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REGULATORY SYSTEM DESIGN: SOME SOLUTIONS TO THE DELEGATION PROBLEM

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ABSTRACT

We present solutions to each of the major delegation problems that arise when elected officials delegate rulemaking authority to government agencies. These problems include principal-agent issues, monopoly provision, information asymmetry, and tragedy of the commons. Rather than presenting our solutions to these problems as incremental changes to an existing system, we discuss how a regulatory system built from scratch might avoid these problems. Following our problem-specific solutions, we present a detailed structure of a regulatory process that alleviates many delegation problems simultaneously. This structure better aligns the incentives of regulators with those of legislators and with the well-being of the public. We intend the solutions and process structure presented here not to serve as a collection of proposed changes but as guideposts for those hoping to make any part of the regulatory system better attuned to the needs of the populace.

JEL codes: K23, L51, Q58

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Regulation is the delegation of a specific set of functions of government—usually, lawmaking and enforcement—from one level of a governmental hierarchy to another level or to an external party. While regulation and regulatory systems are not inevitable features in all societies, casual observation suggests that nearly all modern formalized governments engage in some form of delegated lawmaking. Such delegation is typically accompanied by formalized rules and procedures, just as contracts between private parties contain stipulations and conditions. Over time, a government that engages in regulation accumulates a multitude of rules and procedures related to the delegation of its functions. A snapshot in time of this set of rules and procedures is effectively that government's regulatory system.

Studies of regulation, regulatory processes, and administrative law almost always begin by examining the systems that existed in various jurisdictions at some point in time. One common approach is to explain particular characteristics of the system and present a diagnosis and ideas for improvements of those characteristics based on their capacity for leading to intended outcomes. For example, McCubbins, Noll, and Weingast[1] studied the degree to which democratically elected officials are able to exert control over bureaucrats in the existing US regulatory system. In contrast, studies of constitutions, lawmaking processes, and constitutional law examine how a governance system might be constructed so that it delivers the intended outcomes. Buchanan, for example, questioned the logic of assuming a collective or social rationality as a basis for assessing the results of policy choices.[2] Instead, Buchanan, along with later constitutionalist scholarship, seemed to argue for procedural analysis to

1. Matthew D. McCubbins, Roger G. Noll, and Barry R. Weingast, "Administrative Procedures as Instruments of Political Control," *Journal of Law, Economics, and Organization* 3, no. 2 (1987): 243–77.
2. James Buchanan, "Review: The Theory of Public Finance," *Southern Economic Journal* 26, no. 3 (1960): 234–38.

identify the right institutions for delivery of preferred outcomes, whatever they may be.[3]

We here apply the constitutional approach of this second group (i.e., examining how to design elements of an effective system from scratch) to the subject of the first (regulation and regulatory processes). The major problems of delegation will be discussed and solutions presented to each, not as incremental changes to an existing system, but as they would exist in a model regulatory system built from scratch. Some of these solutions resemble elements of current regulatory systems and existing proposals for incremental change; others include new elements or propose combining existing elements or proposals in new ways. We also discuss how to structure an effective regulatory process that alleviates many problems of delegation simultaneously.

Our solutions and regulatory process structure are primarily informed by agency theory, information theory, transaction cost economics, and public choice economics. Rather than consider how well the rules and procedures of existing regulatory systems fare relative to some performance metric, we consider what institutions need to exist in order to overcome many of the problems that are common in principal-agent contracting and public choice. For simplicity, we consider delegation to include only the design of regulations. We therefore exclude enforcement or other possibly delegated functions. More precisely, we assume that enforcement will always occur without discretion and to the degree specified by the relevant regulations.

To develop the solutions and regulatory process, we first consider how a theoretical regulatory agency would produce and manage a set of rules related to the area in which it was delegated authority, if that agency's goals were to generate useful information for the principal and to design the rules according to criteria articulated by the principal.[4] We then explain what could go wrong, drawing on the literature on agency theory, public policy, and management. Some potential problems that we explore include principal-agent issues, such as shirking, mission drift, and agency capture; one-sided and asymmetric information; and regulatory accumulation. For each problem we identify, we offer multiple recommendations that, if incorporated in the design of the system, could avoid or at least partially offset the negative consequences of these issues. We then present a broad discussion of a model regulatory process that further alleviates

3. Amartya Sen, "Rationality and Social Choice," *American Economic Review* 85, no. 1 (1995): 1–24.
4. While we generally assume the principal's goal to be the maximization of social welfare, the institutions in our model regulatory system could be used equally well toward a different social objective.

these problems simultaneously. We conclude by discussing the applicability of our solutions and regulatory process to existing regulatory systems.

1. BACKGROUND

Normative and positive theories about the nature and intent of regulation vary widely and would lead to different regulatory systems. Normative theories in the economics literature traditionally focus on the public interest (defined as social welfare, following Pigou[5]), while some normative literature from scholars of public administration and public policy add social equity and social justice as potential objectives (for an example, see Frederickson[6]). Seminal positive theories of regulation include *capture theory*[7] and its more generalized form, the *economic theory of regulation*.[8] Other variants include Djankov et al.'s *tollbooth theory*,[9] Glaeser and Shleifer's *optimal precaution theory*,[10] and McChesney's theory on the political extraction of private rents.[11]

Of course, positive theories of regulation do not require systems to be intentionally designed with agency capture or rent delivery, for examples, as their objectives. Stigler's seminal study[12] was agnostic on whether capture is a feature or a bug of the regulatory system, but he pointed out that some regulatory outcomes are consistent with capture theory and that capture is more likely to occur under certain conditions. The possibility of subversion by stakeholders of a regulatory system that was intended to serve the public interest is, in fact, one of the focal points of this study.[13] However, subversion is not always necessary for a regulatory system—or at least some of the rules and procedures governing it—

5. Arthur Pigou, *The Economics of Welfare* (London: Macmillan and Co., 1920).
6. H. George Frederickson, "Public Administration and Social Equity," *Public Administration Review* 50, no. 2 (1990): 228–37.
7. George J. Stigler, "The Theory of Economic Regulation," *Bell Journal of Economics and Management Science* 2, no. 1 (1971): 3–21.
8. Richard A. Posner, "Theories of Economic Regulation," *Bell Journal of Economics and Management Science* 5, no. 2 (1974): 335–58; and Sam Peltzman, "Toward a More General Theory of Regulation," *Journal of Law & Economics* 19, no. 2 (1976): 211–40.
9. Simeon Djankov, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer, "The Regulation of Entry," *The Quarterly Journal of Economics* 117, no. 1 (2002): 1–37.
10. Edward L. Glaeser and Andrei Shleifer, "The Rise of the Regulatory State," *Journal of Economic Literature* 41, no. 2 (2003): 401–25.
11. Fred McChesney, "Rent Extraction and Rent Creation in the Economic Theory of Regulation," *Journal of Legal Studies* 16, no. 1 (1987): 101–18.
12. Stigler, "The Theory of Economic Regulation," 3–21.
13. We use the term "stakeholders" to include all parties that could be positively or negatively affected by regulation—including businesses, trade associations, politicians, and interest groups. Freeman's broad definition of a stakeholder is apt: "any group or individual who can affect or is affected by the

to achieve purposes other than the public interest. These other purposes could be part of the design. McCubbins, Noll, and Weingast,[14] for example, argued that the Administrative Procedure Act was designed so that Congress could stack the deck in crafting new legislation—that is, so that regulation would be executed in a way that maintains the delivery of benefits to the special interests intended by the legislation's authors long after those authors have left public office. Similarly, Cooper and West[15] and Posner[16] theorized that analytical procedures in the regulatory process required by executive order give the president increased control over regulatory decisions, regardless of whether economic efficiency is the president's goal. The accounts of numerous insiders confirm that this is in fact what happens.[17]

The incentives of agencies and the bureaucrats employed there may also countermand legislative intent. In the United States, for example, the civil service system limits agency managers' ability to select employees, shrinks the ability of employees to earn merit-based wage increases, and, most importantly, virtually guarantees lifetime job tenure. These features of American civil service that limit the performance incentives of individual bureaucrats arose because its architects assumed a neutrally competent cadre of apolitical experts would fill the bureaucratic ranks.[18] Instead, the bureaucratic ranks are filled with specialists rather than true experts, and regulatory policy often follows the whim of a partisan president. These specialists are also likely to have a skewed view of the importance of their own agency's mission, either because they developed such a view on the job or because they self-selected into the agency they felt was most important; consequently, they are more likely to go to extremes than legislators or those with a general perspective on policy.[19] Furthermore, where incentives

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achievement of the organization's objectives." R. E. Freeman, *Strategic Management: A Stakeholder Approach* (Boston: Pitman, 1984), 46. In our case, the organization is the regulator.

14. McCubbins, Noll, and Weingast, "Administrative Procedures," 243–77.

15. Joseph Cooper and William F. West, "Presidential Power and Republican Government: The Theory and Practice of OMB Review of Agency Rules," *Journal of Politics* 50, no. 4 (November 1988).

