Regulatory Auditing at the Office of Information and Regulatory Affairs*

Alex Acs

Charles Cameron

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The Office of Information and Regulatory Affairs (OIRA), in the Office of Management and Budget, is the locus for centralized presidential efforts to control agency rule-making. To do so, OIRA selectively audits and then orders revision of the regulations proposed by agencies. To analyze OIRA's auditing decision we begin by formally modeling its strategic problem. The model distinquishes situations when cost-benefit analysis speaks definitely and thus constrains the scope for ideology, from those in which it is somewhat ambiguous and thus fails to constrain ideology. In such cases, liberal agencies may be eager regulators and conservative agencies reluctant ones. Auditing strategies for liberal and conservative presidents should reflect these tendencies. The model also identifies agency responses to auditing regimes: "deterrence" and "chilling" effects on the production of regulations but also "stimulative" effects. We then assemble data on 20,279 proposed rules promulgated by 35 agencies from 1995-2010. Under Bush, OIRA's average of 278 audits per year disproportionatly targeted regulations from liberal agencies, particularly intrusive regulations from those agencies. Under Clinton, OIRA's average of 296 audits per year did not display ideological targeting. Similarly, under Obama, OIRA's 95 audits per year displayed no ideological targeting.

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PRELIMINARY AND INCOMPLETE FOR DISCUSSION PURPOSES.

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I. Introduction

The emergence of a vast administrative and regulatory state is a hallmark – arguably *the* hallmark – of modern government. As was quickly understood by Woodrow Wilson and other early students of American political development, the presence of gigantic standing bureaucracies with enormous scope and power of action presents not merely a problem in public administration; it presents a problem in brute politics. The crux of the matter, as a leading scholar of public management rather dryly notes, is that "whoever controls the bureaucracy controls a key part of the policy process" [Lewis 2008]:6.

The problem of political control is acute for Congress. Not surprisingly,it became an analytical focus of the "new institutionalist" revolution in scholarship on Congress and the administrative state [McNollgast 1987], [Ferejohn and Shipan 1990], [Epstein and O'Halloran 1999]. But the problem of control is equally if not more acute for America's chief executive officer, the President: How can one man, aided by a relative handful of confederates, exert effective control over rule making in the agencies?

Presidents, working diligently and with considerable ingenuity, have responded to the challenge by developing a remarkable set of tools for controlling policy making in the administrative state. Perhaps the most important is "politicization," the systematic placement of loyal subordinates into supervisory positions within the agencies [Lewis 2008]. But others include:

- Centralized budgeting [Tomkin 1998],
- Direct command through executive orders [Howell 2003],
- Centralized review and direction of the agencies' legislative programs [Rudalevige 2002], [Neustadt 1954], and
- Reorganizing or terminating agencies [Lewis 2003].

One of the newest tools, and potentially a puissant one, is *direct centralized review and forced revision of the agencies' proposed rules.* This tool – innovated by the Nixon Administration, institutionalized during the Reagan Administration, and then retained by every subsequent president – can be seen as the apotheosis of the centralizing tendencies of the American presidency, noted so crisply in Moe's classic analysis [Moe 1985].

The locus for the President's centralized review of agency rules is the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB). In effect, OIRA is the point of the spear in the President's battle to exert direct centralized control over the content of federal regulations.

The magnitude of the task facing OIRA – and the President – is well conveyed in Figure I , which displays the annual number of pages in the *Federal Register* since its inception in 1936.[1] The impact of the Great

1. The source of these data is the Office of the Federal Register, see __.

Society and Nixon-era regulatory programs was dramatic, with the number of pages of regulation rising from under 20,000 in 1960 to over 80,000 in 1980. Since 1980, federal agencies have issued at least 50,000 pages of new regulations every year. Since 2000, the annual number of pages of rules has been about 80,000. Simply to be clear: If issued properly, using the procedures specified in the Administrative Procedures Act and then sustained in court against legal challenges (if any), the agency rules in the pages of the *Federal Register* have t*he force of law*. Figure I thus reveals a sunami of lawmaking by agencies, dwarfing the statutes enacted by Congress and the executive orders issued by the President. Of course, many of these bureaucratically written laws are of minor significance (as is true of statutes and executive orders). But many are enormously consequential for citizens, firms, and organized interest groups.

//Figure1 – annual number of pages in the Fed Reg over time, about here//

Centralized review of every proposed rule would require an Executive Office of the President nearly as large as the federal bureaucracy itself. A small but elite cadre of presidential analysts can inspect and compel revision of only a relative handful of regulations – at best. Two critical questions then become: *Which regulations should the President's central analysts target for review?* And: *What incentive effects does this auditing regime create for the agencies?*

In this paper, we study OIRA's actual targeting decisions: Which rules did OIRA pick to audit, from the plethora of available ones? How did this change with the shift between Republican and Democratic presidents? What elements of regulations seemed to cue OIRA's attention?

// NOTE: We present some preliminary evidence on the incentive effects of OIRA's auditing regime, below, for purposes of discussion in the Law and Politics Colloquium. But we have concluded that a convincing analysis of incentive effect is too big a job for this paper: //

We begin our analysis by formulating a formal game-theoretic theory of regulatory auditing by partisan technocrats. The starting place is a recognition that the auditing problem facing OIRA is somewhat similar to that facing the Internal Revenue Service [Graetz et al 1986], or the case selection problem facing the U.S. Supreme Court [Cameron et al 2000], [Spitzer and Talley 2000]. However, as many observers have noted, a distinctive feature of the strategic interaction between OIRA and agencies is the critical role played by cost-benefit analysis.[2] In particular, agencies undertaking big-ticket regulations must undertake a "regulatory impact analysis" (RIA), a cost-benefit study of the regulation. We argue that sometimes these studies speak in a dispositive manner, clearly indicating a particular action or level of regulation that both the agency and OIRA – regardless of the ideological orientation of the President – will find convincing. In this sense, OIRA review is "technocratic" and non-ideological (for arguments along these lines see [Livermore and Revesz 2012],

2. It is important to note that OIRA employees are not subject matter experts but economists and policy analysts whose expertise lies in cost-benefit analysis. Though OIRA "desk officers" surely acquire subject-specific knowledge over time, they cannot devise technical regulations themselves. Their focus necessarily is a regulation's cost-benefit justification.

Section IV D). Oft-times, however, the results of a cost-benefit analysis are sensitive to relatively arbitrary or debatable assumptions. Consequently, the results can plausibly justify either high or low levels of regulatory effort. If so (the model suggests), the political commitments, ideologies, and proclivities of career managers in the agencies may play a role in the evaluation of the regulation, creating an ideological bias in the production of regulations. Specifically, liberal agencies may sometimes propose economically significant regulations that they perceive as worthy but that a well-informed conservative President would oppose as insufficiently supported by evidence. Conversely, in the face of somewhat inconclusive evidence conservative agencies may propose smaller or weaker regulations than a well-informed liberal President would prefer. The models suggests that OIRA, acting as a faithful agent of such a President, will adopt an auditing strategy that recognizes agency bias and attempts to counter-act it. But, the appropriate targeting strategy is quite different, depending on whether OIRA serves a conservative or liberal President. In that sense, OIRA's auditors will appear "partisan."

The model also indicates that auditing regimes are not simply "error correcting"; they create incentive systems for the agencies. Thus, auditing strategies have multiplier effects that go far beyond revision of specific regulations. This observation is hardly novel: some commentators have recognized that agencies may engage in "OIRA avoidance" or even strategic "inaction" [Anonymous 2011], [Livermore and Revesz 2012].[3] The game-theoretic model systematically extends these observations and casts them in a new light. First, regulatory auditing by a conservative OIRA may create a *deterrence effect* among liberal agencies, reducing the probability these agencies issue an economically significant regulation absent strong justification. Second, appropriately targeted regulatory auditing by a liberal OIRA may create a *stimulating effect* among moderately conservative agencies, increasing the probability these agencies issue an economically significant regulation despite an absence of absolutely definitive evidence. This effect requires targeting non-economically significant regulations from conservative agencies. But, the model indicates, this kind of targeting may create a *chilling effect* among very conservative agencies, increasing their probability of issuing no regulation at all (again, in the absence of compelling cost-benefit analysis supporting a particular positive level of effort.) Thus, some of the predictions of the partisan-technocrat model are straight-forward but others are rather subtle.

The empirical portion of the analysis examines OIRA's treatment of 20,279 regulations issued between 1995 and 2010, that is, six years of the Clinton Administration, eight years of the Bush Administration, and the first two years of the Obama Administration. These regulations resulted in slightly less than 4500 audits, for audit rates of about 19% for Clinton, 23% for Bush, and 12% for Obama (in his first two years).[4]

3. More generally, the legal literature considers some of the incentive effects of regulatory oversight, particularly by judges, under the rubric of "regulatory ossfication." See inter alia [Yackee and Yackee 2012] and [O'Connell 2008].

4. The directorship of OIRA was officially vacant during the first year of the Obama Administration, due to the delay in the

We first examine and model agency audit rates, to provide a simple over-view of patterns in the data. We then model audit probabilities per regulation, exploiting the multi-level structure of the data. The shift from liberal to conservative president (and back again) affords the opportunity to examine critical comparative static predictions about the relative ideological position of the President and the agencies.

In fact, the data display distinctly different targeting patterns between the Bush Administration OIRA and the Clinton and Obama ones. The Bush OIRA targeted costly regulations, particularly from liberal agencies. In addition, the Bush OIRA spent some effort targeting less costly regulations from liberal agencies. The Clinton and (early) Obama OIRAs also targeted economically significant regulations much more intensively than other regulations. Strikingly, however, this targeting was not directed at regulations from conservative agencies. Rather, it was ideologically "flat." The Clinton Administration did spend some effort targeting less costly regulations, but again without keying on agency ideology. The early Obama OIRA reviewed very few non-economically significant regulations at all. In short, the targeting decisions of the Bush OIRA appear broadly compatible with those one might expect from partisan technocrats. The targeting decisions of the Clinton and Obama OIRAs were not compatable with producing a "stimulative effect" in conservative agencies; rather, they resemble across-the-board "second-guessing" of the agencies, but only when the agencies undertook costly regulation.

//Our preliminary analysis of incentive effects suggest a Bush "deterrence effect" in the Department of Education, though notably not in the EPA. The results should be interpreted cautiously since they require a well-fitting model of agency production of rules and there is very little state-of-the-art on how to do this. Moreover, the effects reflect both appointments in the agencies and OIRA review.//

The paper is organized in the following way. In the next section, we provide some basic information about OIRA. Section III presents a theory of regulatory auditing by partisan technocrats. Section IV reviews the data, indicating sources, measurement issues, and basic descriptive features of the data. Section V investigates OIRA's auditing strategies in the three administrations. // For the discussion version of the paper only: Section VI explores agency production of rules under the distinct auditing regimes. // Section VII discusses the results and concludes.

Senate confirmation of Cass Sunstein.

II. Background

II.A. The History of Regulatory Central Clearance

Attempts by presidents to exert systematic, centralized control of agency rule making began during the presidency of Richard Nixon [Conley 2006]. John Ehrlichman, Nixon's chief domestic policy aide, initiated a program of "Quality of Life" reviews within OMB. The reviews specifically targeted the new regulatory agencies, such as OHSA and EPA, whose proposed rules could impose huge costs on business. To conduct the regulatory reviews, White House Chief of Staff H.R. Haldeman recruited a group of systems analysts from the Department of Defense. Beginning in 1971, these professional analysts brought cost-benefit analysis to bear on proposed regulations, particularly those from EPA. At this early stage, participation by the agencies was at least nominally voluntary, and OMB did not impose explicit benchmarks for passing a cost-benefit scrutiny (ibid). The Ford Administration continued the Quality of Life reviews, requiring agencies to prepare inflation impact statements on proposed rules.

Perhaps surprisingly, the Carter Administration continued OMB's regulatory review. In fact, in 1978 Carter issued Executive Order 12044,"Improving Government Regulations," requiring agencies to provide a regulatory analysis for large-ticket regulations. A handful of regulations were then selected for intense review by an inter-agency task force, staffed by economists from the Council on Wage and Price Stability. Thus, regulatory review reflected the President's commitment to reducing inflation.

