

REGULATORY COMPLIANCE BURDENS

LITERATURE REVIEW & SYNTHESIS

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I. Introduction

Government regulation is intended to provide a variety of social benefits, but it does so at a cost. Regulations that address a compelling public need, such as material failures of private markets to internalize social costs, can potentially support and improve upon market transactions and yield important economic, social, and environmental benefits (Clinton [1993](#); Parker & Kirkpatrick [2012](#)). However, if poorly designed or implemented, they can “cause serious economic distortions that lower economic growth or GDP, damage investment and competitiveness and reduce entrepreneurship” (Parker & Kirkpatrick [2012](#)). They can impose unnecessary administrative burdens as well as barriers to entry into the market of smaller and newer, more innovative, firms. They may also provide opportunities for rent seeking and even corruption (Djankov et al. [2002](#)).

It is thus in the public interest to strive to maximize the net social benefits of regulation—the difference between the social benefits and the social costs of regulation, where “social” costs and benefits refer to the private and public resources available to society.¹ Note that private business costs are ultimately passed on to individuals in their roles as consumers, employees, and business owners (Dudley et al. [2017](#), 199).

The long-standing presidential executive order governing federal regulation directs agencies to pursue regulations only when necessary, and to select regulatory approaches that “maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach” (Clinton [1993](#), §1(a)). This order further states that, “[w]hen an agency determines

that a regulation is the best available method of achieving the regulatory objective, it shall design its regulations in the most cost-effective manner to achieve the regulatory objective” (Clinton [1993](#), §1(b)(5)). In principle, the latter objective can be achieved by reforming regulations in a way that does not affect the level and scope of existing regulations, but rather achieves cost savings by reducing inefficiencies in the implementation of regulations (OECD [2010](#), 17). Reducing such inefficiencies is worth pursuing for its own sake, but in addition there may be important “knock-on” effects to the extent that lowering the cost of regulations is also conducive to economic growth and development (OECD [2020a](#)) and could reduce unproductive behavior, such as rent-seeking and corruption.

In the U.S., states and localities are increasingly interested in streamlining regulatory compliance and administrative processes and systems to make them faster and less burdensome to businesses, without compromising their regulatory missions (Pew [2018](#)). While such initiatives are likely to benefit affected businesses and may make governments more efficient at achieving their regulatory missions, the question this paper seeks to address is whether they also produce broader economic effects such as fostering an environment more conducive to economic development.

Because individual regulations provide benefits as well as costs, governments across the world in recent years have focused less on deregulation than on regulating “smarter” or “better” (Parker & Kirkpatrick [2012](#); OECD [2012](#)). This often involves following good regulatory practices (GRPs) when developing regulations, including transparency and public participation, centralized oversight, and *ex-ante* regulatory impact analysis (OECD [2012](#)). International bodies, such as the Organization for Economic Cooperation and

1. OMB ([2011b](#), 5) distinguishes these “real costs” from “transfers” that distribute resources between groups with illustrative examples.

Development (OECD) and World Bank, have undertaken efforts to understand the impacts of such policies on economic growth.

In addition to these ex-ante practices for developing regulations, *ex-post* evaluation of regulatory impacts is increasingly seen as an important element of good regulatory practice to explore, among other things “whether [existing regulations] have given rise to unnecessary costs or other unintended impacts” that could be alleviated with modifications (OECD [2020b](#), 9). Because regulatory costs accumulate over time, the OECD has long recommended that “[r]educing the administrative burden of government regulations on citizens, businesses and the public sector should be a part of the government’s strategy to improve economic performance and productivity” (OECD [2012](#), 27).

A. Paper Objectives

This paper reviews and synthesizes available literature on the potential economic impacts of reducing regulatory compliance and administrative burdens on business, while holding regulatory goals and outcomes constant. (1) We identify ways in which regulations can be made more efficient (less costly) while maintaining the existing scope (policy goal) of the regulations. (2) Where possible we summarize empirical estimates of the potential cost savings to be gained from making regulations more efficient. (3) We discuss how reducing regulatory cost inefficiencies contribute to economic development and growth.