16. Eric A. Posner, "Controlling Agencies with Cost-Benefit Analysis: A Positive Political Theory Perspective," *The University of Chicago Law Review* 68, no. 4 (Autumn 2001): 1137–99.

17. Christopher C. DeMuth and Douglas H. Ginsburg, "White House Review of Agency Rulemaking," *Harvard Law Review* 99, no. 5 (1986): 1075–88; Elena Kagan, "Presidential Administration," *Harvard Law Review* 114, no. 8 (2001): 2245–385; Donald R. Arbuckle, "The Role of Analysis on the 17 Most Political Acres on the Face of the Earth," *Risk Analysis* 31, no. 6 (2011): 884–92; and John D. Graham, "Saving Lives Through Administrative Law and Economics," *University of Pennsylvania Law Review* 157, no. 2 (2008): 395–540.

18. Herbert Kaufman, "Emerging Conflicts in the Doctrines of Public Administration," *American Political Science Review* 50, no. 4 (1956): 1057–73.

19. Christopher C. DeMuth, "Can the Administrative State Be Tamed?," *Journal of Legal Analysis* 8, no. 1 (2016): 121–90.

do exist for bureaucrats, they often reward more regulation rather than better regulation. This leads to a greater regulatory output than is optimal.[20]

We deliberately constructed our solutions around two principles—that the mandate given the regulator serves the public interest, and that the regulatory system should maximize the chances of the regulator fulfilling its mandate. This choice serves two purposes. First, it simplifies the regulatory system's design to a single objective function—the fulfillment of a public interest-oriented mandate—which permits us to focus on the problems that arise in delegation rather than on whether a regulatory system could be designed to achieve other objectives. Second, although positive theories of regulation generally refute the notion that regulatory systems are designed with the public interest as the sole objective, elements of a model regulatory system focused on the public interest can serve as a standard for comparison to observed systems, especially if the creators of those observed systems indicate that their objective is also the public interest.

For the purposes of this paper, we defined the public interest as a default rule favoring overall welfare maximization, with ad hoc exceptions possible when decision makers can make a strong empirical case that some other social value should take precedence. This approach has been advocated by regulatory scholars[21] and appears to describe how welfarist approaches to regulation often work in practice.[22]

Some other assumptions were necessary. First, we assumed that the regulatory system would be partnered with a well-functioning and honest judicial system to develop common law solutions to property rights issues and resolve torts.[23] Second, because this thought experiment involved constructing elements of a regulatory system from scratch, legislation that would conflict with regulatory mandates could not exist. For example, the regulatory system would be constructed without the presumption of any sorts of limitations on liability that are sometimes created by legislatures for specific industries.

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20. William A. Niskanen, *Bureaucracy and Representative Government* (Chicago: Aldine-Atherton, 1971).

21. Some examples include Robert Hahn and Cass Sunstein, "A New Executive Order for Improving Federal Regulation? Deeper and Wider Cost-Benefit Analysis," *University of Pennsylvania Law Review* 150, no. 5 (2002): 1489–552; Graham, "Saving Lives Through Administrative Law and Economics," 395–540; and Jerry Ellig and Richard Williams, "Reforming Regulatory Analysis, Review, and Oversight: A Guide for the Perplexed" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2014).

22. *Cass Sunstein, The Cost-Benefit Revolution (Cambridge, MA: MIT Press, 2018)*.

23. However, it is not necessary to assume the judicial system to be public or private.

2. PROBLEMS OF DELEGATION

Even with a well-designed regulatory process, regulating markets and delegating rulemaking authority often lead to a number of problems—many of them similar to problems in the private sector. For example, delegation always risks principal-agent issues. A system created with the intent to delegate regulatory design is no exception. In addition, scholars of regulatory systems in modern societies have noted other undesirable features that may be avoidable in a well-designed system. In this section, we explain some of the major issues that could be avoidable with appropriate design. These include principal-agent issues, monopoly provision, information asymmetry, and regulatory accumulation.

2.1 Principal-Agent Issues—Shirking, Drift, and Capture

Principal-agent issues arise when some principal must delegate decision-making authority to an agent whose preferences or incentives may not align with those of the principal and the principal is limited in his or her capacity to oversee the performance of the agent. In the case of government regulation, legislators are the principals, and regulators are the agents. Legislators are elected by the general public, so they are directly accountable to the public and presumably have the public's best interest in mind. However, because of the complexity of designing effective rules, legislators must delegate rulemaking authority to regulatory agencies.

One principal-agent concern is *shirking* on the part of the regulators.[24] This idea stems from the foundational literature on principal-agent problems in the private sector, which details the problem of moral hazard when principals delegate to agents.[25] Moral hazard occurs when decision makers do not incur the full costs and benefits of their actions. For example, moral hazard can occur in a private firm when a business owner must delegate decision-making authority to an employee who earns a wage on the basis of hours worked. If the owner is unable to measure or observe the quality of the agent's work because of information asymmetries, the agent may be able to shirk without incurring any personal costs. In the context of regulation, legislators are unable to check the work of all regulators to ensure that they are fulfilling their duties. Legislators may also have

24. Matthew C. Stephenson, "Information Acquisition and Institutional Design," *Harvard Law Review* 124, no. 6 (2011): 1422–83.
25. Milton Harris and Artur Raviv, "Optimal Incentive Contracts with Imperfect Information," *Journal of Economic Theory* 20, no. 2 (1979): 231–59.

difficulty interpreting the quality of that work because of the esoteric nature of some components of regulation and regulatory analysis.

Another principal-agent problem that can arise in a government bureaucracy is *agency drift*. This occurs when regulators make decisions on the basis of personal preferences rather than the preferences of the legislators. For example, when oversight is limited or absent, regulators may make decisions on the basis of personal political values or ambitions.[26] As discussed in section 1, regulators are also likely to overvalue the importance of their particular policy area and are more likely than legislators to go to the extremes.[27] This can lead to systematic bias that drives agency decisions further away from legislative preferences over time (as opposed to random bias, which would only lead to minor deviations from legislative preferences and would cancel itself out over time).

Capture is another principal-agent concern in a regulatory bureaucracy. In this scenario, regulated industries are able to capture their respective regulatory agencies, leading to regulation that benefits the industry at the expense of the general public, competing industries, or (in some cases) within-industry competitors. This capture can occur for two reasons. According to the traditional theory, regulators allow themselves to be captured in order to further their own interests. Kwak dubbed this the *materialist channel* for regulatory capture, and it can occur through a number of mechanisms—the industry may bribe the regulators; regulators who depend on funds from the industry may be pressured by that industry; regulators may work with industry because it will help them get high-paying industry jobs in the future; and so on.[28]

Regulatory capture can also occur through the *nonmaterialist channel*,[29] in which regulatory agencies unintentionally favor the regulated industry. This type of capture often occurs over time as regulators slowly begin to think like the regulated industry because of frequent discussions and interactions with its representives. For example, in some policy areas, much of the information necessary to create effective regulations must come from the industry itself, and often it is transmitted through meetings between regulators and industry representatives. This creates another information asymmetry that allows industry representatives to frame situations or problems in ways that lead to regulation favoring

26. McCubbins, Noll, and Weingast, "Administrative Procedures," 243–77.
27. DeMuth, "Can the Administrative State Be Tamed?," 121–90.
28. James Kwak, "Cultural Capture and the Financial Crisis," in *Preventing Regulatory Capture: Special Interest Influence and How to Limit It*, ed. Daniel Carpenter and David A. Moss (New York: Cambridge University Press, 2013), 71–98.
29. David Freeman Engstrom, "Corralling Capture," *Harvard Journal of Law and Public Policy* 36, no. 1 (2013): 31–39.

that industry. However, Kwak emphasizes how this nonmaterialist capture can occur in other ways as well.[30] In particular, he more broadly discusses "cultural capture," which might occur through group identification, status, or relationship networks created by the interactions between industries and regulators.

2.2 Monopoly Provision

Information about regulations' anticipated effects as well as their design are often delegated to a single provider—the regulatory agency. As in any market, a monopoly provision has several drawbacks. Higher prices, fewer goods, and lower quality are all possible results, relative to a more competitive arrangement. A frequently suggested remedy to the monopoly issue within a national government is federalism—that is, local or state governments implement policy and compete with one another to attract people and businesses. The assumption is that the localities with the best policies (however defined) will have the most success, and eventually other localities will be forced to adopt similar policies to maintain or build their population.

While federalism may be a strong argument in many circumstances, some areas of regulation require more uniformity because of the nature of the affected industry. For example, regulation of industries with complicated interstate trade practices or potential externalities that cross state lines may lead to more complexity, reduced trade, and other costs that outweigh the benefits of federalism in those markets. Furthermore, once the federal government claims jurisdiction over an area of regulation, it rarely cedes that authority. In any of these circumstances, limiting monopoly problems can be difficult—but as we will see, not impossible.