The Reagan administration created OIRA through Executive Order 12291 in early 1981. The move reflected Reagan's deregulatory approach to government and his desire to constrain the growth of government. OIRA represented the most muscular mandate for regulatory review yet.

The contemporary era of OIRA's regulatory review began in 1993 when President Clinton issued Executive Order 12866. The new order significantly reduced the number of pending regulations in OIRA's review docket. Prior to EO 12866, OIRA reviewed all regulations, irrespective of their costs, resulting in over 2,000 audits per year. Clinton's new order developed a more focused approach toward regulatory review by allowing the administration to select which regulations to devote their resources to review. Under the new rule, agencies were required to submit a list of their planned regulatory actions to OIRA detailing some information about the regulation, including whether it imposed over $100 million in annual costs. From the list of submitted regulations, OIRA selected regulations for agencies to submit for detailed review, irrespective of costs. According to the administrator's implementing memorandum when EO 12866 was introduced, a central purpose of the new order was "greater selectivity in the regulations reviewed by OIRA" [Croley 2003].

When the second Bush administration took office in 2001, it continued to operate under EO 12866

through July 2007, at which point EO 13422 took effect.[5] The focus of our study is on how OIRA used its review-and-revise authority under EO 12866. Plus, first two years of the Obama Administration which retained the same basic setup.

II.B. Centralized Review of Agency Rule-Making

OIRA's role as a reviewer of pending regulations does not give it authority to reject a regulation outright—only an agency head can do so. But it does empower OIRA to change the scope of a regulation or flag a regulation so that a department head can reject or modify a regulation. When OIRA selects a regulation to review, we refer to this as "auditing," whereby OIRA requests that the agency hand over all relevant documents related to a particular rule for closer examination.

//Insert Figure II about here: OIRA and the Regulatory Auditing Process

The following figure, drawn from [**?**], presents a schematic of the process. First, an agency proposes a regulation. OIRA may then review or decline to review the regulation. In either case, the Agency may withdraw the regulation. For audited, non-withdrawn regulations, OIRA may force revisions of the regulation. The regulation then becomes a proposed final regulation. and is published in the *Federal Register*. Typically, a notice-and-comment period follows the publication of the proposed rule, at which point interested parties submit comments and concerns to the agency. Following this period, the agency responds to the comments and makes any changes to the rule that it sees fit. At this point, OIRA gets a second "bite at the apple" and my elect to audit the regulation again. In this paper, however, we focus on OIRA's first audit.[6]

As we discuss more in the data section below, OIRA learns about which regulations agencies are working on—and thus which regulations to audit—from the Unified Agenda of Regulatory and Deregulatory Actions (Unified Agenda).[7] The Unified Agenda has been in existence since President Carter's EO 12044, which in addition to providing provisions for regulatory review, also required that federal agencies publish information twice a year on regulations that are under development. Typically, this includes information about regulations in all different stages of the rulemaking process, spanning the time when a rule is still in early draft form to the final stage when an agency reports that a regulation has been published in the F*ederal Register*.

5. 13422 made an Regulatory Policy Officer RPO position in each agency a requirement, plus OIRA review of regulatory guidance documents published by agencies. The changes under 13422 are generally considered to increase the burden on the regulatory process.

6. In most cases, OIRA's first audit occurs during the proposed rule stage, however sometimes the first audit is at the final rule stage. In the following empirical analysis, we focus on the first audit, regardless of the stage in which it occurs.

7. Of course, OIRA could learn about agency activity from other sources, such as an external "fire alarm" sounded by an interest group, but the Unified Agenda is at least the official record and, by design, provides information to Congress and the President about the regulatory activities of federal agencies.

II.C. Literature Review

OIRA is a controversial agency. Not surprisingly, it has sparked a considerable literature among legal scholars and political scientists. Broadly speaking, this literature has three streams: normative, positive, and empirical. Within the normative branch, scholars have noted OIRA's potentially revolutionary impact on administrative procedures and the operation of government agencies (see inter alia [Kagan 2001], [Cooper and West 1988]). Within this line of scholarship, conservative legal scholars have offered a variety of public interest justifications for OIRA, some drawing on notions from positive political theory (citation, ginsburg). In turn, liberal legal scholars have debunked those justifications while sometimes noting the possible benefits of centralized regulatory review by liberal presidents [Bagley and Revesz 2006].

A handful of studies use positive political theory to examine different aspects of OIRA. [Jordan 2008] suggests that presidents might discipline the heads of agencies whose regulations frequently flunk OIRA audits. [Bueno de Mesquita and Stephenson 2007] examine how oversight by a supervisor with veto power – for example a court, but also OIRA – may distort an agency's regulatory efforts. [Wiseman 2009] focuses on the delegation decision of Congress, raising the possibility that joint oversight of an agency by OIRA and Congress might benefit both overseers, as the agency seeks to curry favor with one overseer or the other. Although regulatory auditing by the Executive is implicit in these studies, none examines OIRA's targeting problem in much detail nor considers the incentive effects of different auditing regimes (though [Bueno de Mesquita and Stephenson 2007] is relevant here).

As several scholars have noted, empirical analysis of OIRA's decision making has been limited. Indeed, systematic empirical analysis of agency rule making is surprisingly rare.[8] Using data from the General Services Administration;'s Regulatory Information Services Center [the RISC data], as well OIRA's log of ex parte contacts for each reviewed regulation, [Croley 2003] provides a useful descriptive overview of the rules audited by OIRA between 1981 and 2000. [Dragu 2010], also employing the RISC data, models the empirical probability of revisions conditional on selection for auditing. [Jordan 2008], also employing the RISC data, examines the impact of OIRA rule revisions on the tenure of agency heads. He finds longer tenures for agency heads whose audited regulations were treated favorably by OIRA. None of these studies identifies the universe of regulations at risk of auditing nor estimates audit probabilities for regulations, and none considers the impact of OIRA review on agency production of regulations.

8. [O'Connell 2008] uses data from the published Unified Agenda of regulations to provide an empirical portrait of agency rule-making; the paper also reviews the empirical literature in both legal scholarship and political science.

III. A Theory of Regulatory Auditing

Our point of departure is the following insight: the results of a cost-benefit analysis sometimes speak clearly, pointing definitely to a decision; but sometimes, the results of a cost-benefit analysis are ambiguous or hinge delicately on questionable assumptions. If so, reasonable people may draw different conclusions about the best choice of action, depending on the credence or weight they place on different parts of the analysis. In the model, the tension between OIRA and an agency arises exactly in these ambiguous situations and leads to a auditing game with particular properties.

Before turning to the model, two points require elaboration. First, the model focuses purely on the interaction between OIRA and the agencies. It ignores the possibility that Congress might side with an agency against the President, and reverse OIRA's modification of a proposed rule through legislation. Of course, the OIRA-Agency Game is played within the context of the separation of powers system. But, we see the SOP considerations as likely to be minor. During unified party government, Congress is apt to approve of the President's revisions of agency regulation. During divided party government, it may not. But, effective action requires coordination across two chambers, securing very expensive floor time, and then beating filibusters and presidential vetoes. So it is, at a minimum, extremely costly for Congress to act, and in many cases impossible for it to do so. While these arguments may not hold for every regulation, we choose to focus on the understudied auditing/rule-setting interaction that does affect every regulation.

Second, the model implicitly assumes that ideological conflict between the President and the career civil servants who write regulations cannot be solved entirely through politicization, that is, via political appointments into the agency. Otherwise, every regulation coming from every agency would already be in conformance with presidential preferences and there simply would be no role for OIRA to play.[9] The "limited impact of appointments" assumption stands in contrast to that made in some notable models of separation of powers games, which assume the president can bring agency ideology into perfect alignment with his own (see e.g., [Ferejohn and Shipan 1990]). We justify this assumption on three grounds. First, recent empirical work on the ideological orientation of top appointees finds that many in fact are somewhat distant from the president [Bertelli et al 2011]. This ideological gap may reflect congressional resistance to ideologically distant presidential appointments [Warren 2012]; it may also reflect a dearth of ideologically compatible appointees in some fields. Second, seemingly compliant appointees may "go native." For example, an appointee's shared professional identity or career concerns post-government service may limit her willingness to impose the president's preferences on the bureaucrats. Third, even if the president can appoint an ideological clone who vigorously enforces the president's preferences, the sheer complexity of many

9. OIRA could play a role coordinating regulatory activity across agencies. The coordinating role of OIRA seems understudied and worth future investigation.

regulations as well as the magnitude of the task facing appointees in some agencies may lead to failures. Despite these arguments, we see the interaction between politicization and centralized control as a fruitful avenue for future work. A sharper understanding of the logic of centralized control is a prolegomenon for that work.

The regulatory auditing game studied here has some similarities to the tax compliance and judicial settlement games analyzed by Reinganum and coauthors [Graetz et al 1986], [Reinganum and Wilde 1986], and an agency budget game analyzed by Banks [Banks 1989], and Banks and Weingast [Banks and Weingast 1992]. But those models feature separating equilibrium, in which the agency's (or tax payers') report actually reveals its private information. The audit schedule is set to induce the revelation but implicitly, the models assume a commitment by the potential auditor not to use the revealed information absent an audit. This cannot be sequentially rational in the Agency-OIRA game. In a situation in which an agency's and OIRA's preferred response to ambiguous cost-benefit studies differ, if OIRA knew the agency was acting "badly," OIRA would simply order the agency to re-set policy without the audit. This precludes the separating equilibrium identified in those papers and implies only pooling or partial pooling equilibria can exist in situations of conflict.

III.A. Sequence of Play, Actions, and Strategies

There are two players, OIRA (denoted P for president) and an Agency A. Both are parameterized by a preference or bias parameter $\beta_i \in B = \mathbb{R}_+$ $i = (P, A)$ affecting its perceived value of the benefits of regulation. "Liberal" agencies and OIRAs highly value those benefits; "conservative" ones much less so. (This will be made precise momentarily).

The sequence of play is as follows. First, Nature determines the state of the world $\theta \in \{L, H\}$, choosing H with common knowledge probability p. (As explained below, the state of the world affects the benefits attainable via regulation). Second, the Agency attempts to discover the state of the world via a cost-benefit analysis. With common knowledge probability π the cost-benefit analysis successfully reveals the state of the world; with probability $1-\pi$ the analysis reveals nothing. We denote the resulting private information of the Agency as its "type" $t \in T = \{L, H, \varnothing\}$, where the third element $\varnothing$ indicates an uninformative cost-benefit analysis. The Agency then chooses a proposed level of regulation $x_A \in X_A = \{0, L, H\}$. That is, it may decline to issue a regulation at all ($x_A = 0$); it may propose a "small" regulation ($x_A = L$); or it may propose a large "economically significant" regulation ($x_A = H$). We denote by s a probability distribution over the elements of X_A. If the Agency declines to regulate, there is no regulation to be audited and the game

ends.[10] However, if the Agency proposes either a small or large regulation, OIRA may audit the proposed regulation. Denote the audit actions available to OIRA as $a \in \{0, 1\}$ and a probability distribution over those elements as r. If OIRA declines to audit the regulation ($a = 0$) then the proposed regulation becomes the final regulation x_F and the game ends. However, if OIRA decides to audit the regulation it pays an audit cost k and discovers Agency's type t. That is, OIRA learns whether the Agency set the regulation on the basis of a "dispositive" cost-benefit analysis, or an ambiguous or uninformative one. Note that, as a generalist agency, OIRA cannot independently obtain additional information about the state of the world itself; but, as an expert in cost-benefit analysis it can understand the Agency's analysis and hence discover the Agency's type. Following an audit, OIRA may order the Agency to re-set the level of regulation to $x_P \in \{ L, H\}$ and this re-set value becomes the final level of regulation, so that $x_F = x_P$. If OIRA orders a re-set, the Agency pays a re-set cost or penalty κ. This reflects degraded career concerns, loss of favor with the President, and so on.