One of the challenges of this project is distinguishing between regulatory reform initiatives that substantively alter regulations and their outcomes (those that address “appropriateness” and “effectiveness” using OECD ([2020b](#)) nomenclature) from those that streamline

compliance burdens and reduce “red tape” without affecting regulatory goals or benefits (i.e. improve regulatory “efficiency”). It is well known that regulation imposes compliance burdens on private parties, and that such costs are unavoidable to some extent.

However, in principle, regulations should be designed and implemented such that the economic burdens of complying with a given regulatory objective are minimized (such as through one-stop online portals for compliance reporting that reduce the need for filing duplicative paper forms). When that is not the case, regulation is more costly than it needs to be, and an important question is: what are the added costs of regulating inefficiently?

Compliance with regulations involves opportunity costs in that the resources expended for compliance are not available for other productive, welfare enhancing activities. Market participants operate within an institutional structure that involves the rule of law, a system of exchange, and property rights. Those institutions “shape entrepreneurial opportunities which have real effects on the ability of the economic system to realize the gains from social cooperation under the division of labor” (Boettke & Coyne [2009](#), 138).

In a survey of the literature, Parker and Kirkpatrick do not find “an identifiable economic theory of specific regulatory policies (e.g. administrative simplification) and specific economic and welfare outcomes (e.g. higher economic growth)” (Parker & Kirkpatrick [2012](#), 10). However, they do identify several papers that quantify the effects of administrative simplification, which are the types of reforms we focus on here. They find that “[r]educing regulatory burdens, opening one stop shops, shortening the time for opening a business and lowering business entry costs and regulatory burdens can be expected to improve national

economic performance” (Parker & Kirkpatrick [2012](#), 20).

“The broad proposition in the literature is that reducing the regulatory burdens on business, including the costs and delays of starting up new businesses, as well as managing existing ones, will lead to more new market entry and dynamic efficiency gains in terms of entrepreneurship or productivity” (Parker & Kirkpatrick [2012](#), p. 21).

Some key findings of our research are:

1. Providing flexibility in compliance with regulatory goals can yield significant benefits by lowering costs to businesses, and by providing incentives for innovation in achieving those societal goals that can lower consumer prices, increase opportunities, and improve productivity and economic growth. Such flexibility can be achieved through performance or market-based, rather than means-based, regulatory design. These approaches set clear, measurable compliance goals but allow regulated parties to determine how best to achieve those goals. (Sections II.A and III.A)
2. Streamlining redundant or excessive administrative requirements can yield real benefits. This might include one-stop-shops for acquiring regulatory approvals, or opportunities for electronic rather than paper-based reporting. (Sections II.B and III.B)
3. Addressing factors in the regulatory process that lead to unnecessary delays in getting approvals to engage in economic activities, such as starting a business or residential or commercial development, can yield economic benefits. (Sections II.C and III.C)
4. Newer and smaller firms tend to be affected most by inefficient regulation. Since they may be more

innovative than incumbents, more competition from new firms could stimulate economic growth. (Section IV)

5. It is challenging to separate savings in regulatory cost burdens that are possible from making existing regulations more efficient from those that require changes in the level and scope of regulations, which would require an analysis of the benefits as well as the costs of the changes. (Section III)

6. The U.S. appears to lag behind other OECD countries in making concerted efforts to reduce administrative burdens and regulatory delays. (Section V)

7. All these actions impose costs on government agencies, but experience in other countries and in specific regulatory areas suggest the benefits in terms of economic growth may exceed those costs. (Section V)

This paper is organized as follows. The remainder of this section summarizes our methods. Section II provides a review of the types of regulatory costs that may affect the efficiency of a regulation without altering its ability to achieve its objective or its effectiveness. Section III reviews findings from the literature on the broader economic effects of those types of costs, and the benefits associated with reducing them. Section IV reviews available information on the relationship between inefficient regulation and economic outcomes, and section V draws conclusions about what efforts states might be able to undertake to achieve economic benefits from streamlining regulatory implementation. It also offers recommendations for future research to explore evidence regarding the economic gains achievable from administrative burden reduction. The matrix in the Appendix summarizes key literature that presents quantitative analysis.

