

“Measurement and Policy Formulation”**

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“Measurement and Policy Formulation”

1. Introduction

I plan to take a broad view of “Measurement and Policy Formulation,” though focusing on several specific examples from the financial regulatory process. Many of my readers may wonder what do I mean by the title of my lecture? Do I plan to explore how better “measurement” impacts the development of financial regulatory policy and impacts policy decisions? Alternatively, do I intend to engage in “reverse causality” and discuss how policy and its formulation result in changes to measurement that would be central to the policy process? Given the nature of our collective interest, what are some of the challenges associated with the development of measurements that would enhance the policy process and how do the ways that econometricians think about such issues as estimation and identification inform the policy process? To some degree, I hope to address all of the above in a modest fashion.

At the same time, I don’t want to present a perfectly sanguine view about the policy process. Those who focus on measurement are not always as welcomed as they should be in the inner circles of policy formulation and the centrality of their contributions are not uniformly appreciated. Indeed, some regulatory staff members are simply interested in preserving the discretion of politicians, attorneys and other policymakers with respect to regulatory choices or in using features of economic data to advocate for their own policy preferences, whatever they may be.

Still, in the aftermath of both the financial crisis and a variety of court challenges that have overturned various rule-makings on cost-benefit grounds, there is renewed attention to the quality of the policy process and interest in the potential insights of economists.¹ Recently, this arose in criticism from members of Congress about the degree to which cost-benefit analysis has been reflected in the implementation of the Dodd-Frank Act, reviews by the Inspector General at various financial regulators and a ruling by the District of Columbia Circuit Court of Appeals, overturning the SEC's proxy access rule due to an inadequate cost-benefit analysis. There are a range of measurement and methodological issues that are relevant to effective policy-making. Of course, my perspective on these matters, like that of most economists and econometricians, would emphasize the importance of economic thinking as well as clarity in understanding measurement for policymaking. There are many ways in which financial economists and financial econometricians can provide new insights and perspectives to enhance policy decisions. On the flip side, the nature of policy challenges also can inform the types of methods and questions that we address. In my lecture I plan to use my lens as a former Chief Economist of the Securities and Exchange Commission (SEC) and the methodological perspective of our discipline to examine this.

Cost-Benefit Analysis

¹The most important of these cases is the Chamber of Commerce successful challenge to the SEC's 2004 rule requiring mutual fund boards to have an independent chairman and at least 75% independent directors, e.g., *Chamber of Commerce vs. SEC*, 412 F. 3d 133 (D.C. Cir., 2005) and 443 F. 3d 890 (D.C. Cir., 2006). While the Circuit Court did not establish standards for how such analysis should be undertaken, it rejected as inadequate the SEC's evaluation of the costs associated with its proposal. An important recent case is *Business Roundtable and Chamber of Commerce vs. SEC*, No. 10-1305 (D.C. Cir., 2011) in which the Circuit Court rejected the SEC's proxy access rule on grounds of an inadequate cost-benefit analysis. An interesting evaluation of the proxy access rule on conceptual grounds is in Shadow Financial Regulatory Committee Statement No. 297 (2010).

A good place to begin discussion of measurement issues in the context of financial regulation is to highlight the important role of cost-benefit analysis. Under federal administrative law regulatory actions need to be justified by an appropriate economic analysis of the benefits and costs. In many instances the cost-benefit analyses offered to justify rule-makings take a very narrow view of the consequences and to a degree suggest a “*false precision*” in the assessment of the likely consequences and don’t attempt to evaluate the *uncertainty* associated with these consequences. Indeed, the absence of a suitable cost-benefit analysis led the Federal Circuit Court of Appeals for the District of Columbia to overturn the SEC’s 2004 rule requiring that mutual fund boards be led by an “independent chair” and include at least 75% independent directors. From a variety of court rulings in recent years it’s clear that regulators need to take seriously cost-benefit analysis to avoid the risk that contemplated rules would be overturned.² While some policy makers often view the cost-benefit analysis as simply justifying or rationalizing a contemplated rule-making, a proper cost-benefit analysis should guide the regulatory decisions. As economists this reflects the duality between prices and quantities; prices guide quantity decisions, just as the cost-benefit analysis should guide and inform the resulting regulatory decisions.