2.3 Information Asymmetry

The process of regulation delegation creates information asymmetries between the legislators and regulators. Though this relates to the principal-agent issues mentioned earlier, information asymmetries create other problems that merit a separate discussion. These asymmetries occur for two primary reasons. First, the sheer amount of information used or provided by regulatory agencies is too great for legislators to consume. Second, because of this delegation of authority, regulators gain more expertise regarding their responsibilities and policy areas

30. Kwak, "Cultural Capture and the Financial Crisis," 71–98.

than do the legislators, making the information that legislators do consume less useful for effective oversight.[31] One might hope that all of these regulators are as public-minded as the legislators are and are as committed to carrying out their duties as the legislators desire. However, the more regulators that are necessary to write the regulations, the more difficult it is to ensure this public-minded quality in each and the more difficult it is for elected officials to oversee the regulators to ensure that they fulfill the legislators' directives.[32]

Although information asymmetry is a possibility in any principal-agent scenario, it becomes a particularly salient issue when information and design are both allocated to a sole-source provider. Information asymmetry is endogenous—regulators may choose to create it,[33] just as firms might in their interaction with regulators.[34] Furthermore, regulators may have incentives to manipulate or strategically withhold information to promote the adoption of their preferred policy decision.[35] Thus, information asymmetries may lead to regulations that are not only based on the policy preferences of unelected regulators but are also based on incorrect or incomplete information, which can lead to other problems.

One such problem is that incorrect or incomplete information reduces the effectiveness of transparency, which is an important component of an accountable democratic government. Transparency is only useful to the extent that the public or interested parties are able to obtain accurate information. Second, inaccurate or misleading information is often more harmful than no information at all. It is not uncommon for agencies to use past methodologies or findings to design new regulations. So one regulatory decision to obfuscate or omit important information can lead to a cascade of regulatory decisions based on false or misleading information, likely leading to harmful unintended consequences. For example, the US Department of Agriculture (USDA) has consistently used memory-based dietary data collection methods (M-BMs) to create estimates of dietary consumption of the US population since the late 1970s despite decades of "unequivocal evidence that M-BM data bear little relation to actual energy

31. McCubbins, Noll, and Weingast, "Administrative Procedures," 243–77.
32. In the United States, this oversight role ultimately falls to the president rather than to the legislators who created the initial rulemaking authority.
33. Jason Scott Johnston, "A Game Theoretic Analysis of Alternative Institutions for Regulatory Cost-Benefit Analysis," *University of Pennsylvania Law Review* 150, no. 5 (2002): 1343–428.
34. Jeffrey T. Macher, John W. Mayo, and Jack A. Nickerson, "Regulator Heterogeneity and Endogenous Efforts to Close the Information Asymmetry Gap," *Journal of Law and Economics* 54, no. 1 (2011): 25–54.
35. Ryan Bubb and Patrick L. Warren, "Optimal Agency Bias and Regulatory Review," *Journal of Legal Studies* 43, no. 1 (2014): 95–135.

and nutrient consumption."[36] In fact, some studies have shown that researchers have manipulated these data to appear plausible because the initial results indicated energy-intake levels that are physiologically implausible.[37] Nonetheless, this methodology and the subsequent recommendations by the USDA have persisted for decades.

Another related concern is the certainty with which regulators present information in their regulatory analyses. While regulators are tasked with presenting objective information in their analyses, any prediction regarding how decisions will affect outcomes must rely on assumptions or subjective judgments to some degree. Furthermore, the frequent use of precise estimates in science and regulatory analyses leads to a false sense of certainty. For example, research has shown that regulators often overlook or ignore the uncertainty present in risk assessments that their regulatory analyses rely on.[38] In fact, regulators have incentives to present their decisions as "a monolithic 'scientific answer,' " rather than acknowledging the uncertainty or potential bias underlying the assessments.[39]

2.4 Regulatory Accumulation—A Tragedy of the Commons?

Even in a well-designed regulatory system, regulations can build up over time. This buildup of rules—regulatory accumulation—carries its own set of consequences that are independent of those of individual rules. For example, regulatory accumulation leads to a more complicated set of constraints for private actors, increasing the cost of decision-making. Accumulation of regulations targeting specific sectors of the economy can deter investment in R&D, slow entry, and inhibit the expansion of existing firms.[40] On a more individual level, regula-

36. Edward Archer, Michael L. Marlow, and Richard A. Williams, "Government Dietary Guidelines: Uncertain Science Leads to Questionable Public Health Policy" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, April 2017).
37. Edward Archer and Steven N. Blair, "Implausible Data, False Memories, and the Status Quo in Dietary Assessment," *Advances in Nutrition* 6, no. 2 (2015): 229–30.
38. Richard Williams and Kimberly Thompson, "Integrated Analysis: Combining Risk and Economic Assessments While Preserving the Separation of Powers," *Risk Analysis* 24, no. 6 (2004): 1613–23; and Susan E. Dudley and George M. Gray, "Improving the Use of Science to Inform Environmental Regulation," in *Institutions and Incentives in Regulatory Science*, ed. Jason S. Johnston (Lanham, MD: Lexington Books, 2012), 165–97.
39. Dudley and Gray, "Improving the Use of Science," 174.
40. Bentley Coffey, Patrick A. McLaughlin, and Pietro Peretto, "The Cumulative Cost of Regulations," *Review of Economic Dynamics* 38 (2020): 1–21; Germán Gutiérrez and Thomas Philippon, "The Failure of Free Entry" (NBER Working Paper No. 26001, National Bureau of Economic Research, Cambridge, MA, 2019); James B. Bailey and Diana W. Thomas, "Regulating Away Competition: The Effect of Regulation on Entrepreneurship and Employment," *Journal of Regulatory Economics* 52,

tory accumulation tends to disproportionately harm low-income households[41] and increase income inequality.[42]

Regulatory accumulation is a common feature in modern democratic governments, and it occurs for a number of reasons. For one, regulatory analysis requirements tend to omit consideration of regulatory accumulation effects and merely require the analysts to consider the effects of the individual regulation in question. Even if analysts were to attempt to measure the effects of regulatory accumulation, it would be an onerous task. Since these effects are rarely measured or estimated, regulators have little incentive to account for them when making their decisions. However, these are not the only obstacles to combating regulatory accumulation. For example, agencies often face other incentives that drive them toward increasing rather than decreasing the number of regulations. Regulators are more likely to be rewarded for regulating more than for regulating better, as discussed in section 1. Furthermore, special interests are often invested in the knowledge and technology required to comply with existing regulations, and they frequently oppose deregulation that may hurt their competitive advantage. Combined, these components of a regulatory system lead to an ever-increasing stock of regulations, even when this continuous accumulation leads to poor outcomes.

3. SOLUTIONS

3.1 Solutions for Principal-Agent Issues

As with principal-agent issues in other contexts, two types of solutions exist: monitoring and enforcement to ensure that the agent carries out the wishes of the principal, and alignment of incentives so that the agent chooses to act in the principal's interest.

3.1.1 Monitoring and Enforcement

There are various approaches to monitoring and enforcement either currently in effect in some jurisdictions or proffered by experts as ways to improve the

no. 3 (2017): 237–54; and Dustin Chambers, Patrick A. McLaughlin, and Tyler Richards. "Regulation, Entrepreneurship, and Firm Size," *Journal of Regulatory Economics* 61, no. 2 (2022): 108–34.

41. Dustin Chambers, Courtney A. Collins, and Alan Krause, "How Do Federal Regulations Affect Consumer Prices? An Analysis of the Regressive Effects of Regulation," *Public Choice* 180, no. 1 (2019): 57–90.

42. Dustin Chambers and Colin O'Reilly, "Regulation and Income Inequality in the United States," *European Journal of Political Economy* 72 (2022): 102101.

regulatory process. Each approach is typically housed within one branch of government and can be combined with other approaches housed in other branches—as is typically seen in governments today. By briefly examining how monitoring and enforcement can occur within each branch of government as well as the pros and cons of such oversight, we identify a way to combine the relevant knowledge and authority from each branch without hampering an effective regulatory process.