B. Methodology

Our approach entailed identifying and reviewing theoretical and empirical literature that assessed the impact of regulatory compliance and administrative burdens. The broad spectrum of interdisciplinary work by scholars in fields of administrative law, economics, public policy, public administration, and political science provided insight into the economic impact of regulatory policies and administrative burdens. We used sources published as peer-reviewed articles in academic journals, books, work by academic centers and think tanks, government agency reports, and select working papers from other research institutions (e.g., the OECD, World Bank, National Bureau of Economic Research).

We analyzed qualitative and quantitative summaries and methods to ascertain the effect that regulatory policies and administrative burdens might have on businesses, governments, and entrepreneurs. We initially focused our review on environmental regulations, general business permitting, and land use regulations, including building codes. We did not include occupational licensing in our survey. While this remained our focus, during our review, we found that a more meaningful way to categorize regulations was according to the three types introduced in the next section: compliance costs, administrative costs, and costs associated with delay and uncertainty. To accurately summarize and interpret the findings, we created a matrix (Appendix) that identifies the themes, research question(s), designs, methodology, and key findings of the literature that we use in the paper.

Our approach consisted of 1) identifying key literature by traditional database searches using key words related to regulatory policy and administrative burdens; 2) an internal peer review

by subject matter experts to identify gaps in the initial review, as well as review by two external experts; 3) an additional search of recent literature that cites sources identified in the first two steps to assist in systematically investigating the relation between the study results and methodological choices.

We initially prioritized for inclusion empirical papers focused on U.S. policymaking where the goal of the research was either to generate estimates of regulatory burdens in connection with outcomes of interest to economic development or to assess the outcomes of previously enacted regulatory reform efforts. The paucity of analytical articles focused on the U.S. led us to include articles and papers with an international focus (especially involving other OECD countries) where we determined that the study conducted a robust evaluation of regulatory reform results or employed novel research methods or datasets that could be valuable if applied to a U.S. context.

In addition to empirical papers, we also included any study that provided a theoretical treatment that would be directly relevant to policymakers. This included, for example, sources that detail the mechanisms through which regulatory burden affects economic growth and elaborates on theories of change that detail how reduction in administrative costs would likely lead to changes in economic indicators of interest (e.g., job creation, GDP growth, etc.).

We also received anecdotal information that is not in the published literature, but nonetheless may offer some useful insights. For example, U.S. environmental statutes typically have a federalist structure, i.e., the Environmental Protection Agency sets stringency levels, but states conduct most of the permitting, inspection, and enforcement. EPA sometimes will do cross-

state studies to evaluate the cost and effectiveness of various state strategies. In one case, EPA was able to explain to states how to reduce the overall level of resources—both public and private—devoted to inspections, while increasing the level of compliance achieved by targeting them appropriately (Mannix 2022).

Such studies may be done by EPA’s program offices or the policy office, or by a cross-agency committee. The (now defunct) Innovation Action Council, for example, convened representatives of all EPA program offices and regions, and tackled such problems as achieving compliance at major ports. Ports present a particular problem because they involve a dense convergence of regulatory compliance problems across multiple agencies, multiple jurisdictions (local, state, federal, and international), and multiple private actors. EPA made particular efforts to discover best practices that worked at one port and then communicate them effectively to other ports² (Mannix 2022).