I wish to emphasize that while the term “cost-benefit” analysis may seem narrow to some economists, it’s an opportunity for economists who take measurement seriously to bring the full import of economic reasoning and thinking into the federal regulatory process.³

²Financial regulators have been subject to considerable Congressional criticism as well as from the agencies’ own Inspector Generals about the adequacy of their cost-benefit analyses in the context of the implementation of some aspects of the Dodd-Frank Act.

³See Spatt (2007a) for a discussion of alternative definitions of cost-benefit and economic analysis.

The lens of economics provides guidance for understanding how economic actors will adjust their behavior along various margins and indeed, would help identify those margins that are especially important in the specific context. The decisions of the federal appellate court highlight the legal significance of cost-benefit analysis to proper rule-making and I think by extension highlight one of the central roles (both actual and potential) of measurement to the regulatory process. In fact, I view it as surprising that only a modest number of regulatory actions have been challenged in the appellate courts on these grounds given the success to date of such actions and the controversy underlying many regulations.

One type of effect that arises in many regulatory contexts is an “*unintended consequence*.” Indeed, many cost-benefit statements even discuss such “unintended consequences,” but one wonders whether this is an oxymoron. How can an effect that a regulator recognizes when preparing the cost-benefit statement be viewed as an “unintended consequence”? After all, it is certainly an anticipated consequence. An additional concern about regulatory claims of “unintended consequences” is that these can arise as a way for the policymaker not to accept responsibility for certain consequences, whether anticipated or not, that were not among the regulator’s goals. But effective policymaking must fully acknowledge *all* consequences rather than being dismissive of the unintended ones. Indeed, arguably the effects that were not anticipated are especially significant as these provide a way to measure and assess “*policy risk*.” The difficulty of measuring and assessing policy consequences highlights the potentially important role of “sunset” provisions under which policies would be terminated absent a

serious re-evaluation after a substantial number of years.⁴ While assessing the impact of policy “after-the-fact” still would be challenging, it surely would be informative from a measurement perspective to be able to undertake ex post as well as ex ante analyses. At a minimum, one could undertake “before” and “after” comparisons. This would at least have the potential to include unanticipated effects.

A very specific issue that arises in many rule-making contexts concerns where to “draw the line” between different situations that could be subject to alternative regulatory treatments, often referred to as “*line-drawing*” exercises. Some illustrative examples of this include some threshold size levels for the Sarbanes-Oxley requirements and the rules for deregistration of cross-listed entities based upon relative trading volumes. An important recent example is the \$50 billion threshold (consolidated assets) on bank holding companies being automatically designated as systemically important. The line-drawing situations suggest a variety of alternative statistical approaches. Indeed, we can certainly view “line drawing” as a regression problem. Alternatively and perhaps more directly, this problem is familiar to every professor and teacher—where do you draw the lines between different grades?—whom do you classify in the B+ bucket and whom do you place in the A- bucket? Obviously, this could reflect objective standards, but the challenge then could be complications in evaluating the complexity of the underlying tasks.⁵ It also could reflect trying to identify the sparse portions of a distribution (akin to identifying gaps in the raw grade data) or simply matching to a hypothetical distribution structure. It’s ironic that regulators are focused to a degree on cost-benefit analysis for

⁴Romano’s (2005) analysis of the Sarbanes-Oxley Act highlights the importance of sunset provisions to revisit the planned treatment when legislation is adopted unusually rapidly due to exigent circumstances.

⁵This is analogous to how difficult were the exam questions.

determining the line between regulatory regimes, but arguably less interested in using cost-benefit considerations for determining the more fundamental and basic regulatory treatment.