The most direct form of monitoring and enforcement would have to be done by the legislature itself. The legislature would have to review and approve regulations before they take effect. This method could definitively determine whether the regulators carried out the legislature's intent. In practice, it is doubtful that all legislators would read and assess all regulations, or even a subset of regulations designated important enough for the legislature to review; a legislature would probably delegate this review task to a committee. Delegating these decisions to a committee with a government-wide focus, rather than to the individual authorizing committees that oversee each regulatory agency, would help to avoid biased decisions; as with agency staff, legislators who self-select into an agency's committee may have a skewed view of the importance of that agency's mission. A special regulatory review committee could be created for this task, or the task could be given to an existing committee with a government-wide focus, such as a budget committee.[43]

Another well-known form of monitoring and enforcement occurs within the executive branch through the establishment of an office that reviews regulations and the accompanying analyses before the regulations are proposed or finalized. The office either possesses the power to block regulations that fail to meet specific requirements or it makes recommendations to the chief executive, who has that power. The requirements that each regulation must meet are often process requirements that focus on making informed decisions and promoting overall welfare, which we have assumed to be the intent of the legislature. We discuss these process requirements in more detail in section 4. For now, what is important is the ability of the executive branch to ensure that agencies comply with these requirements. As with the legislative branch, institutional features can help prompt the monitoring body to take a perspective more focused on overall welfare than on the mission of a particular regulatory agency. First, the executive can situate the monitoring office within the budget office, which by its nature must take a government-wide focus. Second, the executive can make

43. New Zealand's Parliament utilizes a separate Regulatory Review Committee; see https://www.parliament.nz/en/pb/sc/scl/regulations-review/.

the monitor responsible for coordinating interagency review, so that it hears the perspectives of other agencies.[44]

Empirical evidence suggests that regulatory review by the Office of Information and Regulatory Affairs—an executive branch monitor in the United States government—is associated with more thorough regulatory analysis and better explanations of how the analysis informed agency decisions.[45] An executive branch monitor, however, may not provide the best assurance that the legislature's interests are respected. In a US-style government with separation of powers, the interests of the chief executive—an elected official in his own right—may diverge from those of the legislature. Executives have their own policy priorities, and they are often willing to set aside analytical requirements intended to promote the general welfare if these requirements conflict with executive priorities.[46]

A final form of monitoring and enforcement is judicial review. Unlike legislative or executive branch monitoring, courts review a regulation only if a stakeholder challenges the regulation. For courts to effectively monitor the regulator's ex ante assessment, the legislature would have to establish three possible grounds for challenging the regulation: (a) the regulator failed to conduct a critical aspect of the ex ante assessment, (b) the regulator failed to use the best available information in its assessment, or (c) the regulator failed to explain how its analysis informed its decisions. Evidence from the United States indicates that courts have the ability to understand and adjudicate the competing evidentiary claims that arise in such cases.[47]

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44. Cass Sunstein, "The Office of Information and Regulatory Affairs: Myths and Realities," *Harvard Law Review* 126, no. 7 (2013): 1838–78.

45. Jerry Ellig, Patrick McLaughlin, and John F. Morrall, "Continuity, Change, and Priorities: The Quality and Use of Regulatory Analysis across US Administrations," *Regulation and Governance* 7, no. 2 (2013): 153–73; Jerry Ellig and Rosemarie Fike, "Regulatory Process, Regulatory Reform, and Quality of Regulatory Impact Analysis," *Journal of Benefit-Cost Analysis* 7, no. 3 (2016): 523–59; and Jerry Ellig, "Evaluating the Quality and Use of Regulatory Impact Analysis: The Mercatus Center's Regulatory Report Card, 2008–2013" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2016).

46. Kagan, "Presidential Administration," 2245–385; Graham, "Saving Lives Through Administrative Law and Economics," 395–540; Lisa Shultz Bressman, and Michael P. Vandenbergh, "Inside the Administrative State: A Critical Look at the Practice of Presidential Control," *Michigan Law Review* 105, no. 1 (2006): 47–100; and Jerry Ellig and Christopher Conover, "Presidential Priorities, Congressional Control, and the Quality of Regulatory Analysis: An Application to Healthcare and Homeland Security," *Public Choice* 161, no. 3–4 (2014): 305–20.

47. Caroline Cecot and W. Kip Viscusi, "Judicial Review of Agency Benefit-Cost Analysis," *George Mason Law Review* 22, no. 3 (2015): 575–618; and Reeve Bull and Jerry Ellig, "Judicial Review of Regulatory Impact Analysis," *Administrative Law Review* 69, no. 4 (2017): 725–840.

Each of these three forms of monitoring and enforcement helps alleviate principal-agent problems in different ways. So when designing an effective regulatory system, it is important to realize that these forms may complement one another. Monitoring and enforcement by the legislature helps ensure that regulations reflect the intent of the principals by giving the principals direct approval or veto power. Monitoring and enforcement by the executive helps to ensure that regulators properly analyze the circumstances and create regulations that are necessary and effective. Last, monitoring and enforcement by the judiciary serves as an additional check on regulatory agencies in two important ways. First, it provides an avenue for the public to seek redress when agencies do not comply with their requirements. Second, it extends to regulations that are not subject to legislative or executive monitoring and enforcement. (For example, many regulatory process requirements, including those in the United States, have minimum thresholds for the significance of a regulation, below which the monitoring and enforcement mechanisms do not kick in.)

3.1.2 Incentives

A regulatory system should incentivize delivery of outcomes intended by the principal's mandate. When possible, the best approach is simply to observe whether or not the desired outcomes were achieved and to reward regulators who achieved their goals. Regulators should have already described these outcomes in the ex ante analysis. With a short enough time horizon, it may be possible to gauge and reward the success of specific agency staff members. This measurement can occur at regular intervals over the following years and following the ex post evaluation of the regulations.

This brings to light another important component of the regulatory process that can help avoid incentive issues: the analysts conducting the ex post analysis should not be the same analysts who conducted the ex ante analysis. In fact, it is best if the ex ante analysts and ex post analysts can be sufficiently insulated from each other so as to avoid favoritism or quid pro quo relationships. This is true whether incentives are tied to outcomes or not, although it is clearly more important when they are. As shown in section 3.3, the legislature can take some additional steps so that this separation of ex ante and ex post analysts can help address the problem of regulatory accumulation as well.

If outcomes are too distant (in time) or too difficult to tie to individual actions, then incentives should be focused on other components of the regulatory process that are likely to lead to effective regulation that reflects legislative preferences. In particular, regulators should be rewarded for good analysis,

good design, and cost minimization, and for performance indicators that are tied not only to outcomes specifically addressed by a rule but also to the welfare of affected stakeholders and to unintended consequences. The specific structure of rewards should depend on the nature of the agency and its focus as well as on regulation-specific considerations. For this reason, legislators may simply want to lay out the goals (as we have here), along with some additional requirements or parameters when necessary, and allow regulatory agencies or other executive offices to design the regulatory incentive structures on the basis of circumstance. These agencies or offices can draw from the principal-agent's vast supply of literature regarding mechanisms for incentivizing agents on the basis of achievement of performance indicators.

In addition to rewarding productive behavior, the legislature could penalize or prohibit regulatory-agency behavior that decreases the likelihood that regulations will enhance welfare. For example, the legislature could reduce the budgets of agencies that consistently fail to produce thorough ex ante analysis or fail to explain how the analysis affected their decisions.[48] The legislature could also prohibit agencies from basing raises, promotions, or other rewards at the individual level on the quantity of regulatory output.

3.2 Solutions for Monopoly and Information Asymmetry

How can a regulatory system avoid the information-asymmetry issue? Overcome the monopoly problem. When regulators are the sole producer of information about a regulatory proposal, the principal has little recourse but to accept that information as correct. This is why the US Congress created the Congressional Budget Office (CBO) in 1974; without the CBO, Congress would be wholly dependent on budget estimates and forecasts produced by the Office of Management and Budget in the executive branch.

The most direct solution is for the legislature to create its own regulatory analysis capability. For at least some regulations, the legislature might find it useful for this unit to conduct its own independent assessment of the problem and the alternatives, benefits, and costs. At a minimum, though, the analysts would need the requisite expertise to evaluate whether the regulatory agency's assessment adequately covered all major topics and used the best available information. When the regulatory agency does an inadequate job of analyzing the potential regulations, the legislature would need a mechanism, such as veto power, either

48. Ellig and Williams, "Reforming Regulatory Analysis," 33–34.

to stop the regulating agency or to force the agency to choose a different regulatory approach. On the federal level, the US Congress passed legislation in 2000 requiring the Government Accountability Office to review agency regulatory analyses, but funding for the initiative was never appropriated.[49]

As another potential solution, the legislature could create a mechanism for crowdsourcing regulatory assessments. A mechanism similar to Wikipedia's could be used to produce assessments of the problem and estimates of the benefits and costs of regulatory alternatives. Where there are disagreements, the differing estimates would not be eliminated but rather included in an analysis of uncertainty. An analytical entity reporting to the legislature should retain final review authority over crowdsourced analysis to help prevent private parties from dominating the process.

3.3 Solutions for Regulatory Accumulation

3.3.1 Regulatory Budgeting

One approach to limiting regulatory accumulation has gained a great deal of attention in recent years: regulatory budgeting. Regulatory budgets establish a limit for regulatory growth on the basis of some metric, such as the number of rules or restrictions, or the total projected costs. In 2017, President Donald Trump implemented a regulatory budget with Executive Order 13771, which lasted until it was revoked by President Joe Biden on January 20, 2021. President Trump's budget required that federal agencies identify two rules for elimination for every new rule they proposed, so that the cost of the new rule would be at least offset by reducing the costs of old rules. These requirements only applied to the subset of new rules deemed "significant" as defined in section 3(f) of Executive Order 12866.[50] This approach was also limited in the sense that a future president could simply override the existing Executive Order with a new one, as happened on President Biden's first day in office.