2. For part of this story, see <https://www.epa.gov/ports-initiative/about-epa-ports-initiative>.

II. Types of Regulatory Cost

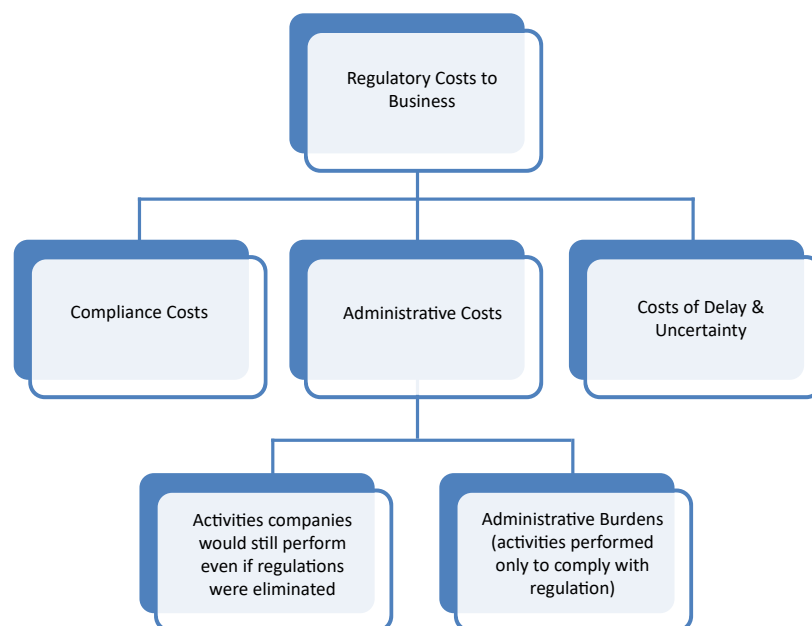
To better understand regulatory impacts, the GW Regulatory Studies Center developed a taxonomy of regulatory forms that catalogues the range of regulatory instruments used to achieve regulatory objectives (Balla et al. 2018). The taxonomy contains three tiers, starting with a broad classification distinguishing economic, social, transfer, and administrative regulations, that is disaggregated to a more detailed taxonomy of specific policy instruments within those broad categories. The premise of that research is that the form a regulation takes—the particular policy mechanisms adopted to achieve a goal—is an important causal factor in the economic impacts of the regulation. These different regulatory forms may translate into regulatory costs in different ways. For example, means-based standards may impose greater costs than performance-based standards (see discussion on compliance flexibility below); monitoring, reporting, and verification requirements may impose administrative burdens; and licensing and permitting requirements may lead to delay costs.

Figure 1 depicts the three main categories of regulatory cost to business that we examine here. Regulation involves both direct expenditures, such as (A) compliance costs (e.g., installing equipment necessary to meet a regulation) and (B) administrative costs including paperwork, monitoring, and reporting, as well as (C) implicit costs associated with delay and uncertainty. Note that our focus in this paper is on costs to regulated businesses, but some regulatory costs directly affect consumers (e.g., acquiring permits to renovate a home) and workers (e.g., occupational licensing), and all are ultimately born by individuals, be they business owners, workers, renters, consumers, etc.

A. Compliance Costs

Substantive compliance costs include capital investments necessary to meet regulatory requirements, changes in production processes or use of inputs, and/or ongoing operation and maintenance costs. Regulations causing such costs can fall under the broad heading of design

Figure 1. Costs of Regulation to Business



Source: Authors' illustration.

vs. performance standards. Design standards are highly prescriptive in nature—for example in the case of pollution control directing that a particular technology be used to reduce emissions. Performance standards set outcomes that must be achieved—e.g., reducing emissions levels by X%—but leave the decision of how to achieve that target up to individual producers.

Agencies may prefer design standards because they are easier to enforce (i.e., to observe that a required technology is in place and operating), but federal guidance states that “performance standards are generally preferred to design standards” (OMB [2011a](#), 6). The presumption, which is backed by some empirical evidence (Maloney & Yandle [1980](#), [1984](#)) is that compliance costs can be reduced significantly—without affecting the desired outcome of the regulation—by implementing performance instead of design-based standards.

In a related vein, it has also been shown that relying on market-based incentives, such as marketable emission permits, fines, and Pigouvian taxes, instead of direct regulation, can have an important advantage of holding down compliance costs (OMB [2003](#), Baumol & Oates 1988). For example, EPA encourages states to consider implementing water quality trading, banking, and other market-based programs on a water-shed scale (EPA [2019](#)). See discussion in section III.A below.

B. Administrative Costs

In addition to the costs associated with changing production and/or use of inputs to comply with regulation, regulated entities may incur administrative costs. As Figure 1 suggests, businesses would incur some administrative costs even if not compelled to via regulation (such as internal monitoring to ensure required equipment is functioning properly). Marneffe and Vereeck

([2011](#), 350) distinguish those from “administrative burdens,” which include time and resources spent in monitoring and reporting on compliance, understanding regulatory rules, applying for permits, and so forth. Inefficiencies arise when such administrative costs are more burdensome than needed to achieve the goals of regulation. Balla et al. ([2018](#)) find that monitoring and reporting requirements are negatively associated with productivity in the agriculture sector. Shapiro & Borie-Holz ([2020](#), 4) find that reporting burdens are particularly salient to small businesses, and that routine recordkeeping and reporting requirements generate negative sentiments about government generally.