An interesting perspective on one aspect of “line drawing” is the discontinuous response across the boundary. When the regime differences are especially great this can lead to a strong incentive to qualify for the more favorable regime that distorts behavior near the boundary in some instances. One dimension in which financial regulation is especially important concerns systemic risk, but that’s a particularly challenging one for cost-benefit analysis because of the role of “tail” or outlier events.

Independence of Mutual Fund Directors

An interesting application of the cost-benefit theme is the case of the SEC’s failed attempt to require mutual funds to have an “independent” chairman of its board of directors and 75% “independent” directors, adopted by the SEC in June 2004—but later overturned by the Federal Circuit Court of Appeals for the District of Columbia (see some of the court decisions referenced in footnote 1) due to an inadequate cost-benefit analysis. The mutual fund context also raises some related ideas about the interpretation of statistical evidence.

The underlying economic setting in which mutual funds operate is one in which the capital market is at least reasonably efficient and where it is difficult for individual funds to create substantial value added. Another form of these observations is the answer of a

typical finance professor when asked by an uninformed investor as to how to invest—namely encouragement to purchase low-cost index funds and passive vehicles. Given the cross-sectional dispersion and noise in equity portfolio returns, it turns out to be surprisingly difficult to be able to identify statistically truly superior performers. In contrast, it is quite easy to identify low-expense funds *ex ante* because of the extent of persistence in mutual fund expense ratios and the lack of variability in these.⁶

This points to a crucial aspect of the independent board context for mutual funds. What light could the empirical literature shed on the potential benefit of restrictions on mutual fund governance? For example, do funds with an independent chairman outperform those that don't? Just posing the question that way raises a broad range of econometric issues. If there was an effect from “improved governance” that showed up as outperformance it would likely be a very modest number of basis points, but given the cross-sectional dispersion in returns that would be undetectable absent an extremely long time series and the extent of statistical power would be limited.⁷ However, there are some dimensions in which statistical power would be stronger and the independent chair or director variables can impact some specific types of decisions, such as decisions to allow backdating of employees stocks options or to merge particularly poorly performing funds.⁸ Of course, even beyond the issue of *statistical power* is arguably the more fundamental point about how to interpret potential outperformance. Presumably the choice by mutual fund boards

⁶There is considerable persistence in the identities of mutual funds with low expense ratios. Yet there is very little predictability in gross returns (before expenses) or even net returns (after expenses) of mutual funds.

⁷The issue of statistical power is a central one in trying to detect modest performance differences in equity mutual fund returns (see discussion in Harris (2003) and Spatt (2006b)).

⁸Such evidence is discussed in the survey in Spatt (2006a).

with respect to the independence of the board chair and the extent of independent board members reflects a variety of endogenous variables and an *equilibrium* (rather than *causal*) relationship that could be misinterpreted by policymakers.⁹

The totality of this suggests that it could be difficult to be persuasive on cost-benefit grounds to justify the types of governance restrictions imposed – at least given a baseline of no requirement of an independent mutual fund chair and a more modest requirement on independent directors.¹⁰ This also indirectly points to one of the key challenges for effective cost-benefit analysis, what is the appropriate baseline or benchmark? Indeed, this is an important conceptual issue to which econometricians could potentially contribute. Often, policymakers take the benchmark or baseline to be the situation prior to the implementation of the hypothetical regulatory policy, which suggests a bias towards the status quo. In a variety of econometric contexts the choice of benchmark is a central econometric issue. Perhaps most familiar to financial econometricians is the choice of benchmark in many asset pricing analyses. Often, the benchmark in such studies becomes the return on the market basket or index. For example, the empirical content of the Capital Asset Pricing Model (CAPM) is to test the mean-variance efficiency of the benchmark, the market portfolio.

⁹The issues of statistical power and causality and empirical evidence regarding mutual funds and governance is discussed in Spatt (2006a, 2006b). The importance of a potential underlying equilibrium relationship among variables is highlighted in such studies as Demsetz and Lehn (1985) and Coles, Lemmon and Meschke (2011).