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49. Susan E. Dudley, "Observations on OIRA's Thirteenth Anniversary," special edition, *Administrative Law Review* 63 (2011): 113–30.

50. Executive Order 12866, issued in 1993 under President Bill Clinton, defines a significant regulatory action as "any regulatory action that is likely to result in a rule that may: (1) Have an annual effect on the economy of $100 million or more or 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; (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive order." Exec. Order No. 12866, 58 Fed. Reg. 190 (October 4, 1993).

The recent regulatory budget approach in the United States is an important step in addressing regulatory accumulation, but its limitations highlight some important characteristics of effective regulatory budgeting. First, in a presidential system, the legislature could create a statutory regulatory budget to ensure that it endures even when presidential administrations change. Second, a regulatory budget could apply to all regulations rather than only a small subset. The concept of a budget brings to light another issue: while reducing costs is the focus of limiting regulatory accumulation, measuring costs for each individual regulation (proposed or existing) is a tremendous task. Currently, US federal agencies only quantify costs and benefits for about one out of every 300 regulations.[51] Furthermore, focusing strictly on costs ignores benefits, and this may encourage regulators to target high-cost regulations, even if those have large net benefits to society.

Third, a regulatory budget should focus on a metric that regulators or some monitoring body can easily measure, such as the number of rules or restrictions.[52] In 2001, British Columbia initiated a regulatory budget that used "regulatory requirements" as its metric. The government was able to meet its target of reducing requirements by one third within three years, and it continued to reduce requirements even after that period. This helped British Columbia rise from 1.9 percentage points below the average growth rate in Canada (prior to the regulatory budgeting effort; the lowest of any province), to 1.1 percentage points above the average growth rate in Canada between 2002 and 2006, all while maintaining high levels of safety and environmental quality.[53] In a difference-in-differences study, Coffey and McLaughlin found that British Columbia's regulatory budgeting in the first years of this century directly caused the province's economic growth rate to increase by about one percentage point.[54]

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51. James Broughel and Richard A. Williams, "More Information Needed on the Benefits and Costs of Regulations" (Mercatus Expert Commentatry, Mercatus Center at George Mason University, Arlington, VA, 2018), https://www.mercatus.org/economic-insights/expert-commentary/more-information-needed-benefits-and-costs-regulations.
52. Laura Jones and Patrick A. McLaughlin, "Measurement Options for Regulatory Budgeting," *Harvard Journal of Law & Public Policy Per Curiam* 25 (Summer 2022): 43–60.
53. Laura Jones, "Cutting Red Tape in Canada: A Regulatory Reform Model for the United States?" (Mercatus Policy Research, Mercatus Center at George Mason University, Arlington, VA, 2015); and James Broughel and Laura Jones, "Effective Regulatory Reform: What the United States Can Learn from British Columbia" (Mercatus Policy Research, Mercatus Center at George Mason Univeristy, Arlington, VA, September 2018).
54. Bentley Coffey and Patrick A. McLaughlin, "Regulation and Economic Growth: Evidence from British Columbia's Experiment in Regulatory Budgeting" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, May 2021).

Fichtner, McLaughlin, and Michel recently developed a new approach to regulatory budgeting called *legislative impact accounting* (LIA), which incorporates regulatory information into the budget process.[55] In the LIA approach, the legislature determines and appropriates annual regulatory cost budgets to individual regulatory agencies. The legislature also receives a prospective economic analysis of the expected costs of new legislation, called a "legislative impact assessment," prior to voting on any legislation that grants rulemaking authority to an agency. As agencies produce ex ante and ex post regulatory analyses of new and existing regulations, this information is passed back to congressional budget scorers, who use this information to update the legislative impact assessments. Congress then uses this updated information in the following budget cycle to determine new budgets and amend existing legislation when regulations are unsuccessful or lead to negative consequences. This approach gives Congress more information about the expected and real effects of legislation and allows Congress an opportunity to limit regulatory accumulation through budgeting and to correct mistakes when regulations lead to poor outcomes.

3.3.2 Independent Review Commission

Creating an independent regulatory review commission is another way to address regulatory accumulation—in fact, this approach works well when accompanied by a regulatory budget.[56] This commission would be responsible for selecting committees of experts to analyze potential regulations for elimination to determine whether they should be kept, modified, or eliminated. The committee should look for ineffective, outdated, inefficient, duplicative, or conflicting regulations, and the commission would then produce a list of all regulations that the committees identified for elimination, which should span a large number of regulatory areas. Congressional action, such as a joint resolution of disapproval, would then be necessary in order to stop the elimination of the identified regulations, and it must stop the elimination of all or none.[57]

55. Jason J. Fichtner, Patrick A. McLaughlin, and Adam N. Michel, "Legislative Impact Accounting: Incorporating Prospective and Retrospective Review into a Regulatory Budget," *Public Budgeting and Finance* 38, no. 2 (2018): 40–60.
56. Patrick McLaughlin and Tyler Richards, "Regulatory Review Commission + Regulatory Budget = A Diet for Better, More Effective Regulations" (Mercatus Policy Brief, Mercatus Center at George Mason University, Arlington, VA, November 2019).
57. Patrick McLaughlin and Richard Williams, "The Consequences of Regulatory Accumulation and a Proposed Solution" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2014).

In addition to identifying large groups of harmful regulations, this approach has a second benefit, which arises if we relax our assumption that legislatures have only the overall welfare of the public in mind. Individual legislators, even if mostly public minded, may still be beholden to the special interests that support them, or to their specific constituency. This can lead to strong opposition to removal of individual regulations or small groups of regulations that may take away benefits for particular groups. However, if the legislature is omitted from the decision of which regulations to include in the package and votes only on the package as a whole (as opposed to voting on individual regulations), the undue influence of special interests is removed from the process. Furthermore, legislators whose supporters are the most adamant opponents to the package can still propose and argue for a joint resolution of disapproval to stop the elimination. Since only a few legislators will likely experience such pressure, the joint resolution of disapproval is only a real threat to the commission's recommendation package if it does not represent the preferences of the legislature as a whole.

The independent review commission is modeled after the Base Realignment and Closure (BRAC) Commission from the late 1980s, which accomplished a similar goal. Following the Cold War, Congress knew that many of the remaining military bases on US soil were unnecessary. However, no one could agree on which bases to close because each base fell within the district of some member of Congress, and each time a base was proposed, the elected official for that district successfully shot down the attempt to close the base. To solve this problem Congress created the BRAC Commission, which was responsible for identifying a list of bases for closure. Furthermore, Congress could only stop the recommendations as a whole by a joint resolution of disapproval. Although a joint resolution of disapproval was introduced, it was defeated by a massive margin of 381 to 43, and the BRAC Commission was successful in closing 11 bases.[58] This model provides a blueprint for effective reform when special interests threaten progress.

3.3.3 Sunsetting

A final way to mitigate excessive regulatory accumulation is for legislators to include sunset provisions in legislation. Sunset provisions establish an expiration date for a piece of legislation or a regulatory board. Typically, legislative staff or state auditors will be required to review the legislation or board prior to the expiration date. The reviewers will then recommend whether to continue, modify, or eliminate the legislation or board. If the legislature does not take action to renew

58. Jerry Brito, "Running for Cover: The BRAC Commission as a Model for Federal Spending Reform," *Georgetown Journal of Law and Public Policy* 9, no. 1 (2011): 131–56.

or modify the legislation or board, then it expires. The benefits to sunset clauses are two: they require systematic review of legislation to determine whether it was successful (and whether it is still necessary), and they require the legislature to vote affirmatively to keep it in effect. This provides useful information and an easy mechanism for the legislature to employ to remove or modify ineffective legislation.

In the United States, sunset provisions are used somewhat regularly at the state level but rarely at the federal level.[59] Drury suggested that this might be because "the size and complexity of federal government would make implementation . . . impossible."[60] While this is likely true if all legislation included sunset clauses, a more selective approach to sunsetting is certainly feasible for the national level. In fact, researchers have identified selectivity as a key component of effective sunsetting.[61] Another key component of effective sunsetting is strong systematic evaluation of the legislation or board.[62] States that have given up on sunsetting are often those with low levels of professionalism, staffing, and spending,[63] which implies that investment of time and resources is necessary to ensure success.

When legislatures determine whether to include sunset clauses in legislation, they should consider whether the legislation is likely to authorize regulatory action that is only necessary for a limited period. And when legislatures choose to include a sunset clause, they should ensure that sufficient resources are available to conduct a thorough review of the success or failure of the legislation or board when the time comes. With these considerations in mind, sunset clauses can be a powerful mechanism for reducing regulatory accumulation and removing outdated or ineffective regulations.