Unnecessary administrative burdens are often referred to as “red tape” (Pérez [2022](#)) and, more recently, “sludge” (Sunstein [2020](#)). For example, in the public administration literature, Bozeman ([1993](#), 283) defined “organizational red tape” as “rules, regulations, and procedures that remain in force and entail a compliance burden for the organization but have no efficacy for the rules’ functional object [or purpose].” Sunstein ([2020](#), 654) focuses on administrative burdens on individuals and defines “sludge” to include “excessive or unjustified frictions, such as paperwork burdens, that cost time or money; that may make life difficult to navigate; that may be frustrating, stigmatizing or humiliating; and that might end up depriving people of access to important goods, opportunities and services.” He finds “sludge often has costs far in excess of benefits, and it can hurt the most vulnerable members of society,” and recommends that private and public institutions conduct regular “sludge audits to catalogue the costs of sludge and to decide when and how to reduce it” (Sunstein [2020](#), 654). Mandel and Carew ([2013](#)) liken the accumulation of regulation burdens to a buildup of pebbles in a stream that “block the natural flow of

economic growth and innovation, to no fault of any single regulation” (4). They propose a “regulatory improvement commission” to review existing regulations, similar to Sunstein’s sludge audit (Mandel & Carew [2013](#)).

C. Costs of Delay and Uncertainty

Aside from the time and money that must be devoted to administrative compliance, the manner in which regulations are administered can increase uncertainty experienced by businesses and/or consumers and delay the process of making business decisions and investments. Bloom suggests that “greater uncertainty appears to reduce the willingness of firms to hire and invest, and consumers to spend” (Bloom [2014](#), 153). Marneffe and Vereck ([2011](#), 351) note that unnecessary delays result in opportunity costs (“measured by the value of the project lost”) and “cash-flow problems” (measured by interest paid or foregone). Such delays impose barriers that may deter investment and innovation. For example, as discussed in Section III.C below, land use regulations that require multiple approvals may impose economic costs.

III. Economic Effects of Regulation and Efforts at Reducing Regulatory Costs

There is general agreement in the literature that unnecessary regulatory costs can hinder economic growth. The corollary, as Parker and Kirkpatrick (2012) note, is that “... reducing the regulatory burdens on business, including the costs and delays of starting up new businesses, as well as managing existing ones, will lead to more new market entry and dynamic efficiency gains in terms of entrepreneurship or productivity” (Parker & Kirkpatrick 2012, p. 21).

The challenge in quantifying these effects is in defining regulatory costs in a useful way. Much of the research in this area uses blunt measures of regulation as a proxy for regulatory costs (e.g., counts of regulations, pages or words in the regulatory code, number of regulatory agency employees, or the budgets of regulatory agencies) (Balla et al. 2018). Even if these proxy measures shed light on trends in total regulatory costs and their economic impacts, they are less useful for distinguishing or understanding the discrete types of regulatory costs of interest here and described in the previous section—those that could be reduced without altering regulatory objectives.

While making regulation more efficient provides benefits to regulated parties and regulators, it can also improve macroeconomic outcomes, which can be measured in different ways. For example, Aghion et al. (2021) find a negative relationship between French employment regulations (including some that could be considered administrative burdens) and innovation (measured by patents). They estimate that regulations impose an “aggregate innovation (and therefore growth) loss of about 5.4%,” which is equivalent to a loss in aggregate consumption of 2.2% (Aghion et al. 2021, 38).

Regulation may inhibit market dynamism (measured using employment or startup rates in the private sector to quantify job creation and destruction). Administrative burdens related to getting approval in the form of licenses or permits to operate can affect firm entry and exit (Ciccone & Papaioannou 2007), as can compliance costs that force businesses to exit a market. The World Bank’s annual *Doing Business* reports estimate performance indicators for over 190 countries with respect to their relative ease of doing business and the extent to which a country’s regulatory environment contributes to or hinders entrepreneurship (World Bank various years ³).

