Hamilton-Jacobi-Bellman equation for the rule:

[24] By scale invariance of the Brownian diffusion (Karatzas and Shreve 1991: 66-71), the usual operators and Lemmata of Ito calculus can be applied straightforwardly to these posterior quantities.

$$\delta\Psi\left(y\right)=\max\hat{\alpha}\left(y\left(t_{y}\right)\right)\frac{\partial\Psi\left(y\right)}{\partial y}+\hat{\alpha}\left(y\left(t_{y}\right)\right)\frac{\partial\Psi\left(y\right)}{\partial t_{y}}+V_{\alpha}(t_{y})^{2}\left(y\left(t_{y}\right)\right)\frac{\partial^{2}\Psi\left(y\right)}{\partial y^{2}}+o(t)\qquad(17)$$

where $o(t)$ denotes "vanishing" terms of order greater than t, that is, terms that converge to zero faster than t_y does. After applying Ito's Lemma, independence, and the pure martingale property, dividing through by the differential dt_y and taking limits as the differential vanishes, the infinitesimal generator $\mathcal{L}$ for the rule-value evidence process $\hat{\alpha}(t_y)$ can then be expressed as:

$$\left(\mathcal{L}^{y}\Psi\right)\left(y\right)=\Psi_{\hat{\alpha}}\left(y,t_{y}\right)+\Psi_{t}\left(y,t_{y}\right)+\frac{1}{2}V_{\hat{\alpha}}^{\Pi}\left(t\right)^{2}\Psi_{\hat{\alpha}\hat{\alpha}}\left(y,t_{y}\right)$$

Evaluating $\mathcal{L}^{y}\Psi\left(y\right)$ according to the Shiryaev conditions (smooth pasting and value matching; Shiryaev 1978) results in elimination of the Ψ_{t_y} term and a uniquely optimal first-passage time policy. We have proved:

Lemma 1: Optimal Stopping Barrier for Each Incumbent Product

The Agent incorporates the information in a call or put when and only when, and if and only if, $\hat{\alpha}(t_y)$ passes for the first time through the optimal stopping barrier,

$$\gamma^{*}(t_{y})\quad=\quad r\xi+\frac{1}{2\xi^{2}}\Psi_{\hat{\alpha},\hat{\alpha}}(\hat{\alpha}(t_{y}),t_{y})V_{\alpha}\left(t_{y}\right)^{2}\qquad(18)$$

where $\Psi_{\hat{\alpha}\hat{\alpha}}(\hat{\alpha}(t_y),t_y)$ is the second partial derivative of the value function Ψ with respect to the filtered state variable $\hat{\alpha}$, given a realization of $\hat{\alpha}$ at time t_y.

10.5 Incorporating Rule-Value Evidence into the Lévy Market

At the optimal incorporation time t_y^*, the Investor assigns $\hat{\alpha}(t_y^*)$ to the value of the Lévy fundamental, such that $S(t=t^{A}+t_{y}^{*})=e^{X_{t}+\hat{\alpha}_{t}}$, and the solutions (12) and (13) are adjusted as follows.

$$\begin{aligned}V_{c}(S_{0})&=\frac{\mathcal{E}[S_{0}e^{\alpha+M}-K\mathcal{E}(e^{M})]}{\mathcal{E}(e^{M})}\\\tau_{c}^{*}&=\inf\{t\geq0:e^{X_{t}+\hat{\alpha}_{t}}\geq S_{c}^{*}\}\\S_{c}^{*}&=K\mathcal{E}(e^{M})\end{aligned}\qquad(19)$$

and that for the put option is

$$V_p(S_0) = \frac{\mathcal{E}[K\mathcal{E}(e^I) - S_0 e^{\alpha+I}]}{\mathcal{E}(e^I)} \tag{20}$$
$$\tau_p^* = \inf\{t \geq 0 : e^{X_t + \hat{\alpha}_t} \leq S_p^*\}$$
$$S_p^* = K\mathcal{E}(e^I)$$

It is immediate from (20) and (21) that once the rule has been valued, the option put and call values change by $e^{\hat{\alpha}_t}$, an that the option exercise times may also change.

Comment: Non-monotonicity of the Incorporation Time.

Define by $\Psi(t_y)$ the distribution governing the incorporation time, namely $t_y^* = \inf\{t \geq 0 : \hat{\alpha}_t \geq \gamma^*(t_y)\}$, and likewise define its density as $\Psi(t_y)$. The hazard rate of incorporation can then be defined as $h(t_y) = \frac{\psi(t_y)}{1-\Psi(t_y)}$. The fact that $h(0) = 0$ follows from the specification of (18), and because $\Pr[\alpha < \xi] > 0$ (the investor may never incorporate the rule into an option call or put), $\lim_{t_y \to \infty} \Psi < 1$, and $\lim_{t_y \to \infty} h = 0$.

Proposition 2 is sufficient to establish a lower (positive) bound on the incorporation time for an Investor to react to the rule, hence the optimal window for event study must include positive t_y. To complete the demonstration of a non-monotonic event window, consider the signal to noise ratio χ, defined as

$$\chi(t) = \frac{\alpha}{\mathrm{Var}[S(t)]} \quad \forall t \geq t^A \tag{21}$$

As χ grows large, α and the Investor's actions upon it become undetectable. But by (6),

$$\mathrm{Var}[S(t)] = e^{(\sigma^2 + \lambda^+ + \lambda^-)t} \tag{22}$$

And because σ^2, λ^+ and λ^- are strictly positive, $\lim t \to \infty \chi \to 0$ and approaches its asymptote exponentially.

Finally, for a multiproduct firm with positive complementarities (positive definite covariance matrix), the event window should be smaller still.

Let the multiproduct firm consist of N products (divisions), such that its asset price is given by

$$S^m(t) = e^{X_1(t) + X_2(t) + \cdots + X_j(t) + \cdots + X_N(t)} \tag{23}$$

Because $\mathrm{cov}\,(X_j, X_{j'}) \neq 0$ for some j and j', the variances do not sum linearly. Since the covariance matrix is positive definite, however, $\mathrm{Var}\,(S^m(t))$ is a convex combination of the finite series $\mathrm{Var}\left(e^{X_1(t)}\right), \mathrm{Var}\left(e^{X_1(t)}\right), \ldots \mathrm{Var}\left(e^{X_{N_j}(t)}\right)$, and

$$\mathrm{Var}S^m(t) > \mathrm{Var}S(t) \quad \Longrightarrow \quad \chi^m(t) > \chi(t) \tag{24}$$

Finally, note that the usual hypothesis of volatility clustering in asset prices can be handled rather straightforwardly, as the hypothesis is customarily stated in terms of positive covariance of disturbances (i.e., $\text{Cov}[\text{Var}(S_{t-\epsilon}), \text{Var}(S_t)] > 0$). If the rule arriving at t^A induces higher variance in S_t (as influential rules usually do), then by volatility clustering, $\mathcal{E}[\text{Var}(S_{t^A-\epsilon})] < \mathcal{E}[\text{Var}(S_{t^A+\epsilon})]$, and the relations in the comment are monotonically preserved, as the rule induces higher asset price variance which is associated with higher subsequent price variance. Particularly for events, volatility-clustered asset prices necessitate shorter event study windows than do non-volatility-clustered price series.

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