¹⁰The SEC's prior regulations required that mutual fund boards have at least 50% of their directors as independent. The Investment Company Act of 1940 had established a minimum statutory threshold that at least 40% or more of a mutual fund's directors be independent.

My takeaway from this discussion is that issues involving causality and endogeneity are important to effective policymaking and point to a fundamental challenge. In my view the importance of the subtle issues that econometricians face in empirical analysis and design are vastly underappreciated by many regulators.

Short Selling

However, one context where regulators took quite seriously (at least for awhile) underlying empirical issues concerned the SEC's effort associated with the now somewhat maligned repeal of up-tick restrictions on short sales (selling stock not owned by the investor by borrowing it). For 70 years the SEC banned investors from selling stock short except on a rising price ("up-tick" restrictions). As it evaluated repeal the SEC undercut an unusual approach to address the issue—it temporarily removed the restrictions during 2005 and 2006 on a matched sample of 1/3 of the Russell 3000 stocks, setting up an interesting natural experiment in which the other 2/3 of the Russell 3000 stocks could form a control sample. The SEC also facilitated making the data publicly available rather than only making the data available to its own staff. This created the potential for alternative analyses and conclusions.¹¹

By setting up such an experiment, the SEC generated data to help assess the impact of the anticipated rule-making. This avoids potential complications from selection that could arise if the issuing firms, market makers or the regulator would decide which stocks would be included in the controlled experiment. Natural or controlled experiments often avoid a variety of econometric complications on such dimensions as identification and

¹¹This should be a standard aspect of the regulatory model in my judgment.

endogeneity. For example, the study of “twins” has been a useful technique in separating the causes of underlying effects in many contexts. Indeed, the study of identical and fraternal human “twins” has been very helpful in separating genetic and environmental factors.¹² Of course, in many cases proceeding along such lines to study financial regulation would not be practical, but in the case of many trading-rule issues the nature of the high-frequency data is particularly amenable to controlled experiments or policy phase-ins that would generate data to help evaluate the anticipated change in policy.¹³

Of course, it is important to recognize that a natural experiment isn’t a perfect design. One limited aspect that the natural experiment on short selling did not capture was that a partial repeal did not fully allow arbitrageurs to sell short market baskets in the equity without the up-tick restriction applying to some stocks. Of course, full repeal would allow the implementation of arbitrage strategies at a portfolio level without interference from the up-tick rule.¹⁴ Experiments, by their very nature, can generate “Hawthorne” (observation) effects in which agents change behavior because they are being studied.¹⁵ For example, if traders felt it valuable enough to invest in influencing the regulator they could “manipulate” the regulator’s perceptions by altering their behavior during the study. I would anticipate that such effects would not be substantial in this context due to the diffused nature of asset holdings. However, the limited period of the study relative to

¹²Add citation to human twins’ studies.

¹³A good example of a phase-in was the introduction of post-trade price reporting in the corporate bond markets through the TRACE system a decade ago, where there were a number of modifications to the reporting regime. This was studied by XXXX.

¹⁴See discussion in Boehmer, Jones and Zhang (2008).

¹⁵Such effects are typically associated with studies in psychology.

the period in which the regulatory change would be effective works in the wrong direction.

We learned much about the impact of the up-tick restrictions from this natural or controlled experiment.¹⁶ For example, despite relatively modest “short interest” exposure on equities of just a few percent of total stock holdings, we observed that about 35% of all sales were short sales. This occurred because many intermediaries who were already net short initially accommodated natural purchasers, reflecting how liquidity arises in markets.¹⁷ As liquidity suppliers responded to demand for their services across both sides of the market, these “short positions” turned over extremely rapidly. This suggests that restrictions on selling short on a declining tick would largely constitute “sand in the gears” of the trading process. Additionally, the controlled experiment also showed that a substantial change in volatility or short interest did not emerge as a result of dropping the up-tick restrictions.