It will be seen that this is a signaling game, in which the Agency's proposed level of regulation may reveal information about its private knowledge of the benefits of regulation. In the equilibrium considered below, Agency type $t = L$ and $t = H$ separate; but Agency type $t = \varnothing$ partially pools with types L or H. And, OIRA probabilistically audits the regulation depending on the ideology of the Agency and it proposed level of regulation. The prospect of auditing may have a "chilling effect" on Agency type $t = \varnothing$, driving it to choose no regulation ($x_A = x_F = 0$); auditing may have a "deterrence effect" driving a type-$\varnothing$ agency to choose $x_A = L$ rather than $x_A = H$; and it may have a "stimulative effect" incentivizing a type-$\varnothing$ agency to choose $x_A = H$ rather than $x_A = L$.

More formally, a strategy for Agency is a proposed regulation level function $s : B^2 \times T \rightarrow X_A$, or $s : B^2 \times T \rightarrow \Delta(X_A)$. (Recall $X_A = \{0, L, H\}$). Here, $\Delta(.)$ denotes the set of probability distributions over a set. So in the former case, the function $s(t; \beta_A, \beta_P)$ yields a proposed level of regulation x_A. In the latter case, the function $s(t; \beta_A, \beta_P)$ yields a probability distribution over proposed levels of regulation $(0, L, H)$. Note that different agencies, as parametrized by policy bias β_A, may employ different distributions for drawing from X_A for the same t (and of course may employ different distributions in the face of dirrerent OIRAs, as parametized by its policy bias β_P).

A strategy for OIRA is, first, an auditing strategy, and second, a re-set strategy conditional on auditing.[11] The audit strategy has the form $r_1 : B^2 \times X_A \rightarrow \Delta(A_P)$, where $A_P = \{0, 1\}$. Thus, the function $r_1(x_A; \beta_A, \beta_P)$ yields an audit probability conditional on the proposed level of regulation, Agency bias, and OIRA bias. A re-set strategy conditional on a audit depends on what OIRA learned from the audit. A re-set

10. Note on "prompt memos." We don't model but discuss briefly at the end of the paper.

11. One may allow OIRA to order re-sets absent an audit, but this is a relatively uninteresting extension of the game form studied here.

strategy has the form $r_2 : B^2 \times X_A \times T \rightarrow X_P$.

III.B. Utilities and a Characterization of Agencies

The objective of both OIRA and the Agency is to maximize the net benefits of regulation, as they evaluate those net benefits. However, partisan bias affects how they evaluate the benefits of regulation.

A level of regulation x brings benefits $b_P(x;\theta,\beta_P)$ to OIRA, $b_A(x,\theta;\beta_A)$ to the Agency, and costs $c(x)$ to both parties. For both parties, we assume for simplicity and ease of exposition $c(x) = cx$, $c > 0$. The state-contingent benefit function has following form:

$$b(x,\theta) = \begin{cases} \bar{b}x \text{ if } x \leq \theta \\ \bar{b}\theta \text{ if } x > \theta \end{cases}$$

where the common knowledge parameter $\bar{b} > c$. In words, regulation brings positive marginal benefits (which exceed marginal costs) *but only up to level* $x = \theta$. Beyond that level, regulation brings zero marginal benefits. This function is rather stark but captures in a clear and tractable way the essential idea of state-contingent, declining marginal benefits from regulation. The marginal benefit (and marginal cost) curves are shown in Figure III.

//Insert Figure III about here: Marginal Benefit and Marginal Cost Curves

OIRA's utility is:

$$u_p(x_F,\theta,a_P) = \beta_P b(x_F,\theta) - c(x_F) - a_p k$$

That is,

$$u_p(x_F,\theta,a_P) = \begin{cases} (\beta_P\bar{b} - c)x_F \ - a_p k \text{ if } x_F = L \text{ or } x_F = H = \theta \\ \beta_P\bar{b}L - cx_F \ - a_p k \text{ if } x_F = H \neq \theta \\ 0 \text{ if } x_A = x_F = 0 \end{cases}$$

Figure IV displays $u_p(x_F,\theta,\beta,a_P = 0) = \beta b(x_F,\theta) - c(x_F)$, that is, the total net benefits of regulation. The red (lighter) line in the figure indicates the net benefit function when $\theta = L$; the blue (darker) line indicates net benefits when $\theta = H$. As shown in the figure, OIRA's utility to the left of θ is $(\beta\bar{b} - c)x_F$. To the right of θ, it is $\beta\bar{b}\theta - cx_F$. It is easily seen that OIRA's most-preferred level of regulation is simply $x_P^* = \theta$, which brings utility level $(\beta\bar{b} - c)\theta - a_p k$. Note that the value of $x_F = L$ does not depend on the state of the world, but the value of $x_F = H$ most certainly does.

// Insert Figure IV about here: Net benefit curves //

The intuition here is straightforward. A low level of regulation brings a low level of benefits but also a

low level of costs, and hence is not particularly risky (in the somewhat simplified world of the model, not at all risky). Of course, a low level of regulation may be undesireable because it leaves valuable social benefits on the table. On the other hand, a high level of regulation necessarily brings high levels of costs. In some states of the world ($\theta = H$) the benefits of regulation are so high that these costs are worthwhile. But in other states of the world ($\theta = L$) the benefits of regulation are not worth the costs. Notably, if there is uncertainty about the levels of benefits (e.g., when $t = \varnothing$) then the uncertainty induces a lottery in net benefits, specifically a lottery over $(\beta b - c)H$ (which occurs when $\theta = H$) and $\beta bL - cH$ (which occurs when $\theta = L$).

The Agency's utility is similar to OIRA's:

$$u_A(x_F, \theta, I; \beta) = \beta_A b(x, \theta) - c(x) - I\kappa$$

That is,

$$u_A(x_F, \theta, a_P) = \begin{cases} (\beta_A \bar{b} - c)x_F \ - I\kappa \text{ if } x_F = L \text{ or } x_F = H = \theta \\ \beta_A \bar{b}L - cH \ - I\kappa \text{ if } x_F = H \neq \theta \\ 0 \text{ if } x_A = x_F = 0 \end{cases}$$

where I is an indicator function that takes the value of 1 if OIRA re-set the Agency's proposed rule and a value of 0 if it did not.

The bias parameters $\beta_i > 0$ are a measure of OIRA's and the Agency's *policy bias:* higher values of β indicate greater value afforded the benefits of regulation relative to costs, while lower values of β indicate lower value afforded benefits relative to costs. While OIRA's policy bias β_P reflects the ideological posture of its principal the President, one may rationalize Agency policy bias as reflecting agency culture, identification with agency mission, distributional concerns, philosophical commitments embodied in different discount rates, or interest group pressures. Whatever the exact source of agency policy bias, but we it as a basic fact of bureaucratic politics, and treat agency policy bias as both stable and unmanipulable by the President.[12]

Referring to Figure III (marginal benefit and cost curves), the effect of policy bias is to shift the flat non-zero part of the marginal benefit curve up or down, as policy bias is greater than or less than one. In turn, policy bias will rotate upward or downward the positively sloping portion of the net benefit curves in Figure IV (net benefit curves), and shifts inward or outward the downward sloping portions of the net benefit curves.

It proves extremely useful to characterize agencies in terms of their policy bias, since OIRA's optimal

12. An extenion of the model might allow the President to shift Agency policy bias somewhat, through appointments. But so long as the President could not eliminate the gap between Agency bias and his own, the following analysis would go through.

auditing strategy will vary dramatically across different classes of agencies. First, note that absent knowledge of the state of the world, the expected value of the lottery induced by a high level of regulation $x = H$ is $p(\beta b - c)H + (1-p)(\beta bL - Hc)$. The value of $x = L$ is $(\beta b - c)L$. Equating the two and solving for the implied value of bias

$$p(\beta b - c)H + (1-p)(\beta bL - Hc) = (\beta b - c)L$$

$$\Rightarrow \frac{c}{bp} \equiv \beta_3$$

//Insert Figure V about here, Characterizing Agencies by Policy Bias //

Agencies with policy bias $\beta \geq \beta_3$ prefer the lottery induced by $x = H$ to the "sure thing" return induced by $x = L$. We will call these agencies "liberal": in the absence of definitive evidence to the contrary, the agencies (if they could act freely) would prefer to undertake a high level of regulation. Conversely, agencies with policy bias $\beta < \beta_3$ prefer the sure thing $x = L$ to the lottery induced by $x = H$. Call these agencies "conservative": if they were able to act freely, they would be willing to undertake a high level of regulation only if definitive evidence warranted the choice.

Now consider conservative agencies in more detail, in particular, consider those agencies that are indifferent between the sure-thing $x = L$ and issuing no regulation at all, $x = 0$ (yielding utility 0):

$$(\beta b - c)L = 0$$

$$\Rightarrow \frac{c}{b} \equiv \beta_1$$

Agencies with $\beta < \beta_1$ – call these "ultra-conservative agencies" – value the benefits of regulation so lightly that they will never issue regulations. As this level of conservatism seems implausible we do not consider these agencies any further. Now consider the agency for whom the low level of regulation brings positive benefits but is indifferent between the lottery and $x = 0$ (no regulation, resulting in payoff 0):

$$p(\beta b - c)H + (1-p)(\beta bL - Hc) = 0$$

$$\Rightarrow \frac{c}{b}\frac{H}{pH + (1-p)L} \equiv \beta_2$$

Agencies with $\beta_1 < \beta < \beta_2$ prefer the low level of regulation to no regulation, but prefer no regulation to the lottery induced by a high level of regulation (absent knowledge of the sate of the world). Call these agencies "solidly conservative." Agencies with $\beta_2 < \beta < \beta_3$ prefer the low level of regulation to the lottery induced by the high level of regulation, but prefer both to no regulation. Call these agencies "moderately

conservative."

//Insert Figure V about here (characterizing agencies by policy bias//

Figure V shows the characterization of agencies by policy bias. The flatter curve indicates the value of $x = L$ for agencies as policy bias increases (in the figure $\beta = 0$ at the origin); the steeper curve shows the expected value from the lottery induced by $x = H$.[13] The value of no regulation is simply zero. The cross-over point for the L-valuation and the H-valuation occurs at β_3. Liberal agencies – those with $\beta > \beta_3$– thus prefer the lottery to the low level of regulation, while conservative agencies – those with $\beta < \beta_3$– prefer the low level of regulation to the lottery induced with the high level (absent information about the state of the world). As shown, below β_1 the values of both the low regulation and high regulation curves are negative. In the interval $[\beta_1, \beta_2]$ (defining the solidly conservative agencies) only the value of the $x = L$ curve is positive. In the interval $[\beta_2, \beta_3]$ both the L-valuation and the H-valuation are greater than zero, but the L-valuation is superior to that of the H-valuation. Thus, these moderately conservative agencies prefer regulation to no regulation, but prefer the low level to the high level, if the latter produces a lottery.

It is important to note that *both OIRA and the Agency wish to set* $x_F = \theta$. In this sense, the model assumes both liberals and conservatives are public regarding and wish to "do the right thing," and in fact will agree upon what to do provided both have access to clear-cut and definitive scientific evidence concerning the costs and benefits of regulation.(Some may see this assumption as naive but it lies at the heart of the rational, policy analytic tradition placing cost-benefit analysis at the center of decision-making.) In addition, absent dispositive evidence, liberal agencies and liberal OIRAs ($\beta_P, \beta_A > \beta_3$) will agree what to do, as will conservative agencies and conservative OIRA ($\beta_P, \beta_A < \beta_3$). But, absent dispositive evidence, liberal agencies and conservative OIRAs, and conservative agencies and liberal OIRAs, will *not* agree about the appropriate level of regulation. This tension places the two actors in a strategic situation, which we now characterize.

III.C. Equilibria

We begin by establishing the intuitive points made in the previous paragraph. First, the players have dominant strategies when the state of nature θ is known.

LEMMA 1. Agency type-L and agency type-H have dominant proposal strategies, to wit, $x_A(t = L) = L$ and $x_A(t = H) = H$. Similarly, if auditing reveals the state of nature, OIRA has a dominant re-set strategy: $x_P = \theta$.

*Proof.*Comparison of utilities. ■

13. Some algebra shows that the slope of the $x = L$ curve is bL while that of the $x = H$ curve is $b(pH + (1-p)L)$. The latter must be greater than the former for all positive value of p.