In addition to sunset clauses for legislation, the concept of sunsetting may have another important application to the regulatory process: the individual regulations. Rather than including a sunset clause that creates an expiration date for an entire piece of legislation, legislators could require agencies to include sunset

59. Sylvia Veit and Bastian Jantz, "Sunset Legislation: Theoretical Reflections and International Experiences," in *Better Business Regulation in a Risk Society*, ed. Alberto Alemanno, Frank den Butter, André Nijsen, and Jacopo Torriti (New York: Springer, 2012), 267–82.
60. J. W. Drury, "Sunset Laws: A New Type of Legislative Oversight?," *State and Local Government Review* 14, no. 3 (1982): 107.
61. Veit and Jantz, "Sunset Legislation," 267–82; and Ittai Bar-Siman-Tov, "Temporary Legislation, Better Regulation, and Experimentalist Governance: An Empirical Study," *Regulation and Governance* 12, no. 2 (2018): 192–219.
62. Veit and Jantz, "Sunset Legislation," 267–82.
63. Richard C. Kearney, "Sunset: A Survey and Analysis of the State Experience," *Public Administration Review* 50, no. 1 (1990): 49–57.

clauses in any regulation produced under the authority of the initial legislation. If necessary, this requirement could be restricted to regulations meeting any one of a set of minimum thresholds (similar to how regulatory impact analyses are only required for certain regulations in the United States, though a much lower threshold would often be more effective). As the expiration date approaches, the agency or another body would conduct ex post analysis and potentially recommend that the regulation be renewed, modified, or eliminated. The agency would then proceed with the standard notice-and-comment rulemaking procedure to take whatever action it deems necessary. Like the sunsetting of legislation, if the agency takes no action, the regulation expires. This approach has a number of benefits: it requires the agency or some other body to produce ex post analysis; it provides an opportunity for the public to engage with the agency after the effects of a regulation have been realized; and it requires the agency to make a persuasive case for why the regulation should be renewed if it is to remain on the books.

4. REGULATORY PROCESS DESIGN

The previous discussion focused on specific problems and specific solutions. The following discussion will focus more broadly on the regulatory process. Although we briefly discussed elements of the regulatory process in section 3, the topic requires a more thorough treatment because a well-structured regulatory process can alleviate many of the problems of delegation simultaneously. We thus devote this section to providing a detailed structure of what a model regulatory process might look like, including the elements crucial to align the incentives of regulators with the desires of the legislature and the well-being of the public.

The construction of an effective regulatory system depends largely on identifying an optimal process and creating conditions that ensure that the process is followed. The regulatory process that maximizes the chances of regulators fulfilling their delegated mandates resembles, in many ways, a problem-solving exercise that any individual or firm might undergo on a regular basis. Even though some of the terms used by scholars of governance differ from those focused on private actors in the market, many of the principles embedded in the design of a regulatory system—for example, effectiveness, efficiency, and accountability—are identical to those that permeate the literature on management and industrial organization. However, some key differences remain, such as the role of the regulator as a generator of information and the absence of price signals.

In the remainder of this section, we outline a set of procedures that would maximize the chances of achieving regulations that improve welfare.

4.1 Ex Ante Assessment

Before regulators can make decisions that improve welfare, they need to understand how various regulatory alternatives could affect welfare. For this reason, ex ante assessment is the crucial first step in promulgating welfare-enhancing regulations.

Four elements of analysis are necessary to develop potential solutions to the problems regulations are supposed to solve and identify the effects of these potential solutions on overall welfare:

1. Assess the nature, significance, and root cause of the problem the agency is trying to solve, so the agency knows whether there is a problem that could be solved through regulation and, if so, how the agency can tailor a solution that will effectively solve the problem.
2. Identify a wide variety of alternative solutions. Potential alternatives to consider should include significantly different approaches—such as information disclosure in addition to direct regulation, market-oriented approaches in addition to direct controls, and performance standards in addition to design standards. Alternatives should also include separate components of the regulation and separate margins—such as different degrees of stringency, different enforcement methods, different requirements for different-sized firms, and different compliance dates. Finally, alternatives should include the "no action" baseline, which projects whether and how the problem is likely to persist in the absence of new regulation.
3. Define the benefits the agency seeks to achieve in terms of ultimate outcomes that affect citizens' quality of life and assess each alternative's ability to achieve those outcomes. Reduced injuries or deaths, decreased costs to consumers, and improved literacy are examples of outcomes. (Emissions reductions, improved enforcement, or better information are outputs that might lead to outcomes, but they are not themselves outcomes.) Identifying and projecting intended outcomes is critical not only for ex ante assessment, so regulators can assess a proposed regulation's likely effects on welfare, but also for ex post assessment, so the government can evaluate whether the regulation achieved the intended outcomes. To provide

the clearest guidance to regulators, legislators should specify the intended outcomes in the statute that authorizes the regulation.

4. Identify the opportunity cost to society of each alternative. The opportunity cost is the value of the most valuable alternative given up in order to pursue the chosen course of action. Opportunity costs include not just expenditures for paperwork or compliance, but also social opportunity costs, such as the value of the time people spend waiting in line for airport security checks, or the reduction in automobile sales that occur when new manufacturing requirements increase new car prices.

Legislators may also wish regulators to consider the effects of each alternative on particular groups of constituents. Historically, small businesses have often been singled out for special consideration in the belief that they may not have the time or resources to represent themselves in the regulatory process. The concept of conducting distributional analysis to assess effects of regulations on the poor has also gained increasing attention, for similar reasons. To adequately assess the effects of regulatory alternatives on subgroups, any such distributional analysis must answer three questions:

- Is this group a significant source of the problem the regulation is intended to solve?
- If this group is a significant source of the problem, how do the benefits to society of regulating this group under each alternative compare to the costs of regulating them?
- If this group is not a significant source of the problem, how do the benefits to this group under each alternative compare to the costs each alternative imposes on this group?

Comparison of the benefits and costs of each alternative is easiest if analysts can quantify those benefits and costs using monetary values. However, the framework outlined above can accommodate qualitative as well as quantitative evaluations. If analysts cannot quantify important benefits or costs, the analysts should present evidence that these benefits or costs are real and significant.

Legislators may also want regulators to consider values that are not traditional benefits or costs, such as equity, human dignity, privacy, or individual liberty. Legislation may stipulate that such topics be addressed in all regulatory assessments or just in particular regulatory assessments where these values are pertinent. If a factor other than benefits and costs is important for the regulatory decision, the assessment should clearly define the factor and present evidence

showing how each alternative is likely to affect the factor.[64] Such information is crucial for determining whether regulators' decisions reflect legislators' preferences.

The extensiveness of ex ante assessment should depend on the importance of the regulation. For example, in the federal government, executive branch agencies are required to provide (a) a statement of benefits and costs for any regulation the Office of Information and Regulatory Affairs deems "significant"; (b) an analysis of the benefits and costs of alternatives for any regulation with an economic impact exceeding $100 million annually or several other specified criteria; and (c) a formal analysis of uncertainties for any regulation with an economic impact exceeding $1 billion. To provide the clearest possible guidance to agencies, the legislature should establish transparent criteria by statute.

4.2 Assessments and Decisions

An ex ante assessment conducted before regulators make a major decision helps ensure that regulators have the information needed to craft a regulation that improves welfare to the greatest extent possible. However, it is difficult to ensure that analysis will precede decisions and that regulators will take the analysis into account when they make decisions. There are many accounts of regulatory analysis conducted in order to justify decisions that have already been made.[65]

Two additional requirements will make it more likely that the regulator's assessment will inform its decisions. First, the legislature can increase the odds that analysis will be conducted before decisions are made by requiring regulators to publish their assessment of alternatives some specified period of time prior to the publication of the proposed regulation. Second, the legislature can require that the regulator explain how the analysis informed its decisions. If all major benefits and costs are monetized and the regulator chose the alternative with the greatest net benefits, that creates a presumption that the regulator used the assessment as a guide to the alternative that maximizes welfare. If some nonmonetized benefits or costs played a material role in the decision, the regulator should explain why the chosen alternative likely maximizes welfare after considering the nonmonetized factors. Finally, if factors other than traditional benefits or costs played a role in the decision, the regulator should explain those factors

64. Ellig and Williams, "Reforming Regulatory Analysis."
65. Richard Williams, "The Influence of Regulatory Economists in Federal Health and Safety Agencies" (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, July 2008).

and point to the evidence in the assessment that shows the chosen alternative is likely to significantly advance or achieve those factors.[66]

4.3 Public Participation

Regulations reallocate resources. Neither legislators nor regulators possess all relevant knowledge necessary to make optimal resource allocation decisions. Much economically relevant knowledge is dispersed, tacit, difficult to articulate, and subjective (that is, based on perceptions).[67] A key virtue of markets and the price system is that individuals are free to act on the knowledge they perceive, and they are guided by market prices that summarize a great deal of knowledge about the relative scarcity of different resources and their values in different uses.[68] In other words, a market economy moves decision-making authority to where the knowledge is located instead of trying to move the knowledge to centralized decision makers.[69]

Regulators' estimates of social benefits and costs require estimates of the value of resources in alternative uses. However, regulators have a job to do in precisely those cases where a market failure exists, because such failures imply either that market prices are inaccurate or that markets are entirely absent.[70] In other words, where regulation is most necessary, regulators are especially handicapped by the absence of market prices that would allow them to calculate the best decision to maximize welfare. Regulators' benefits and cost estimates will be somewhat more reliable when based on some kind of market price data, but they will always be highly imperfect. In short, regulators face a problem analogous to that of central economic planners who, lacking market prices in their own country, use market prices in world markets or in other countries to guide their decisions. The result is far from optimal, but likely better than making decisions without any price data at all.