Many readers have heard about the repeal of the up-tick rule. Indeed, the up-tick restriction was focused upon at the pivotal moment in the 2008 Presidential campaign as the financial markets imploded.¹⁸ The Republican Presidential nominee pointed to the

¹⁶For example, see Diether, Lee and Werner (2009) as well as the Office of Economic Analysis (2007) Staff Study on behalf of the SEC.

¹⁷One market participant told this author in 2010 that his firm marked all orders as short sales in order to accommodate the firm’s lack of knowledge of the sign of its exact inventory in real time and the most restrictive trading rules. Of course, this would be consistent with inventory that turned over quite rapidly. If all firms acted in this fashion the measurement would imply that 100% of the orders were short sales. An alternative justification for this would be if the investor were uncertain about his ability to deliver stock that he owns in time for settlement to his broker.

¹⁸The politics of short-sale regulation is discussed most extensively in Sirri (2010) and secondarily in Spatt (2010).

repeal of the up-tick rule in advocating the firing of SEC Chairman Christopher Cox.¹⁹ Frankly, there was considerable political tension associated with short selling in this period. Indeed, when the *Washington Post* asked outgoing SEC Chairman Cox at the end of 2008 what was the worst mistake that he made as SEC chair, he cited listening to his colleagues from the President's Working Group and agreeing to ban short sales of 900 financially related stocks as the TARP legislation was being debated in the Congress.²⁰ My sense is that among securities regulators in the United States there is a broad appreciation of the adverse consequences of the 2008 ban, but globally many overseas regulators have fallen back on a short-selling ban as a tool to attempt to manage the sovereign crisis (e.g., in May 2010 and August 2011) without internalizing the costs that were experienced in the United States and reflected in former Chairman Cox's wrap-up remark. These costs included a potential reduction in trading liquidity, a reduction in the ability of market participants to hedge and a lack of clarity by market participants about the future trading rules.

After the Presidential election a high priority of incoming SEC chair Mary Schapiro was to revisit the repeal of the up-tick rule, citing this as a source of a loss of "investor confidence."²¹ While the compelling high-frequency empirical evidence from the SEC's natural experiment had been (incorrectly) disparaged as not being relevant for the post financial crisis period, the extent to which the SEC ultimately pulled back on the repeal

¹⁹See *Wall Street Journal* editorial (2008), which also discussed with favor the SEC staff's controlled experiment and analysis supporting the repeal of the up-tick rule.

²⁰See Paley and Hilzenrath (2008).

²¹See Schapiro (2009). While there was a tendency to be dismissive of the relevance of the high-frequency empirical evidence from the natural experiment undertaken prior to the crisis, the SEC's eventual steps to reverse repeal were surprisingly modest and essentially a recognition of the usefulness of the repeal of the up-tick restrictions for the trading process.

of the up-tick restrictions was quite modest, barring short sales on down ticks for a day or two only after a price decline of at least 10 percent. I view the very limited nature of the eventual pull-back on what had become such a politically sensitive rule as a reflection of the strength of the original empirical evidence that the SEC staff generated and upon which the repeal had been based.²² It is striking that the up-tick rule admitted so much after-the-fact controversy given that the economic concerns of the repeal's critics were not about short sales at the trading level, but instead focused upon short interest and arguably just naked short interest.²³ In its own right, this highlights the importance of careful measurement and focusing upon the appropriate economics margin to guide thoughtful policy responses. For example, the costs associated with short selling are on a very different margin than the costs associated with short interest exposure.²⁴

Market microstructure issues involving high-frequency data are particularly amenable to pilot studies, controlled experiments and phase-in of the regulatory treatment provided the underlying setting is carefully designed. Other examples where the consequences of rule-makings have been assessed by such techniques include changes in tick size and in the case of post-trade price transparency changes in reporting lags and relevant trading sizes.²⁵

²²At the time of the 2007 repeal of the restrictions to short selling on up ticks, there was little public or media interest in this action.

²³“Naked” short interest refers to short positions for which the seller of the exposure has been unable to borrow physically the stock.