The relationship between entrepreneurship—the creation of new businesses—and economic growth is well established (Acs 2006). A literature review by Boettke and Coyne (2009) reasons that “[t]he rules of the game create payoffs that make certain entrepreneurial opportunities more attractive than others” (135). They find that, “[i]n providing the rules of the game, [regulations] establish or alter incentives by influencing the costs and benefits associated with certain types of activities” (Boettke & Coyne 2009, 141).

Acs observes:

Entrepreneurs create new businesses, and new businesses in turn create jobs, intensify competition, and may even increase productivity through technological change. High measured levels of entrepreneurship will thus translate directly into high levels of economic growth (Acs 2006, 97).

3. Note that the World Bank discontinued this annual report in 2021 due to “data irregularities.” <https://www.worldbank.org/en/news/statement/2021/09/16/world-bank-group-to-discontinue-doing-business-report>

Ciccone and Papaioannou (2007) find that countries in which it is easier to obtain permission to start a business see greater growth in industries associated with expansionary global demand and technology shifts. Barriers to entry and exit in the market directly affect competition among firms, which affects the quantity and quality of goods and services provided, the prices paid by consumers, employment opportunities, workplace conditions, etc. Streamlining regulatory compliance and administrative burdens, by reducing the costs of starting a new business, obtaining construction permits, hiring new employees, etc., can encourage entrepreneurship.

As noted above, regulations that are well-designed and implemented can provide social benefits. For example, regulatory “barriers to entry may make legal systems run more smoothly; [by filtering out poor quality entrants,] they may produce higher quality goods and services, and they may improve overall societal welfare” (Teague 2016, 286, *internal citations omitted*). On the other hand, as Teague (2016) notes, “barriers to entry could be the consequence of regulatory capture as the public choice theorists predict, hurting business development, on net” (286, *internal citations omitted*). Theory and empirical research suggest that such regulations benefit incumbents and larger firms at the expense of smaller startups (Bailey & Thomas 2017; OECD 2020a).

Numerous international studies have documented the benefits of regulating “better” using cross-country comparisons (e.g., Djankov 2009; Gorgens et al. 2003). Whether these findings hold true in the U.S. (which already ranks highly in terms of government institutions) is less well-studied. Coglianesi and Carrigan observe that “researchers have yet to provide substantial support for” a relationship between regulation and employment, for example (Coglianesi & Carrigan 2013, 7).

States can pursue several actions to reduce regulatory costs that may inhibit economic growth. They can reduce the costs of complying with a given regulatory objective, streamline reporting burdens, and reduce delays and uncertainty.

A. Reducing Compliance Costs

Flexibility in how firms comply with a given regulation can reduce regulatory burdens (and increase innovation in compliance) (Carrigan & Harrington 2015). The potential benefits from giving regulated parties greater flexibility in determining how to comply with regulations were first documented in the 1980s in the case of environmental regulations. Suppose that a regulator seeks to reduce emissions from a particular company by X%. One way of meeting the target would be to impose design standards and prescribe the installation of specific emissions-reducing technologies by the company. Alternatively, the regulator could set a performance standard requiring the company to reduce its emissions by X%, while giving the company the flexibility to determine how to achieve the performance target. In 1979, EPA recognized the potential savings in regulatory costs to be gained from relying more on performance than design standards. EPA likened this approach to placing a “bubble” around the company from which no more than a permitted level of pollution could be emitted. The objective was to “regulat[e] results, not means” (EPA 1979).

As reported by Maloney and Yandle (1980, 1984), applying the bubble approach yielded significant reductions in estimated compliance costs. For example, they estimate that allowing a company (Dupont Chemical) to meet an emissions reductions target of 85% for an entire plant, as opposed to prescribing specific emission targets for each source within the plant reduced compliance costs by roughly 60% (Maloney & Yandle 1980).

The estimated compliance cost savings were even larger—over 90% relative to design standards—if the above-mentioned company were required to achieve an 85% reduction spread over multiple plants, allowing emissions reductions of more than 85% at efficient plants to offset lower emissions reductions at inefficient plants.