Referring to F. A. Hayek's discussion of dispersed knowledge, Sunstein argued that the public comment process helps mobilize knowledge that is widely

66. Ellig and Williams, "Reforming Regulatory Analysis."
67. Michael Polanyi, *The Tacit Dimension* (Gloucester, MA: Peter Smith, 1983); and James Buchanan, *Cost and Choice* (Chicago: Markham Publishing Company, 1969).
68. F. A. Hayek, "The Use of Knowledge in Society," *American Economic Review* 35, no. 4 (1945): 519–30.
69. Michael Jensen and William Meckling, "Knowledge, Control, and Organizational Structure: Parts I and II," in *Contract Economics*, ed. Lars Werin and Hans Wikander (Oxford, England: Blackwell, 1992).
70. Karen Vaughn, "Does It Matter that Costs Are Subjective?," *Southern Economic Journal* 46, no. 3 (1980): 702–15.

dispersed in society.[71] Public participation can help fill a regulator's knowledge gaps, providing valuable information to the regulator that could help improve the design of the rule.[72] In some cases, stakeholders can directly supply relevant price data, as when a trade association submits a survey that estimates compliance and opportunity costs.[73] In other cases, the public can supply some of the information that would normally affect market prices, if a market existed. For example, local business owners or consumers may have a good sense of the demand for a nonexistent good or the costs of externalities.

So far, this discussion of public participation has focused mostly on public comments. However, there are other ways that agencies can (and often do) engage the public to improve rulemaking. One approach is negotiated rulemaking, in which the regulating agency meets with parties that have a significant stake in the rule to try to come to a consensus on a fair but effective rule. Another approach is public hearings, in which the agency invites the public to express their views following the issuance of a rule proposal. In each of these approaches, as well as many others, transparency and attention to potential distributional effects are important, since those with the highest stakes in the rule may seek to benefit themselves at the expense of others. Nevertheless, these components of a rulemaking process help provide regulators with valuable information to help them design and implement effective rules.

Legislators hoping to promote such effective rules can require public participation in the rulemaking process and require that regulators choose the most effective form of public participation given the circumstances. A formal assessment of the different forms of public participation for each rule would unnecessarily slow the regulatory process. However, requiring regulators to explicitly state why they chose specific forms of public participation forces them to consider the different options and justify their decisions. In choosing and justifying the appropriate forms of public participation, regulators should consider not only what forms provide the most relevant information for a given regulation, but also what forms allow all relevant parties to easily understand and engage in the process. Regulators should choose any and all forms of participation that are appropriate for each regulation.

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71. Sunstein, "The Office of Information and Regulatory Affairs."
72. John M. Bryson and Barbara C. Crosby, "Policy Planning and the Design and Use of Forums, Arenas, and Courts," *Environment and Planning B: Planning and Design* 20, no. 2 (1993): 175–94; and Eugene Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship* (Washington, DC: Brookings Institution Press, 1998).
73. To see how a business might calculate these costs, see the "Regulatory Cost Calculator" (Mercatus Policy Research, Mercatus Center at George Mason University, Arlington, VA, 2014).

Public participation is not, however, a panacea that ensures anything close to an optimal process. Even aided by the internet, it does not solve Hayek's knowledge problem. The problem is not just that knowledge is dispersed, but also that much relevant knowledge is impossible (or very costly) to centralize. Public participation is still an attempt to centralize knowledge in the hands of decision makers, rather than moving the decision-making authority to those who possess the relevant knowledge. It can help regulators aggregate dispersed bits of information, and the opportunity for public participation may motivate some stakeholders to articulate some pieces of knowledge that previously existed only as rules of thumb or hunches. Nevertheless, a great deal of knowledge relevant to the regulators' decisions, which would have been summarized in prices produced by the missing markets, will not reach the regulators.

4.4 Ex Post Assessment

Since regulators will necessarily omit much relevant information, even regulations that are informed by a thorough, substantive ex ante assessment and vigorous public participation are unlikely to maximize welfare. In addition to the problem of missing information, regulations may not maximize welfare simply because things change in unpredictable ways, and no one can tell the future with certainty. Governments should analyze the actual effects of regulations retrospectively to correct the inevitable errors. Such ex post assessment also provides valuable information for designing new effective regulations in the future.

Unlike the private sector, the success of regulatory actions cannot be easily judged by market responses. When a firm engages in the production and sale of a good or service in a competitive market, the results can be assessed by considering revenues, costs, and other price-related signals. Profit-and-loss accounting provides feedback on whether the firm's decisions created or destroyed value as well as an incentive to continue doing things that create value and to discontinue doing things that destroy value. Except when regulatory interventions are used to establish property rights and create markets, regulators produce "goods" that are never priced by markets.[74] Furthermore, regulations may take several years

74. This remains true even if the regulator is a private entity engaged by contract to produce a regulatory solution. The solution is delivered in a monopsonistic market, where the only buyer is the delegating government. In theory, multiple governments could purchase regulatory solutions from one or more private producers, generating some form of a market with price signals. While it is intriguing to consider the idea of a multigovernment market for regulation—perhaps resembling the market for military equipment—our focus is the design of a system that would be used by a single government.

to achieve their intended effects, making their success even harder to judge and complicating the task of incentivizing the achievement of desired outcomes. To determine whether regulations have been successful, then, requires a thorough assessment of the outcomes—that is, an ex post assessment.

The process for ex post assessment begins during the ex ante assessment stage. If regulations are designed by specifying the outcomes that they are supposed to achieve—and, even better, are created in a way that leads to the generation of early indicator data that are consistent with achievement of those outcomes—then the ex post assessment is a simple task.[75] In management and organization textbooks, companies are often urged to adopt key performance indicators both when designing and when implementing some action.[76] In any organization, the value created by an individual's actions can be difficult to discern, especially for actions that are unpriced. But if actions have any value, there is almost surely some way to measure it. With actions somehow quantified, statistical analysis can help test whether the action appears to create progress toward a goal. Similarly, a new regulation's value may not be readily evident, especially at the early stages. But the examination of data-driven progress indicators—for example, outputs that would be consistent with the theory outlined in the ex ante assessment of the regulation—can help at least identify regulations that appear not to be working. This amounts to applying the management principle of measuring performance indicators to regulations.

Even with optimal ex ante design helping to identify outcomes and performance indicators, ex post assessment of a regulation requires the consideration of how markets, technology, or other factors could play a role in the measurement of a rule's effect. Social sciences such as economics are replete with statistical techniques that can infer causality in some scenarios, but the applicability of those techniques is always subject to data availability. When adequate data permit causal inference, the first question that an ex post assessment should answer is, did the regulation deliver the desired outcomes? Depending on the answer, further questions can help inform a process for updating regulations, ultimately leading to three possible indications: maintain the regulation, eliminate the regulation, or alter the regulation. In the remainder of this subsection, we outline the essential elements that we would expect in an ex post assessment protocol.

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75. Jerry Ellig, "Ten Principles for Better Regulation" (Mercatus Policy Research, Mercatus Center at George Mason University, Arlington, VA, 2013), 6.

76. See, for example, David Parmenter, *Key Performance Indicators: Developing, Implementing, and Using Winning KPIs* (New York: Wiley, 2007).

4.4.1 Effectiveness

Aldy,[77] among many others, extols ex post assessment as a vital tool in maximizing regulatory effectiveness.[78] In the context of our discussion, effectiveness means delivering the intended outcomes. The best way to test a regulation's effectiveness is to use statistical techniques appropriate to the data. Ideally, this would yield a study that permits a high degree of confidence that the regulation actually caused the observed changes in outcomes. In the expectation that there will not always be data amenable to causal inference, it is vital to identify the mechanism by which the regulation is supposed to achieve an outcome. In other words, articulating a theory of how the regulation would lead to the outcome is not only useful in designing a rule, but also in assessing its performance.

As an example, suppose a regulation calls for government inspectors to identify and issue fines for excessively large gaps between sections of rail on a railroad, because those gaps can cause trains to derail. The regulation's desired outcome is to reduce derailments, and the mechanism by which it would achieve that outcome is the reduction in the frequency of occurrences of gaps wider than some defined threshold. In the regulation's theory of intervention, inspections and the possibility of penalties for violations would induce railroads to allocate more resources to track gap maintenance. Further suppose that 10 years after the regulation goes into effect, derailments have decreased by 90 percent. How can analysts tell if the change in derailments was caused by the regulation, which theorized that inspections and fines would induce changes in railroad behavior?