²⁴Arguably, the costs associated with short interest exposure are considerable, including the need for investors to post additional collateral and the failure to obtain the full time value of money on resources made available from the sale of the underlying asset (retail investors tend to find it particularly difficult to obtain any interest credit on the proceeds created by their short sales).

²⁵Add citations

The discussion of the up-tick restrictions indirectly highlights the role of political considerations (rather than only economics) in driving some aspects of the regulatory debate (also see footnote 18). An interesting counterpart to the debate about short selling is the focus in the energy arena on the role of “speculators” or “excess speculation” in driving the level and volatility of oil prices.²⁶ There is not serious evidence of this and indeed, economics principles suggest that restricting the trades of speculators (who trade to accommodate and thereby, profit from hedgers) would increase rather than decrease the volatility of prices in response to fundamental shocks.²⁷

Measurement as Regulation

In a variety of instances the thrust of financial regulation is about measurement. For example, one of the central issues in ongoing debates about credit rating agencies is whether regulators should rely upon ratings for determining regulatory treatment and outsource this function. The potential extent of systemic risk is heightened by a common view of the underlying ratings standard in the event that this perspective is incorrect and ratings need to be altered. Indeed, when regulators rely upon ratings the measurement itself is at the heart of the regulation. This occurs for a broad range of issues such as determining capital standards for financial institutions and regulatory standards about the extent to which different instruments are suitable to be held by various investors or in different types of financial products.

²⁶This is an issue that often resurfaces when energy prices are especially high by historical standards.

²⁷For example, see Harris and Buyuksahin (2009).

Before I leave the subject of credit ratings, it also would be helpful to observe that how to interpret a rating depends in part on whether the rating was solicited, i.e., purchased by the issuer, or unsolicited (and not purchased) and if purchased, the extent to which multiple ratings at the level are obtained. These perspectives highlight a variety of “selection” effects by the issuer related to which ratings, if any, it chooses to obtain. The economics of selection is particularly important to the interpretation of ratings. The issuer decides whether or not to solicit a credit rating and if so, which ones. When the issuer solicits and obtains relatively more ratings at a level the information content of that is relatively more favorable (e.g., a single rating at a level may suggest the inability to obtain additional ratings at that level).²⁸ My own work on credit ratings during the last few years has tried to highlight related themes related to the disclosure and economic interpretation of ratings.²⁹

Note that how regulators look at unsolicited ratings has changed in recent years. Starting around 2002 regulators (including both the SEC and the International Organization of Securities Commissions, IOSCO) viewed unsolicited ratings as artificially low—reflecting the possibility of an attempt to “extort” from the issuer. As a result of attention to ratings shopping in the last few years, regulators now have been trying to encourage unsolicited ratings, as they instead view the shopped or solicited ratings as artificially high. Of course, when two variables, x and y , represent comparable underlying objects and when $x > y$, that could reflect the estimate represented by x to be too high or the estimate represented by y to be too low.

²⁸Add citations—my theory papers, ties and other empirical paper (Cremer et al.)

²⁹Add citation

As in the case of credit ratings, the publication of a variety of measurements is a useful mechanism for the regulator to influence behavior. An example is the monthly disclosure required from trading market centers concerning various dimensions of order execution quality, which can both influence subsequent routing decisions of broker-dealers and potentially influence executions as well.³⁰

A final example of the centrality of measurement to regulation is the case of options expensing. Under the option expensing standard adopted by the Financial Accounting Standards Board (FAS 123(R)) the measurement objective to use for expensing options is to measure the costs to the firm. This measurement objective is not surprising in light of the purposes of financial accounting for firms.³¹ Indeed, the SEC's economists (which I led from 2004 until 2007) evaluated in 2005 and 2006 market-based approaches as an alternative to models for option expensing; the Commission's economists tried to evaluate these approaches against the measurement standard of whether the price generated reflected the ex ante cost to the firms—as compared to an attempt to generate an artificially low number.³²

Expectations

³⁰Add citation

³¹Obviously, measurement of the benefits to employees receiving the option grants is not directly relevant to what investors are interested in or to the formulation of the accounting standard (except indirectly through the exercise decisions of the employees and employee retention).