The basic idea behind the “bubble” approach has been extended to regulations of a regional and even national scope. A performance-based approach can be implemented directly by imposing a performance target and then monitoring compliance, but equivalent results can be achieved in other ways. One option would be to tax emissions at a rate consistent with achieving the overall target,⁴ leaving individual firms to reduce emissions up to the point that the marginal cost of doing so is greater than the per-unit tax (Baumol & Oates 1988; Cordes 2002). Alternatively, individual firms could each be subject to a specific target—e.g., reducing emissions by 85%—but then be allowed to trade emissions among themselves so that firms with less cost-efficient means of reducing emissions could purchase the right to emit more than the overall target from firms with more efficient emissions-reducing technologies. The Clean Air Act of 1990 adopted such a “cap and trade” approach to reduce sulfur dioxide, resulting in estimated compliance cost savings of more than

4. Unless regulators have complete information about a regulated party’s relevant demand or supply curves, replacing a direct regulation with a tax is likely to result in choosing a tax rate which is either too low, thereby missing the desired level of activity (e.g., emissions), or choosing a tax rate which is too high, thereby overshooting the regulatory target. In principle, tax rates could be adjusted to achieve the level of regulated activity that is desired. In practice, such adjustments are likely to be politically and administratively infeasible. Thus, it is hard to argue that replacing direct regulation with corrective taxes can achieve savings in regulatory burden while holding the level and scope of regulations constant.

50 percent (Aldy & Stavins [2012](#), p. 47).

An even earlier nationwide emissions trading system successfully phased out lead in gasoline in the early 1980s (Mannix 2020). The stringency was set to be the same as under the prior rules, which was easy to do because lead was being added to gasoline, so the quantities were known exactly. The immediate efficiency improvements were on the order of \$100 million per year. Much more significant, however, is that the existence of lead trading made it unnecessary for EPA to use extra lead to subsidize small refiners who were unable to achieve the same level of lead reduction as large refiners. Absent these lead subsidies, uneconomical small refiners shut down. By 1984, EPA was able to begin phasing out lead from gasoline altogether. This was effectively complete by 1987, and the rest of the world followed suit. The U.N. has estimated the benefits of removing lead from gasoline at ~\$2.4 trillion per year (U.N. [2011](#)). Such flexible compliance systems not only reduce administrative costs and compliance costs; they also reduce the need for special exemptions and allowances—which create adverse incentives for both the regulators and the regulated (Mannix 2020).

The cost savings that have resulted from adopting performance-based approaches to federal environmental regulation can also be found at the state level. A recent analysis of new flaring regulations in North Dakota’s oil and gas industry finds that regulating by means of a tax instead of design standards would lower the costs of achieving the regulatory target by over 40% (Lade & Rudik [2020](#)).

The state of Virginia relied on a market-based approach to address the problem of overfishing in its waters. It provides an example of a clean separation between the stringency of a regulation and the means of achieving it. Rockfish (aka

Striped Bass) migrate up and down the east coast. A federal fisheries management committee monitors the stocks; it sets an allowable catch each year, and assigns a portion of that catch to each state. The states are free to adopt different methods of ensuring compliance with their assigned limit. In 1997 Virginia decided to replace its old regulations—involving seasons, limits on methods and gear, etc.—with a system of Individual Tradeable Quotas (ITQ). In effect, the watermen became owners of a specific share of whatever sized catch was assigned to the state. Besides the lower cost of achieving compliance, the most remarkable change was in the relationship between the regulators and the regulated. Under the old system, enforcement was entirely an adversarial process. Under the new ITQ system, watermen who owned a stake in the fishery very much wanted it to thrive, and were eager to cooperate to ensure that limits on the sustainable catch were accurately set and effectively enforced (Mannix 2022).

As these illustrations show, market-based and flexible instruments such as emissions taxes, tradable allowances, or performance standards, are often less costly or more effective than technological standards, because they leave more freedom to firms on the technological solution to minimize compliance costs (OMB 2003).