The lemma implies that in all equilibrium strategy profiles, if the state of nature is known the two agency types play their dominant strategy ($x_A = \theta$) , which will be supported by OIRA in the event of an audit. This simplifies the analysis considerably.

Second, when the state of nature is not known but the agency and OIRA are either both liberal or both conservative (as defined earlier), they agree on the correct action.

LEMMA 2. If $\beta_A, \beta_P < \beta_3$ then agency type-$\varnothing$ proposes $x_A = L$ and if OIRA audits $x_P = L$. If $\beta_A, \beta_P > \beta_3$ agency type-$\varnothing$ proposes $x_A = H$ and if OIRA audits $x_P = L$.

*Proof.*Comparison of utilities. ■

Combining the two lemmata yields a form of the "ally principle" found in many principal-agent games.

PROPOSITION 3. (Ally principle in regulatory auditing) 1) If $\beta_A, \beta_P < \beta_3$ then the following constitutes a perfect Bayesian equilibrium:

$$s(t) = \begin{cases} x_A = L \text{ if } t = L \\ x_A = L \text{ if } t = \varnothing \\ x_A = H \text{ if } t = H \end{cases}$$

$$r_1 = 0 \forall x_A$$

$$r_2 = \begin{cases} x_P = L \text{ if } t = L \\ x_P = L \text{ if } t = \varnothing \\ x_P = H \text{ if } t = H \end{cases}$$

2) If $\beta_A, \beta_P \geq \beta_3$ then the following constitutes a perfect Bayesian equilibrium:

$$s(t) = \begin{cases} x_A = l \text{ if } t = l \\ x_A = h \text{ if } t = \varnothing \\ x_A = h \text{ if } t = h \end{cases}$$

$$r_1 = 0 \forall x_A$$

$$r_2 = \begin{cases} x_P = l \text{ if } t = l \\ x_P = h \text{ if } t = \varnothing \\ x_P = h \text{ if } t = h \end{cases}$$

And OIRA's beliefs are determined where possible by Bayes's Rule.

*Proof.*See Appendix //Type everything out carefully. But, Agency always takes the same action that OIRA itself would. Hence, no auditing. Note that if $t = \varnothing$, Agency posterior belief about the state of the

worl $\mu_A(\theta = h) = p$. There is an unused message: $x_A = 0$ (recall we assume no ultra-conservative agencies). But in this event OIRA cannot act so its beliefs are irrelevant. ■

We now turn to our central theoretical results, which concern the situations when OIRA and the Agency do *not* share the same ideological orientation. Note that a strategy for Agency is a probability distribution over its available actions, to wit a strategy is the ordered triple $s(t) = (s_0, s_L, s_H)$ such that $s_0 + s_L + x_H = 1$.

PROPOSITION 4. (Conservative OIRA and Liberal Agency)

$$s(t;\beta_P) = \begin{cases} (0,0,1) \text{ if } t = H \\ (0, 1 - \frac{p\pi}{(1-\pi)}\frac{\kappa}{(H-L)(c-p\beta_P b)-\kappa}, \frac{p\pi}{(1-\pi)}\frac{\kappa}{(H-L)(c-p\beta_P b)-\kappa}) \text{ if } t = \varnothing \\ (0,1,0) \text{ if } t = L \end{cases}$$

$$r_1(x_A;\beta_A) = \begin{cases} \frac{(H-L)(p\beta_A b-c)}{(H-L)(p\beta_A b-c)+k} \text{ if } x_A = H \\ 0 \text{ if } x_A = L \end{cases}$$

$$r_2(t, x_A) = \begin{cases} x_P = L \text{ if } t = L \\ x_P = L \text{ if } t = \varnothing \\ x_P = H \text{ if } t = H \end{cases}$$

OIRA's beliefs about Agency's type are determined by Bayes's Rule where-ever possible.

*Proof.*Using Lemma 1, $s(t = \theta) = (0,1,0)$ or $(0,0,1)$ as $\theta = L$ or $\theta = H$. OIRA's post-audit re-set strategy is obvious: if $t = \theta$ re-set if and only if $x_A \neq \theta$ in which case set $x_P = \theta$. And, if $t = \varnothing$ re-set if and only if $x_A = H$, in which case set $x_P = L$. This follows from the definition of a "conservative" OIRA ($\beta_P < \beta_3$), so that if $t = \varnothing$ OIRA prefers $x_F = L$ to the lottery induced by $x_F = H$. Now consider OIRA's audit strategy after observing $x_A = L$. From Lemma 1, OIRA posterior belief about Agency's type cannot place any weight on $t = H$. Consequently, either $t = L$ and $x_A = L$ is the correct action (from OIRA's view) or $t = \varnothing$ and again $x_A = L$ is the correct action from OIRA's view. Hence, no auditing if $x_A = L$. We now turn to the mixed strategy portions of the equilibrium profile. OIRA's auditing strategy following the observation of $x_A = H$ must leave agency type $t = \varnothing$ indifferent between playing $x_A = H$ and possibly being audited, and playing $x_A = L$ and definitely not being audited. That is,

$$(1 - r_1)\left(p(\beta_A b - c)H + (1-p)(\beta_A bL - Hc)\right) + r_1\left((\beta_A b - c)L - k\right) = (\beta_A b - c)L$$

$$\Rightarrow r_1 = \frac{(H-L)(p\beta_A b - c)}{(H-L)(p\beta_A b - c) + k}$$

Note that the return from $x_A = L$ is positive for liberal agencies so that playing $x_A = 0$ is a dominated strategy. Now consider the "cheating" strategy of a type $t = \varnothing$ agency, that is, its probability s_H of setting $x_A = H$. This probability must leave OIRA indifferent between auditing and not auditing after observing $x_A = H$. Let μ be OIRA's posterior belief that $t = \varnothing$ after observing $x_A = H$. Recall that the prior probability $t = \varnothing$ is $1 - \pi$, the prior that $t = H$ is $p\pi$ and the prior that $t = L$ is $(1-p)\pi$. Then via Bayes Rule and Lemma 1, $\mu = \frac{(1-\pi)s_H}{(1-\pi)s_H + p\pi(1) + (1-p)\pi(0)} = \frac{(1-\pi)s_H}{(1-\pi)s_H + p\pi}$. OIRA's posterior belief that $t = H$ is $\frac{p\pi}{(1-\pi)s_H + p\pi}$. If OIRA does not audit after observing $x_A = H$ it receives in expectation

$$\frac{p\pi}{(1-\pi)s_H + p\pi}(\beta_P b - c)H + \frac{(1-\pi)s_H}{(1-\pi)s_H + p\pi}\left(p(\beta_P b - c)H + (1-p)(\beta_P bL - Hc)\right)$$

If OIRA does audit after observing $x_A = H$ it receives in expectation

$$\frac{p\pi}{(1-\pi)s_H + p\pi}(\beta_P b - c)H + \frac{(1-\pi)s_H}{(1-\pi)s_H + p\pi}(\beta_P b - c)L - \kappa$$

Equating the two and solving for s_H yields

$$s_H = \frac{p\pi}{(1-\pi)}\frac{\kappa}{(H-L)(c - p\beta_P b) - \kappa}$$

■

Corollary 5. (Effect of increased agency liberalism on auditing). When a conservative OIRA faces liberal agencies, OIRA's audit rate increases in Agency liberalism.

Proof. $\frac{\partial}{\partial \beta_A}\frac{(H-L)(p\beta_A b - c)}{(H-L)(p\beta_A b - c) + k} = \frac{(H-L)pbk}{((H-L)(p\beta_A b - c) + k)^2} > 0.$ ■

The proposition may appear somewhat complex but is quite intuitive. First, if the Agency receives a dispositve cost-benefit analysis, it takes the action indicated by the analysis, either L or H. If it does not, it probabilistically "cheats" – that is, it sometimes offers $x_A = H$ even though OIRA would prefer it to offer $x_A = H$ absent a clear-cut cost-benefit study. In turn, OIRA never audits after the proposal $x_A = L$ (small regulations) and probabalistically audits after the proposal $x_A = H$ (large regulations). As indicated in the Corollary, OIRA keys the audit rate to the policy bias of the Agency so that large regulations from more liberal agencies are audited at a higher rate than large regulations from less liberal agencies. Sometimes OIRA catches cheating and re-sets a large regulation, making it small.

The Proposition implies that OIRA's auditing regime results in fewer proposals of large regulations than the Agency would enact if unconstrained.[14] In other words, OIRA auditing creates a "deterrence effect" in

14. To see this, note that the "cheating" probability $s_H < 1$.

the Agency. This is a separate impact of OIRA's reviews from simply revising audited proposals. Further note that auditing by a conservative OIRA does not induce a "chilling effect" in liberal agencies in which they refuse to issue regulations at all: they may "go small," but they still offer a regulation rather than do nothing.

We now turn to a liberal OIRA facing a conservative Agency.

PROPOSITION 6. (Liberal OIRA and conservative Agency) //Type it out//

This proposition is much more complex and is arguably quite counter-intuitive. First, consider the interaction between a liberal OIRA and a moderately conservative Agency. If the Agency receives a dispositive cost-benefit analysis, it takes the action indicated by the analysis, either L or H. But if the agency does not receive a dispositive analysis, it sometimes "cheats" and offers $x_A = L$ but sometimes offers $x_A = H$. In other words, OIRA's auditing regime induces a "stimulative effect" on the production of large rules in these moderately conservative agencies, compelling them to offer large regulations when they would not do so if left to their own devices. For these agencies, OIRA does not audit large regulations at all (since either the Agency received a dispositive analysis or it did not but is acting as OIRA would wish it to). This is an example of the "Nixon goes to China Principle" evident in other auditing games. Rather, OIRA directs its audits toward *small* regulations. And, it keys its audit rate to the bias of the Agency, more frequently auditing more conservative agencies. Now suppose the Agency is a solidly conservative agency. Again, if it receives a dispositive cost-benefit analysis, the Agency takes the appropriate action; so even these agencies sometimes offer large regulations. But if such an agency did not receive a dispositive cost-benefit analysis, it sometimes offers $x_A = L$ but sometimes offers $x_A = 0$; it does not offer $x_A = H$. In other words, OIRA's audit regime does not have "stimulative effect" on large regulations and sometimes has a "chilling effect" on small regulations. Despite this, auditing regulations from these agencies is worthwhile for OIRA, because it will find small regulations that it will re-set into large ones. However, the chilling effect acts as a brake on OIRA's audits of these agencies, so much so that OIRA's audit rates actually fall for more conservative agencies.

III.D. Example

//Do a numerical example to make things clearer, including pictures of the optimal audit rates by agency bias //

IV. Data

IV.A. Sources

Our empirical study focuses on OMB central clearance under EO 12866 and its successors. The data cover 16 years, 1995 to 2010.[15] We rely primarily on two data sources. The first is the Semi-Annual Unified Agenda of Federal Rulemaking (UA), which is a record of all agency rulemaking activities in the federal government. As discussed above, the UA contains summary information about regulations regardless of what stage of the rulemaking process they are in, ranging from early drafts to publication of final rules in the *Federal Register*.[16] Our second data source is the Regulatory Information Service Center database of OIRA activity (the OIRA data), which keeps a record of all the regulations audited by OIRA. Within the Unified Agenda, each regulation is given a unique identifier, known as the Regulation Identification Number (RIN).

We merged the two data sets together using each regulation's RIN as follows. We first took the entire UA database and determined the first time a RIN was mentioned. Oftentimes, a regulation first appears in the UA at the proposed rule stage or pre-rule stage. However, it is not uncommon for a regulation to first appear as a final rule (in most instances, this is probably because the final rule is a direct or interim final rule, allowing agencies to bypass the proposed rule stage and the subsequent notice and comment period). Regardless of what stage a regulation was in, we took the first mention of each regulation in the UA and coded whether it occurred during the Clinton, Bush, or the Obama administrations. We treat the resulting subgroup of regulations associated with each administration as the universe of regulations from which an administration could audit.