³²The motivation for market-based approaches may have reflected philosophical objections to the use of models in accounting, but also the use of instrument and trading designs that would generate relatively low valuations. In the later case, it would be difficult to satisfy the measurement objective.

Finally, I'd like to turn briefly to an example involving measurement and expectations, and asset prices. An issue for which there has been a fair amount of controversy is the appropriateness of corporate sanctions, especially when the shareholders were actually the victims—as in many instances of accounting fraud.³³ How then would we judge the extent to which the stockholders were victims? Under some guidelines we would look at the abnormal stock price reaction to the revelation as we try to quantify the relevant portion of the harm experienced by the stockholders, but such reactions also would reflect expectations of future penalties that will be imposed by the regulator upon stockholders, which in part will reflect the regulator's policy rule. This raises some interesting empirical and econometric issues in the spirit of rational expectations—the policy rule used by the regulator influences the price reaction in equilibrium and so the inferences of the regulator should be consistent with the assumed policy rule.

Concluding Comments

Good measurement and thoughtful econometric and statistical analysis play an important role in the effective formulation of policy. Measurement itself can be the instrument of policy, but also using the regulatory process effectively can enhance the quality of measurement available for the policy process. For example, the use of natural experiments, policy phase-in and pilots, and sunset provisions all can enhance the quality of information available for forming effective long-term policies. To some degree this perspective suggests a reduction in regulatory discretion and greater focus on economic principles, such as consistency and regulatory predictability, as well as a renewed attention to the quality of data available. This has important implications in my view for

³³Basic discussion of the issue of corporate sanctions is in Spatt (2007b).

the skills that are important to effective regulation and the allocation of resources and staffing within our regulatory agencies.

It also is worth highlighting that measurement is relevant not only about the decisions of the private sector, but also about important decisions by government agencies. In the aftermath of our financial crisis the very limited transparency by our principal financial regulators about both what they observed and the actions they took inhibits our understanding of the consequences and distortions that result from policymaking. A good example is the resistance over several years of the Federal Reserve to Bloomberg's Freedom of Information Act lawsuit to force disclosure of the recipients of emergency lending from the Federal Reserve. To the extent there are justifications for limiting disclosure initially to avoid disruption of the markets, those justifications fade over time, while the importance of our potential ability to learn from the past continues unabated.

My remarks also are intended to emphasize the importance of many basic econometric issues such as causality, endogeneity, statistical power, selection, and identification for enhancing financial measurement and improving both the way in which regulatory policies are formed, using such techniques as natural experiments, phase-ins and pilots, and sunset provisions as well as the policies themselves. The perspective that I have advanced throughout this paper also points to a number of methodologically interesting questions such as how can economic and econometric principles be used to guide our determination of the appropriate benchmark or baseline for cost-benefit analysis? How can we quantify and measure the nature of unintended consequences and the extent of

policy risk? To what degree can traditional statistical tools such as confidence bands and t-statistics be used within the policy context or be adapted to suit it? More broadly, how should the impact of various types and sources of uncertainty guide our choice of frameworks and provide perspective to enhance our understanding of cost-benefit analysis and other measurement challenges that are fundamental to policy formulation?

One final observation is to highlight the value and importance of economists and econometricians weighing into the policy debate. The public comment process on specific rule-making proposals is a valuable, but vastly underutilized, method for econometricians and economists to share their expertise with regulators. This is especially useful due to the importance of empirical evidence to the regulatory process. Traditionally, many of the most influential comment letters are prepared by lawyers representing interested parties. Under administrative law, regulators focus upon feedback provided through the public comment process in making their ultimate policy judgments. The skills that econometricians and economists possess are central to providing insight about many of the most important dimensions that should underlie regulatory decisions.

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