Ideally, analysts would compare a set of railroads that were subject to inspections to an otherwise identical set of railroads that were exempt from inspections. Even if the control group was not otherwise identical, it may be possible to control for other relevant factors.[79] These sorts of evaluations would rely on the availability of data and the appropriate application of statistics techniques that help infer causality. The absence of a control group or other quasinatural

77. Joseph E. Aldy, "Learning from Experience: An Assessment of the Retrospective Reviews of Agency Rules and the Evidence for Improving the Design and Implementation of Regulatory Policy" (Working Paper, Harvard Kennedy School, Cambridge, MA, November 2014).
78. Some others include Reeve Bull, "Building a Framework for Governance: Retrospective Review and Rulemaking Petitions," *Administrative Law Review* 67, no. 2 (2015): 265–320; Randall Lutter, "Regulatory Policy: What Role for Retrospective Analysis and Review?," *Journal of Benefit-Cost Analysis* 4, no. 1 (2013): 17–38; and Richard Morgenstern, "Retrospective Analysis of U.S. Federal Environmental Regulation," *Journal of Benefit-Cost Analysis* 9, no. 2 (2017): 285–304.
79. For example, capital expenditure is correlated with railroad safety, so an analysis of the effectiveness of a railroad-safety rule should consider capital expenditure patterns and how the rule might affect them. Jerry Ellig and Patrick McLaughlin, "The Regulatory Determinants of Railroad Safety," *Review of Industrial Organization* 49, no. 2 (2016): 371–98.

experiments that generate data useful to causal inference can limit the ability to directly analyze the regulation's effectiveness.

Nonetheless, ex post assessment can still deliver statistical evidence about the regulation's success if the agency can examine data related to the mechanism. In this example, the question is whether the 90 percent decrease in derailments was caused by inspections for gaps. While comparisons may be impossible, data about the frequency of excessive gap occurrence could still indicate whether the decrease in derailments occurred around the same time as a decrease in gap-occurrence frequency. Such evidence would be consistent with the theory specified in the regulation's design. If there are multiple railroads covered by the regulation, then carefully specified regression analysis can indicate the degree to which variation in gap-occurrence frequency explains the variance observed in derailments across the railroads.

There is a large amount of literature describing various statistical techniques that analysts can use to examine the effectiveness of regulations. Two things are crucial in the ex post assessment of effectiveness. The first is that analysts use appropriate techniques for establishing the highest degree of confidence that a regulation caused particular outcomes, given the nature of the relationship between the regulation and the outcomes as well as the data available. The second is that the analysts provide honest and complete information about the degree of confidence in their findings.

4.4.2 Persistence of the Problem

If evidence indicates that the problem that the regulation addressed has largely disappeared, another question arises: If the regulation were eliminated, would the problem reappear? In many cases, business practices or consumer preferences may change so significantly that a regulation's design becomes obsolete. In the case of gaps in railroad tracks, the advent and widespread adoption of a new technology, such as continuous welded rail, could mean that gaps are merely a characteristic of a previous era. Whether the regulation caused the change in practices is irrelevant; the question is whether the rule is necessary to maintain the observed outcome, especially in consideration of the mechanism identified in the theory of intervention associated with the rule. Each ex post assessment should include an examination of this question and the corresponding answer—as with effectiveness, honest and complete information about the analysts' degree of confidence is also necessary here.

4.4.3 Unintended Consequences

Another question in the ex post assessment that should follow the indication of a successful rule is whether it can be improved to reduce unintended consequences. Primary among the unintended consequences of regulations should be the inhibition of innovation. Most regulations will restrict the options of private businesses or individuals to some extent, but the form of the regulation is likely to affect its degree of restrictiveness. Since greater restrictiveness will often either reduce the ability of firms to innovate or potentially create uncertainty regarding the legality of new innovations, regulators should err on the side of less restrictive regulations when possible.

Comparing performance and design standards provides a good example of less-restrictive regulations versus more-restrictive regulations. Design standards prescribe a particular technology that regulated entities must use to achieve some societal outcome, while performance standards simply set a goal that aligns the incentives of the regulated entities with those of society. Thus, design standards often inhibit innovation, because they outlaw technologies other than those specified by the regulations; by contrast, performance standards incentivize innovation, because they mandate that regulated entities achieve some societal goal but allow those entities to discover the most effective or efficient ways to do so. When evaluating existing regulations, analysts can search for and consider alternatives to any existing regulations that limit innovation. In particular, analysts should evaluate how existing regulations might limit future technologies in the context of innovations that have occurred since the ex ante analysis.

Inhibiting innovation is just one example of a potential unintended consequence of regulations. Many others exist as well. Risk-risk tradeoffs occur when costly regulations (especially regulatory accumulation over time) lead to reduced expenditures on risk-reducing activities.[80] This can increase the costs associated with regulations and, for regulations intended to reduce risk or mortality, can counteract some or all of the intended benefits. Regulations can also reduce competition or business formation within a market, which can hurt consumers and entrepreneurs. At the extreme, these unintended consequences can lead to oligopolies or monopolies in some markets.[81] Unintended distributive impacts can lead to disproportionately high costs for some groups and potentially unfair

80. W. Kip Viscusi, "Risk-Risk Analysis," *Journal of Risk and Uncertainty* 8, no. 1 (1994): 5–17.
81. Mark Green and Ralph Nader, "Economic Regulation vs. Competition: Uncle Sam the Monopoly Man," *Yale Law Journal* 82, no. 5 (1973): 871–89.

outcomes. Recent research highlights how regulation often disproportionately harms low-income households.[82]

Researchers have identified countless other examples of unintended consequences over the years. These consequences will differ on the basis of the nature and circumstances of a regulation, and analysts should carefully evaluate these potential costs in ex post assessments of regulations. Here, as with ex ante analysis, input from stakeholders can provide useful information. Those affected by the regulation can help analysts identify how unintended consequences have led to negative outcomes. Analysts should therefore elicit public participation to unearth more unintended consequences.

4.4.4 Questions to Ask in Ex Post Assessments

Below we lay out some questions that analysts should ask when evaluating the effectiveness, continuing necessity, and unintended consequences of existing regulations through ex post assessment.

1. Has the rule been effective? Examine outcomes and indicators.
2. Does the problem that the rule addresses remain significant? If the rule addresses risk, characterize the risk pathways, populations exposed, and consequences of exposure. Consider whether changes in business practices or consumer preferences have eliminated the need for the rule.
3. Can the rule's design be improved to simultaneously maintain the achievement of outcomes and reduce the rule's unintended consequences? Examine whether the rule's design could negatively affect innovation, new business formation, and competition. Consider risk-risk tradeoffs.
4. Does the rule interact with other rules, and can the set of rules governing this topic be simplified without increasing risk?
5. Have the distributive impacts of the rule been consistent with what was anticipated? If not, consider whether this is a consequence of rule design.

82. James B. Bailey, Diana W. Thomas, and Joseph R. Anderson, "Regressive Effects of Regulation on Wages," 180 *Public Choice* (2019): 91–103; Chambers, Collins, and Krause, "How Do Federal Regulations Affect Consumer Prices?"; and Dustin Chambers, Patrick A. McLaughlin, and Laura Stanley, "Barriers to Prosperity: The Harmful Impact of Entry Regulations on Income Inequality," 180 *Public Choice* (2019): 165–90.

5. CONCLUSION

Large regulatory systems are a relatively new phenomenon in representative democracies. And unlike the executive, legislative, and judiciary branches of government, no single group of Founders designed a system of checks and balances for any of these "fourth branches" of government to ensure that they function effectively and responsibly. Instead, much of the existing regulatory systems are the result of incremental changes over the past 80 years or so. This is not to say that incremental changes are bad; such changes are a necessary part of a well-functioning and evolving system of government. However, because so much has been learned about the successes and challenges of regulatory systems over the years, it is good practice to consider what elements should be included in a regulatory system built today using new knowledge and some basic principles of good governance. This is the aim of our paper.

We have applied the constitutional law approach of designing an effective system from scratch to the administrative law subject of regulation and regulatory processes, as well as to delegation problems more broadly. In essence, we sought to determine how to establish rules and procedures that lead to a regulatory system that most effectively achieves the goals of elected officials. We first discussed the primary problems of regulatory delegation: principal-agent, monopoly provision, information asymmetry, and regulatory accumulation. We then discussed a variety of nonexclusive solutions that could help alleviate these problems. Finally, we laid out good practices for some of the most important components of an effective regulatory process, which can simultaneously minimize many of the delegation problems: ex ante assessment, regulatory decisions, public participation, and ex post assessment.

This is not meant as a plea for governments to scrap and rebuild existing regulatory systems; rather, it is intended as a guide to help reformers see what elements might exist in a model system, in the hope that the next incremental changes can produce a more effective system. Many of the concepts included in this paper can be adapted to current regulatory systems—in fact, many of these concepts are based on existing recommendations for incremental changes to current systems. Many of the problems and solutions described here can also help legislators and academics think of new ways to solve problems. As we stated before, as new information becomes available, new ideas should lead to changes that improve the existing system. We simply hope that this paper will serve as a guidepost for those seeking positive change.

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