After we assembled the UA data in this fashion, we took the OIRA database and similarly selected the first instance of OIRA review for each regulation. As discussed above, OIRA can review a regulation during the pre-rule, proposed and final stages of the rulemaking process. Most commonly, OIRA first reviews a regulation during the proposed rule stage, and then again at the final rule stage. However, we gather data only on the first instance of OIRA review. As with the UA data, we coded whether the first instance of OIRA review for each regulation occurred under Clinton, Bush, or Obama. We then merged the data first by each administration and then by the RIN number. Thus, we exclude from our analysis those regulations that were issued by one administration but reviewed by another, although analyzing such regulations is a fruitful area of research in the study of presidential transitions (O'Connell 2011).

15. We start with 1995 because this is the first year in which reliable data on the economic significnance of regulations exists.
16. There are a small number of regulations (about 200) which we have been unable to find in the UA, but which nonetheless were reviewed by OIRA. Absent the covariates available for the other regulations, we exclude them from our statistical analysis.

Figure VIII and Table II indicate the agencies included in our analysis.[17]

From the Unified Agenda, we collected 5 covariates specific to each regulation. Agencies are required by law to record whether each regulation: (1) is economically significant, (2) requires a "regulatory flexibility" analysis or (3) imposes unfunded costs on state and local government. In addition, we were also able to conclude from the UA data whether the agency issued an Advanced Notice of Proposed Rulemaking (ANPRM) for a particular rule and whether the rule bypassed the notice-and-comment period. In our view, each of these five variables is a plausible marker for the intensity, or impact, of a regulation and thus a cue for regulatory auditing. Thus, we create a corresponding indicator variable for each of these five pieces of information for all regulation entries in the UA. We now provide some detail on each covariate.

Under EO 12866, there is some flexibility as to what constitutes an economically significant regulation. In general, EO 12866 defines regulations with annual economic costs in excess of $100 million annually to be economically significant. Yet, the order also allows rules to be designated as economically significant—regardless of cost—if they "adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities." Thus, agencies may designate a regulation as economically for a variety of reasons, as can OIRA. EO 12866 requires OIRA to review economically significant regulations, but OIRA also has the authority to re-classify a regulation's economic significance. In practice, OIRA reviews a considerable number of regulations that agencies do not report to be economically significant. Conversely, OIRA declines to review some regulations that agencies report as economically significant. Note that we employ the agency's designation, not OIRA's, as the latter can be seen as a post hoc justification for OIRA's auditing decision rather than a pre-auditing cue of regulatory intensity.

The Regulatory Flexibility Act of 1980 requires agencies to assess whether new federal regulations will have an effect on small enterprises. If an agency indicates that the regulation will affect small business, agencies must complete a regulatory flexibility analysis to determine whether the best available regulatory options have been chosen. Similarly, the Unfunded Mandates Reform Act of 1995 requires agencies to estimate the costs of any regulation that will result in an economic burden for lower levels of government.

When agencies promulgate rules, they often have some procedural flexibility regarding the scope of interest group involvement they permit. On the side of inviting more involvement, agencies can voluntarily elect to introduce a rule to the public as an ANPRM, which sends an early warning to OIRA and interest groups about what the agency has planned. Our view is that agencies issue ANPRMs when the rule is more likely to be controversial, thus agencies desire input from potentially affected parties early in the process. For each

17. Under EO 12866, OIRA does not review regulations from independent regulatory commissions. Therefore, we removed these regulations from the UA database.

rule, we code whether an ANPRM was issued. In addition to issuing early notices of rulemaking, agencies can instead choose an abbreviated rulemaking procedure. Agencies are allowed to issue rules that bypass the NPRM (and ANPRM) stage altogether and move directly to the final rule stage, effectively avoiding all formal periods of interest group involvement. Typically, such rulemakings are referred to as Direct Final rules and Interim Final rules. In the UA data, we code whether or not a particular regulation advanced to final rule status without an ANPRM, NPRM or a comment period. Our view is that such rules are relatively less controversial and thus agencies feel safe fast-tracking the regulation. For more information on how we used the UA data, please see the data appendix.

A critical variable is agency ideology. We employ the measures developed in [Clinton and Lewis 2008]. The data are derived from a large survey of expert observers and specifically inquired about perceived agency culture. Thus, the variable may be seen as a measure of the liberal/conservative nature of the agency's mission. Because agency cultures should be stable over time, we employ this measure across the entire time period under study.

Tables I and II indicate summary data on the variables used in the analysis.

//Insert Tables I about here. Table II is summary statistics on variables by agency //

IV.B. Number of Regulations by Agency

Table II indicates the total number of regulations issued by agencies in each of the three administrations. Consistently, several agencies were extremely heavy issuers of regulations; many other agencies issued far fewer regulations. The heavy issuers include the Commerce Department, the Treasury Department, the Department of Transportation, the Department of the Interior, the Agriculture Department, the Environmental Protection Agency, the Department of Health and Human Services, and the Department of Homeland Security. Light issuers, among those we study, included the Energy Department, the Education Department, and the Small Business Administration.

Perhaps even more important than the total number of regulations issued was the number of "big ticket" or relatively intense regulations issued. This measure paints a somewhat different picture than does the simple number of regulations issued. For example, while Commerce, Treasury, and Transportation issued many regulations, relatively few of these were economically significant. In contrast, EPA, DHHS, and DHS not only issued many regulations; they issued many economically significant ones as well.

IV.C. Agency Ideology

// Insert Figure VIII about here – Agency Ideology //

The Clinton-Lewis data reveal several distinct ideological clusters or groupings, as shown in Figure VIII. About a dozen agencies stand out as particularly liberal. These include such "likely suspects" as the Commission on Civil Rights, the EEOC, and the National Endowment for the Arts. Among this group, heavy regulators include the Labor Department, HUD, the Department of Health and Human Services, the Department of Education, and the Environmental Protection Agency. Five agencies (aside from OMB itself) stand out as particularly conservative: the Department of Defense (in a class by itself), the Commerce Department, the Small Business Administration, the Treasury Department, and the Department of Homeland Security. The remainder of the agencies fall into an intermediate, moderate spectrum, ranging from the Agency for International Development (on the more liberal side) to the Interior Department (on the more conservative). In our view, the Clinton-Lewis estimates have a high degree of face plausibility.

IV.D. Agency Audit Rates

We define an audit rate for an agency as the proportion of regulations appearing in the UA that were reviewed at least once by OIRA. For example, the EPA initiated 1,402 regulations during the period we study, of which 370 were reviewed by OIRA, resulting in an audit rate of 26 percent. Figure XX indicates, for the 35 agencies and 3 presidential administrations we study, the percentage of issued regulations that OIRA opted to review—the agency audit rate. Audit rates varied widely across agencies, and often varied dramatically across the three administrations. Agency audit rates were near zero during the Clinton Administration for such liberal agencies as the Commission on Civil Rights and the Peace Corps. But rates were about 75% during the Bush Administration for the Federal Mediation and Reconciliation Service, and nearly that high for a variety of other liberal agencies. The Clinton Administration's overall audit rate of 19% was about one-quarter lower than the overall audit rate during the Bush Administration, 25%.

//Add this Figure,//

V. Modeling OIRA's Targeting Decisions

We now turn to OIRA's targeting decisions. We are primarily concerned with per-regulation auditing probabilities, as a reflection of the strategic interaction between OIRA and the agencies. However, to provide a simple overview of the OIRA-agency interaction, we also example agency audit rates.

V.A. Agency Audit Rates

// Insert Figure IX – Audit Rates by Agency Ideology and Size of Regulations, Three Administrations //

// Note to the reader: IF YOU UNDERSTAND THIS PICTURE, YOU GET THE ESSENCE OF THE EMPIRICAL RESULTS //

Figure IX indicates important patterns in the agency auditing data. Indeed, this simple figure displays most of the important structure in the data. Shown in each panel is a scatterplot of the agency auditing rate as a function of agency ideology. Also shown is the fit from a simple OLS regression. The top row shows the data from the Bush Administration, the middle row the data from the Clinton Administration, and the bottom row the data from the first two years of the Obama Administration. The left-hand panels focus on economically significant regulations while the right-hand panels focus on non-economically significant regulations. As shown, the Bush Administration audited liberal agencies much more heavily than it did conservative agencies. It tended to audit more economically significant regulations more heavily than it did less intrusive ones, and did so for all agency ideologies. The audit rates for large regulations from liberal agencies were particularly high. In contrast, the Clinton Administration did not appear to key agency audit rates to agency ideology – they are ideologically "flat." That administration audited non-economically significant regulations much less heavily than it did economically significant regulations. The early Obama Administration, like the Clinton Administration, seemed to eschew ideologically targeting of its reviews – again, they are ideologically flat. And, it appeared to restrict its reviews almost exclusively to economically significant regulations.

We extend this analysis by using OLS to estimate an auditing equation.

$$\frac{z_{ij}}{y_{ij}} = a + b_1\text{ideology}_j + b_2\text{bush}_i + b_3\text{n.regs}_{ij} + b_4\text{prct.econ.sig}_{ij} + b_5\text{ideolgogy}_j \times \text{bush}_j$$

Where z_{it} is the number of of audited regulations by administration i for agency j and y_{ij} denotes the total number of regulations issued. Thus, our dependent variable is the proportion of audited regulations for each administration and agency. We estimate this equation for all regulations, for economically significant regulations, and for non-economically significant regulations.

// Insert Table III about here: Regressions on agency level data //

The results are shown in Table III, and largely underscore the structure shown in Figure IX. Across all three models — whether we are looking at all of the data, or only those regulations that are economically significant or insignificant—the Bush Administration audited more regulations more intensely than did the Clinton and Obama Administration. Consider Model 1 in Table III. Strikingly, agency ideology strongly affects audit rates during the Bush Administration. The negative coefficient on β_5 indicates that the Bush OIRA audited liberal agencies more intensely than it did conservative agencies. (Recall that the variable for ideology is coded so that conservative agencies take on larger values.) The ideology variable has a mean of

about 0, so for a moderate agency at the midpoint of the distribution, Bush's overall audit rate is about 13 percentage points higher than that of the two Democratic administrations. The difference, however, is even more striking when one varies the ideology the agency. For an agency roughly one standard deviation more liberal than the average agency, the model indicates that the Bush OIRA audited that agency at an average rate 19 percent points higher than did the Democratic Administrations. For an extremely liberal agency, some two standard deviations from the mean, the model indicates that Bush audited at a rate 25 percent points higher than the Democratic Administrations.

V.B. Per Regulation Audit Rates

At the level of individual regulations, several of the key variables vary only across agencies (for example, agency ideology). Others, specifically the four measure of regulatory intensity, vary by regulation. This multilevel structure suggests a multi-level model (a random effects model) to gauge the impact of the regulation-specific variables and the agency co-variates simultaneously, incorporating random effects to control for all other time-invariant influences. This approach also allows the standard errors of the coefficients to reflect the varying number of observations for each agency, unlike the previous analysis. In agencies with few observations, the estimated agency effects borrow heavily from the overall effect estimated across all agencies [Gelman and Hill 2007]. In other words, the estimation uses information about the audit probabilities across all agencies in order better to estimate audit probabilities in agencies that promulgate few rules.

We focus on a varying intercepts model with agency-level predictors. In order to study OIRA's auditing strategy we estimate the following multi-level model:

$$
\begin{aligned}
(1) \qquad \Pr(y_i &= 1) = \text{logit}^{-1}\left(\alpha_{j[i]} + \beta_1 \text{economic} + \beta_2 \text{flex} + \beta_3 \text{govt} + \beta_4 \text{anprm},\, \sigma_y^2\right) \\
a_j &\sim N\left(\gamma_0 + \gamma_1 \text{ideology}_j,\, \sigma_\alpha^2\right)
\end{aligned}
$$

where the probability that OIRA will review regulation i from agency j is a function of four regulation-level covariates: whether the agency recorded the regulation as economically significant (*economic*), whether the agency was required to complete a regulatory flexibility analysis for the regulation indicating large impacts on small business (*flex*), whether the agency recorded that the regulation would impose economic costs on lower levels of government (*govt*), and whether the regulation was introduced first through an advanced notice of proposed rulemaking (*anprm*). Equation (1) also shows that the probability of review is a function of the ideology of the agency (*ideology*) that promulgated the regulation. We estimate this equation separately for each of the three administrations.

//Insert Table IV about here: Regression results for 3 administrations, multi-level model //

// We will provide more discussion but the results largely confirm the expectations from the agency-level analysis //

VI. Impact on the Agencies

// We have decided that a careful analysis of the impact of regulatory review on agency production of regulations requires much more work than we can provide in this paper. So, we plan to remove this section entirely. For purposes of discussion, however, we provide a simple analysis. First we show some simple scatterplots, indicating the level of production of significant and non-significant regulations in the three administrations, for liberal and conservative agencies. This is Figure X.

We then undertake the following analysis for the number of economically significant regulations produced by each agency. For each agency we create a indicator; we do the same for each year; and then we create an agency-Bush Administration effect. (We do this using a multi-level model, so that the effects are random rather than fixed effects, but the differences are small). Thus, we control for average level of production in each agency across administration; we control for government-wide annual effects including presidential cycles and secular increases. The Bush-agency effect indicates the impact of that administration relative to the Democratic ones on specific agencies, e.g., whether there was an apparent deterrence effect or a "rebound" from Democratic stimulus for a given agency. However, any effects include both the effect of appointments and OIRA review. Untangling the separate effects is a challenge for future research. The coefficient on the interaction term (corresponding to the number of economically significant regulations is show as the final figure, Figure XI, in the paper. Figure XI suggests a deterrence effect for the Department of Education, and re-bound effects in DOT and Agriculture. The very large increase in the Interior Department stands out; we have no ready explanation for it.

In our view, a plausible analysis requires a well-performing model of agency production of regulations to establish a baseline against which to measure the effects of regulatory auditing and agency politicization. But there is little state-of-the-art on how to build such a model. We leave this to future work. //

VII. Discussion and Conclusion

The theoretic model highlights a radical asymmetry in the strategies of regulatory auditing for conservative and liberal presidents. The model suggests that both should use OIRA to offset policy biases in the agencies – the agencies' tendencies to over- or under-regulate relative to the desires of an informed president. But accomplishing this aim is much more straightforward for a conservative President than a liberal one. In

particular (the theory suggests) OIRAs serving a conservative president should target large regulations from liberal agencies, mostly eschewing review of conservative agencies and small regulations across the board. The payoff from this strategy is not simply "fixing" specific regulations; rather, the aim is to create a deterrence effect in liberal agencies so that they do not "over-regulate" in the first place. In contrast, OIRAs that serve liberal presidents (the model suggests) should aim instead at a stimulative effect on moderately conservative agencies, induced by targeting small regulations that might better serve the president's policy goals if the regulations were more ambitious. Again, the payoff is much greater than "fixing" a relative handful of reguations; rather, the point is to encourage conservative agencies to be more attentive to the social gains of regulation in the first place. However, the model notes, this type of stimulative review must be done carefully lest it induce a chilling effect in conservative agencies, leading to no regulatory effort at all.

We then undertook what appears to be the first systematic review of OIRA's regulatory targeting decisions. The empirical patterns in regulatory auditing by the Bush Administration's OIRA broadly resemble what one might expect from a conservative president, in light of the theoretical model. The observed patterns make a great deal of sense, If liberal agencies committed to their mission sometimes pushed forward even in the face of uncertain evidence, and a conservative president used OIRA as a means to restrain them. Given the Republican auditing strategy, an obvious question becomes: Did it actually create a deterence effect in liberal agencies? We see this as an important topic for future research.

In contrast to the strategy identified by the model, the Clinton and early Obama OIRA's did not appear to use OIRA review to offset under-regulation by conservative agencies – the Democratic OIRAs did not target small regulations from moderately conservative agencies. Nor did they particularly target large regulations from conservative agencies, as a purely partisan view might expect. Instead, they targeted large regulations across the board without particular regard to the ideological orientation of the agency. This pattern would make sense if one did not regard under-regulation as a serious social problem, and further believed conservative agencies were just as likely to "over-regulate" as liberal ones. It is also a strategy that facilitates political credit-claiming about "saving" money or preventing costs from over-regulation. This political "credit-claiming" use of OIRA was not considered in our auditing model, which focused on the actual social costs and benefits of regulation, albeit evaluated in a partisan context.

An obvious issue is the incentive effects created in the agencies by this unexpected Democratic auditing strategy. One might expect it to induce a degree of regulatory deterrence in liberal agencies. It might further enhance the reluctance of conservative agencies to regulate. Again, we see these as interesting topics for future research.

One should proceed very cautiously on the basis of a single model of regulatory auditing, a single empirical

study of targeting decisions, and very little evidence of the effect of review on agency efforts. Nonetheless, it may be worth pointing out some of the policy implications, if only as a spur to future research.

First, consider OIRAs in service to a conservative President. The data suggest that conservatives have identified effective auditing strategies, at least as suggested by a simple theory of regulatory auditing. If so, the principle issue for such OIRAs is probably less improving targeting per se than increasing the "multipier effect" from audits: are there ways to boost the "deterrence effect" of audits and if so, would doing so be desireable? Two methods suggest themselves: first, decrease the cost of audits for OIRA; second, increase the penalties within the agencies when OIRA down-checks a proposed regulation. The first may be accomplished by increasing OIRA resouces. The second could work by, for example, tying job evaluations of employees in the agencies to the outcomes of OIRA audits [Jordan 2008].

Increasing the effectiveness of centralizing control by conservative OIRAs would probably not be costless. Although the simple model considered here abstracts from the labor market available to agency employees, increased OIRA auditing and the use of high powered incentives on agency personnel would probably degrade the attractiveness of professional employment in the public sector, particularly in liberal agencies. It would be surprising if talented personel in those agencies did not tend to exit the agencies at higher rates. if so, more vigorous and effective central review of the regulatory state might induce the control-competence tradeoff highlighted in recent work on politicization of the bureaucracy [Lewis 2008]. How conservative presidents might weigh this tradeoff is an open question.

The policy implications for OIRAs in service to Democratic presidents are more speculative. Perhaps such presidents are content with what one may interpret as a credit-claiming performance in regulatory review. But there might be opportunities for liberal OIRAs to think creatively about using review to create stimulative effects in moderately conservative agencies such as the Department of Agriculture or the Commerce Department. In this regard, the model has implications for policy reforms suggested by some actue observors of OIRA. For example, some have advocated more aggressive use of so-called OIRA "prompt letters" addressed to agencies that fail to issue regulations [Kagan 2001]. Little attention has been paid to targeting prompt letters. The model points to how this targeting might work, and may suggest that such letters could be used by liberal OIRAs to offset chilling effects from centralized review of conservative agencies. However, optimally targeting prompt letters probably requires considerable substantive expertise in OIRA, expertise that it may simply lack. Other observers have suggested that OIRA might beneft from "fire alarm oversight" of agencies by outside groups [Livermore and Revesz 2012]. But, which groups overseeing which agencies? The analysis here tends to suggest that liberal OIRAs might indeed profit from firealarm oversight by liberal groups focused on conservative agencies, especially if these groups tried to alert OIRA about missed regulatory opportunities. Whether such groups actually exist and have the necessary skill to

do this kind of oversight is an open question.

Appendix I

The appendix fragment is used only once. Subsequent appendices can be created using the Section Section/Body Tag.

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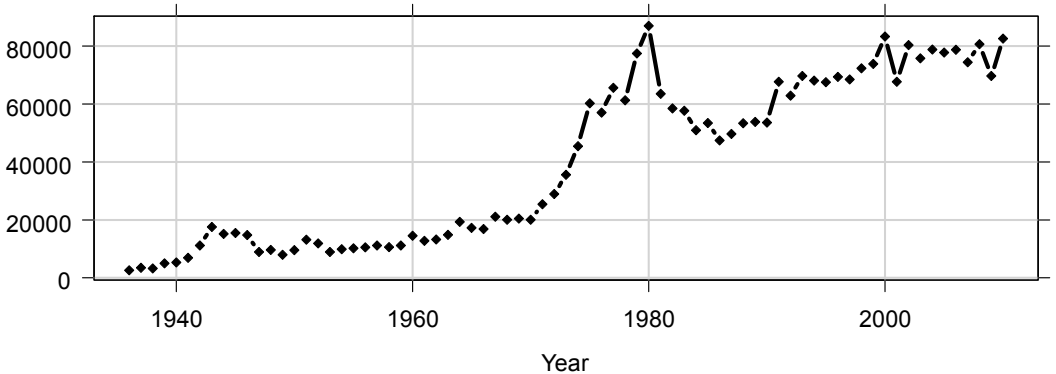


Figure I: Number of Pages Annually in the Federal Register 1936-2010

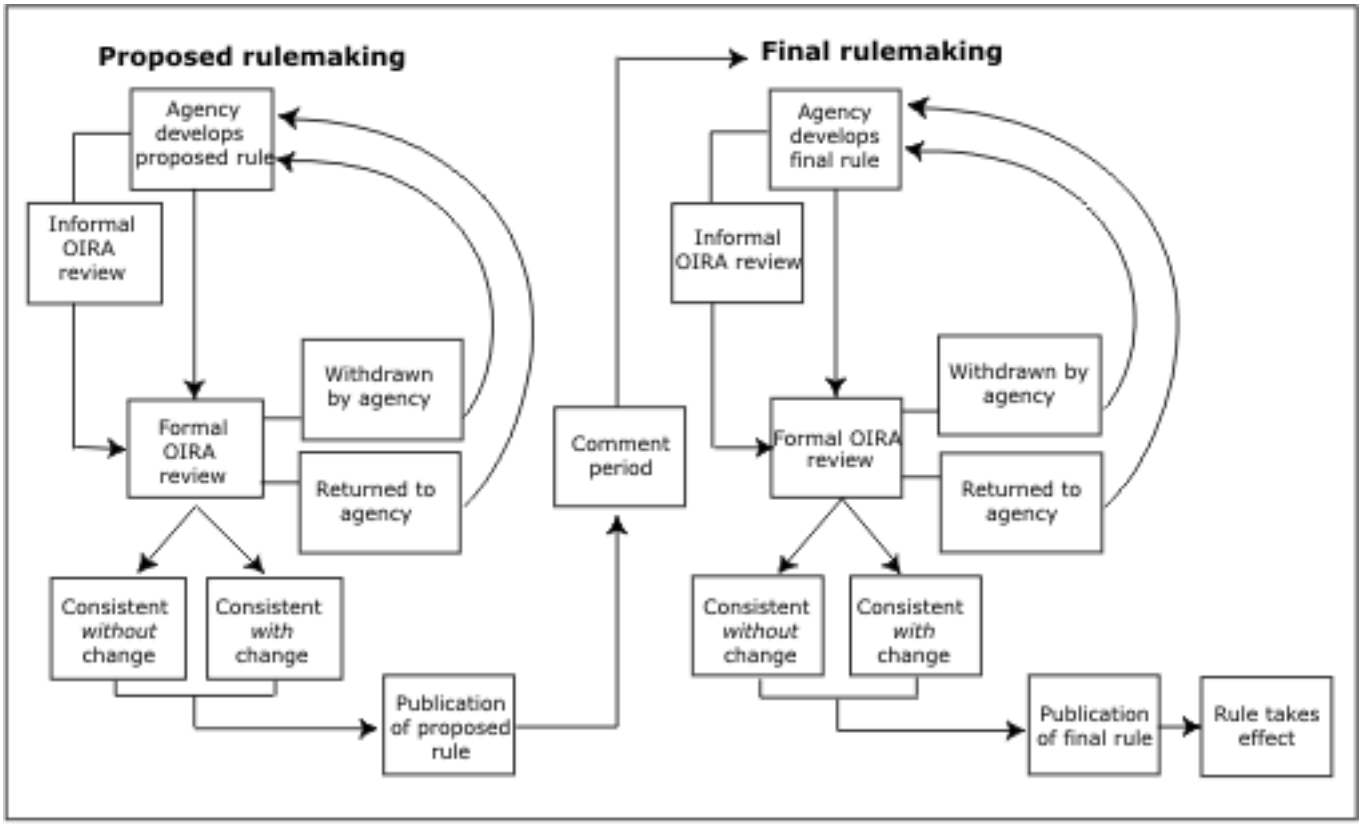


Figure II: OIRA and the Regulatory Auditing Process

Figure III: Marginal benefit and marginal cost curves: Where do benefits fall?

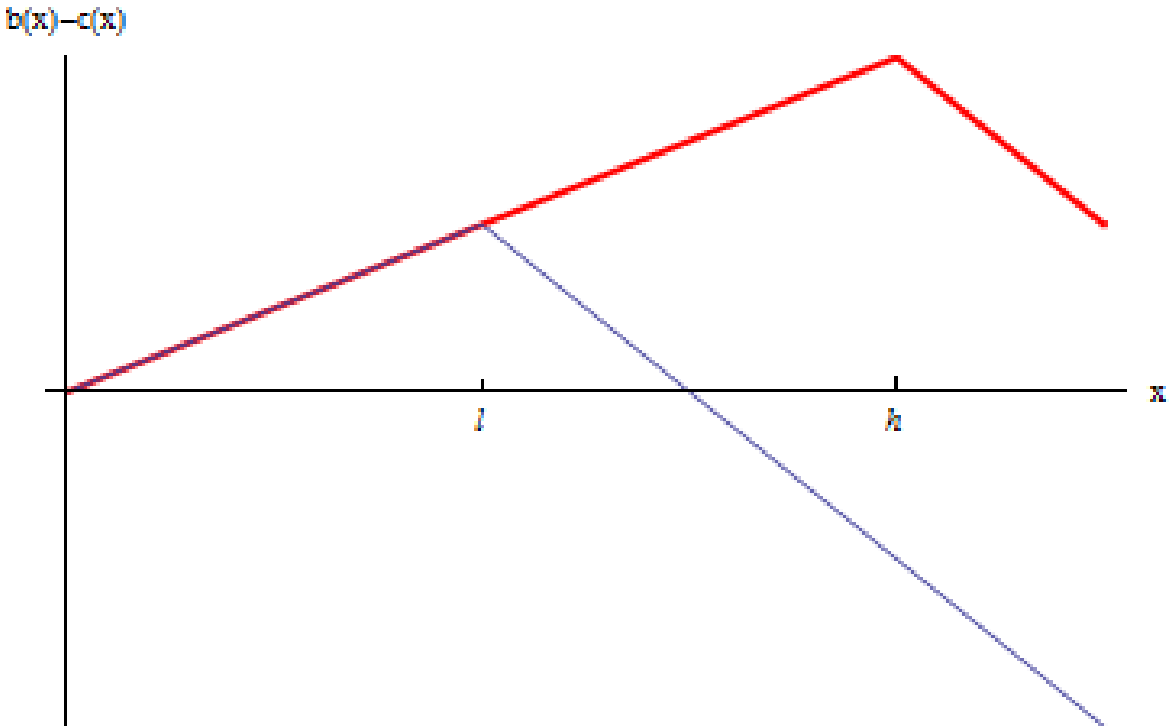


Figure IV: Net benefits depend on the state of the world: uncertainty induces a lottery at high levels of regulation.

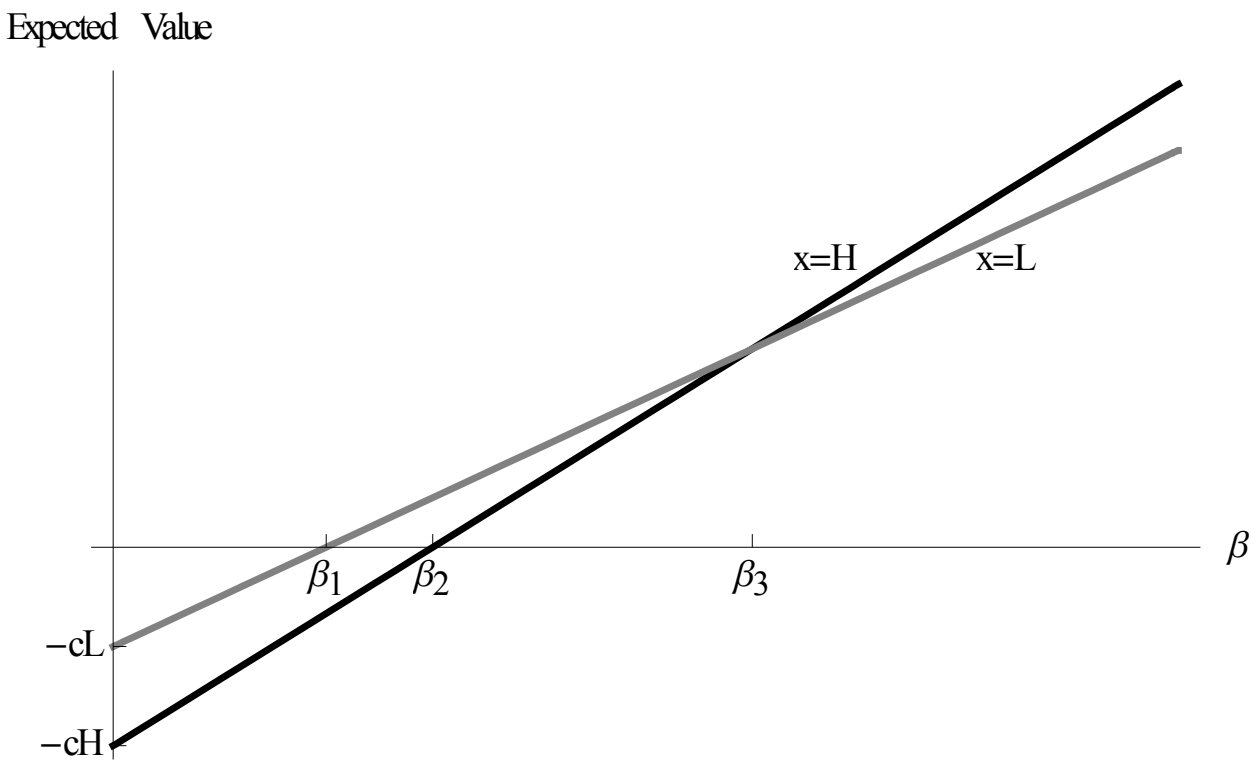


Figure V. Characterizing Agency Policy Bias

Figure VIII. Agency Ideologies

Figure IX. Audit Rates by Agency Ideology and Economic Significance of Regulation

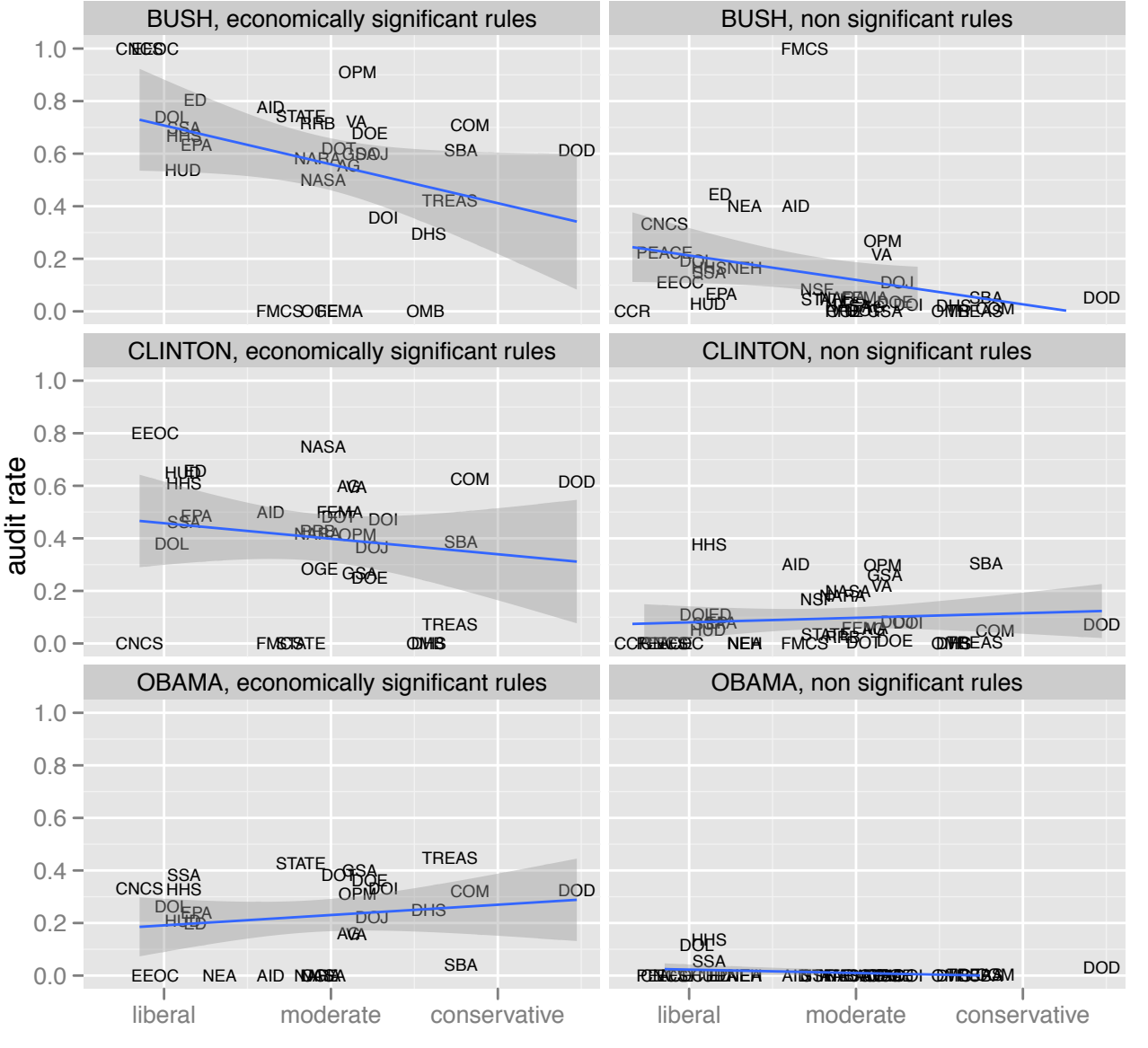


Figure X. Agency Production of Regulations by Agency Ideology and Economic Significance of Regulation

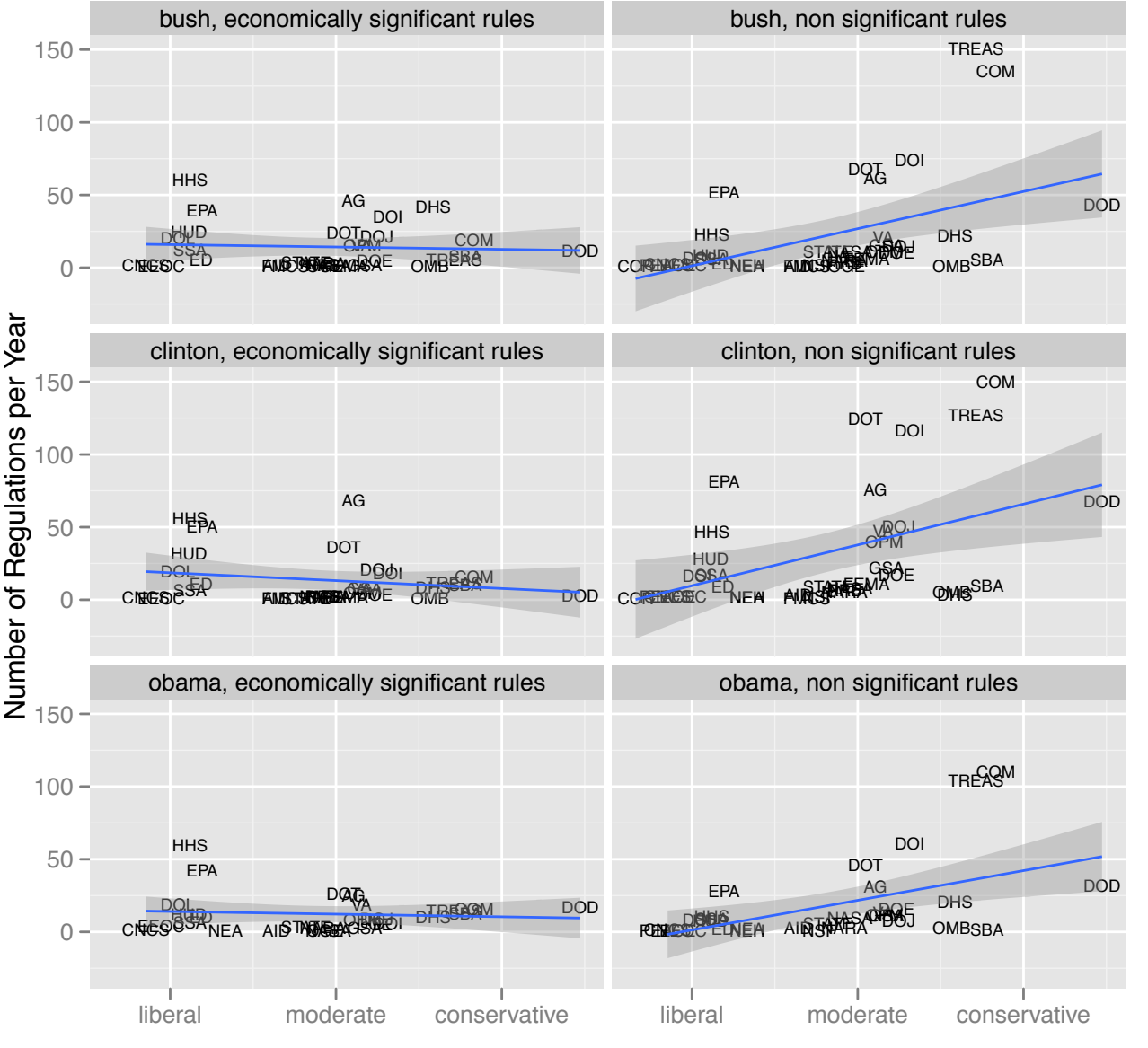
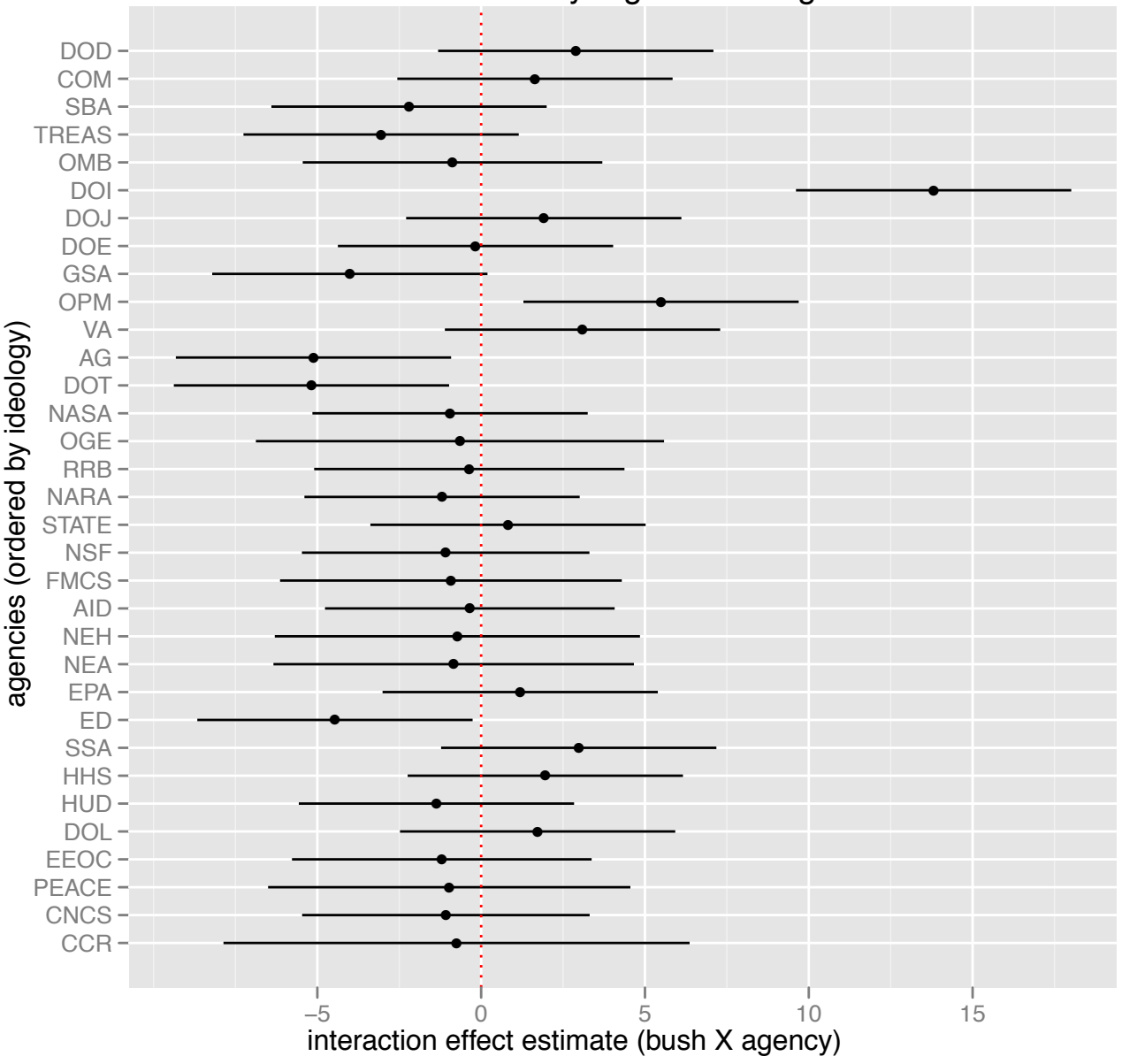


Figure XI: Effect of Bush (Republican) Administration on Number of Economically Significant Regulations



Summary Statistics

	min	max	mean
review	0.00	1.00	0.21
ideology	-2.010	2.210	0.21
econ.sig	0.00	1.00	0.32
reg.flex	0.00	1.00	0.054
gov.affected	0.00	1.00	0.23
anprm	0.00	1.00	0.037
no.nprm	0.00	1.00	0.28
year	1995	2010	2002

Table I: We report the min, max and mean values across the entire dataset. In order, the variables refer to: (1) the number of regulations reviewed by OIRA; (2) the ideology of each agency; (3) whether a regulation was reported by the agency as economically significant; (3) whether the regulation required a regulatory flexibility analysis; (4) whether any level of government (state, local, federal etc.) was expected to be affected by the regulation; (5) whether the agency first issued the regulation as an Advanced Notice of Proposed Rulemaking (ANPRM) (6) whether the agency bypassed the NPRM stage and (7) the year that the regulation was initiated.

	agency	n.regs	review (%)	econ.sig (%)	anprm (%)	reg.flex (%)	gov.affected (%)	ideology
1	Agency for International Development	3.1	46	36	4	2	7	-0.54
2	Commission on Civil Rights	1.0	0	0	0	0	50	-2.01
3	Corporation for National and Community Service	2.7	28	31	10	0	48	-1.72
4	Department of Agriculture	115.1	26	45	5	5	19	0.16
5	Department of Commerce	154.7	9	11	5	8	12	1.25
6	Department of Defense	59.6	15	17	1	3	65	2.21
7	Department of Education	11.5	57	75	9	0	2	-1.22
8	Department of Energy	17.6	13	21	4	0	23	0.35
9	Department of Health and Human Services	88.8	49	68	4	11	28	-1.32
10	Department of Homeland Security	40.1	11	65	5	3	22	0.88
11	Department of Housing and Urban Development	41.2	36	65	3	2	15	-1.33
12	Department of Justice	46.8	32	51	3	3	19	0.37
13	Department of Labor	30.4	43	66	6	8	21	-1.43
14	Department of State	12.1	16	21	8	1	22	-0.27
15	Department of Transportation	115.2	14	26	5	2	9	0.07
16	Department of Veterans Affairs	42.4	36	36	1	1	4	0.23
17	Department of the Interior	113.2	12	23	4	2	32	0.47
18	Department of the Treasury	144.2	2	5	3	5	8	1.07
19	Environmental Protection Agency	103.5	25	43	5	5	43	-1.21
20	Equal Employment Opportunity Commission	2.5	28	35	0	2	72	-1.58
21	Federal Emergency Management Agency	10.7	11	12	3	4	25	0.08
22	Federal Mediation and Conciliation Service	1.0	33	33	22	0	11	-0.46
23	General Services Administration	21.1	13	17	0	1	86	0.26
24	National Aeronautics and Space Administration	10.0	16	14	6	1	11	-0.07
25	National Archives and Records Administration	6.4	14	21	1	2	56	-0.12
26	National Endowment for the Arts	1.6	11	4	6	0	31	-1.00
27	National Endowment for the Humanities	1.7	6	0	0	0	28	-1.00
28	National Science Foundation	1.7	9	0	0	0	50	-0.35
29	Office of Government Ethics	1.7	14	92	0	0	100	-0.10
30	Office of Management and Budget	3.5	0	2	24	4	51	0.85
31	Office of Personnel Management	32.1	47	38	1	0	2	0.24
32	Peace Corps	1.9	19	0	12	0	44	-1.72
33	Railroad Retirement Board	5.8	25	30	0	2	79	-0.12
34	Small Business Administration	15.5	36	63	4	37	19	1.17
35	Social Security Administration	20.2	36	52	3	1	12	-1.32

Table II: Summary statistics on variables by agency. Each column represents per-year averages. The number of regulations (n.regs) is simply the average number per year. The ideology column is each agency's ideology, which does not vary over time. The remainder of the columns are the average proportions of the annual count of regulations that are either reviewed by OIRA (review), economically significant (econ.sig), initiated as "advanced notices of proposed rulemaking" (ANPRM), required regulatory flexibilility analysis (reg.flex), or affected levels of government (gov.affected)

Percent of Agency Regulations Reviewed by OIRA

	all regs	non-econ. sig.	only econ. sig.
(Intercept)	0.01	0.06**	0.28***
	(0.03)	(0.02)	(0.04)
ideology	−0.02	0.01	0.00
	(0.02)	(0.02)	(0.03)
bush	0.13***	0.06*	0.24***
	(0.03)	(0.03)	(0.05)
n.regs	0.04	−0.03	0.29
	(0.03)	(0.04)	(0.16)
prct.econ.sig	0.31***		
	(0.05)		
ideology × bush	−0.06*	−0.06*	−0.10
	(0.03)	(0.03)	(0.05)
R-squared	0.49	0.14	0.27
N	101	99	87

Table III: Regressions with agency-administration level observations. The Bush variable is an indicator for this administration (with Obama and Clinton combined as the base administrations). The number of regulations (n.regs) is measured in hundreds of regulations. As always, larger values on the ideology variable denote more conservative agencies.

Estimating the Probability of an OIRA Audit

	Bush	Clinton	Obama
ideology	-0.53^{**}	-0.14	0.03
	(0.16)	(0.18)	(0.11)
econ.sig	3.52^{***}	2.21^{***}	3.81^{***}
	(0.09)	(0.07)	(0.35)
reg.flex	0.08	-0.15	
	(0.18)	(0.13)	
gov.affected	-0.01	0.02	-0.02
	(0.09)	(0.09)	(0.22)
anprm	0.76^{***}	0.61^{***}	1.33^{***}
	(0.17)	(0.13)	(0.38)
no.nprm	-0.26^{**}	-0.04	0.19
	(0.09)	(0.08)	(0.23)
Log-likelihood	-2621.14	-2895.31	-383.35
N	8505	7478	1633
Group (Agency)	35	35	32
Group (Year)	8	6	2

Table IV: Multi-level logit model run for each administration, where each observation is a regulation. A separate intercept (or random effect) is estimated for each agency and each year. The regulatory flexibility indicator (reg.flex) is missing for Obama because none of Obama's regulations were listed as needing one.