The type of flexibility exemplified by relying on performance- rather than design-based standards is most readily applicable when the goal of regulation is to achieve a specific measurable target, such as a given reduction in emissions or a given improvement in water quality. Nonetheless, the cases demonstrate an important principle. Regulated parties often are best able to judge how to comply with regulations. Thus, as long as regulators are able to effectively monitor the level of compliance, there are potentially significant cost savings (gains in efficiency) to be had by allowing

regulated parties discretion in how to comply. These economic gains need not come at the expense of regulatory stringency. Indeed, some argue that appropriately targeted, performance-based regulations can increase innovation and productivity over a no-regulation baseline by providing incentives for firms to invest in technologies that can either help them comply with the regulation in a more cost-effective way, or create new products or processes that are exempt from regulatory requirements (Porter & Linde 1995). Porter & Linde (1995) emphasize that to be productivity-enhancing, regulations must set clear goals but allow flexible approaches, provide market incentives to seed and spread innovations, and leave as little uncertainty as possible at every stage.

B. Streamlining Administrative Burdens

Experience, especially in other countries, suggests that streamlining administrative burdens can have quite significant positive impacts on GDP and total factor productivity. Parker and Kirkpatrick's review of the quantitative literature finds that "[r]educing regulatory burdens, opening one stop shops, shortening the time for opening a business and lowering business entry costs and regulatory burdens can be expected to improve national economic performance" (Parker & Kirkpatrick 2012, p. 20).

The OECD (2020a, 8) finds that "poor delivery of regulations [e.g., requiring the same information to be provided to different government agencies] can result in potential businesses not being created, and put unnecessary strains on those that exist" especially small and medium-sized enterprises. Bozeman and Kingsley (1998) find that increased levels of red tape are correlated with decreased willingness to take risks. In their survey of small businesses in the midwestern U.S., Shapiro and Borie-Holz (2020) find that burdensome

administrative procedures (especially those for which outcomes are not clear) drive negative sentiment toward regulation and government generally (5).

Sandström et al. (2019, 97) find “a strong connection between innovation, economic growth, and prosperity,” and that in Sweden, streamlining regulation (such as environmental permitting, employment & workplace regulations, and regulations that affect housing supply) is more effective at encouraging innovation (such as new products, processes, or business models) than government funding of R&D.

Klapper et al. (2006) find that burdensome requirements on new businesses can have a chilling effect on the number of new entrants into the market. They compare entry regulations in the United Kingdom and Italy and find that substantial barriers to entry in the form of costly red tape reduces the amount of competition faced by large incumbent firms to a degree that negatively affects productivity growth (measured as real growth in the value added per employee). Evaluations of regulatory reforms aimed at reducing the administrative costs of entry regulations have found significant beneficial effects on both GDP growth and value added per worker (Motta et al. 2010).

The UK undertook a concerted effort to modernize its regulatory framework in 2005, and over the next five years “achieved £3.5 billion in savings [equivalent to around \$5.5 billion] by reducing the cost of red tape faced by business” (Kohli 2011). The initiative focused on the costs associated with completing forms, inspections, reporting and recordkeeping; direct compliance costs (such as equipment) were not included. Two important contributors to the cost savings were replacing paper forms with electronic ones and making

guidance documents more accessible and clear (Kohli 2011).

While the UK initiative focused on businesses, administrative costs can also result in “onerous” experiences for citizens—usually in the delivery of public services (Moynihan et al. 2016, 498; Sunstein 2020). Researchers focusing on administrative burdens on citizens point to data provided pursuant to the Paperwork Reduction Act of 1980, which requires the Office of Information and Regulatory Affairs in the Office of Management and Budget to approve all federal collections of information and compile an annual “Information Collection Budget.” The current budget includes almost ten-thousand separate requirements, compliance with which exceeds 10 billion hours per year ⁵. Sunstein (2019) multiplies the total burden hours by a rate of \$20/hour to arrive at a lower bound estimate of costs. Based on estimated burden hours in September 2022, that calculation yields \$206 billion per year, which, when combined with agencies’ estimate of annual non-labor costs of those paperwork requirements of \$143 billion, amounts to almost \$350 billion per year. While some of these burdens fall on individuals, especially related to filing annual income tax returns and applying for benefits, and some involve responding to survey instruments unrelated to regulation, many are reporting burdens that fall on businesses as requirements associated with regulatory and tax compliance.

Despite the rich source of data in OMB’s Information Collection Budgets, there is surprisingly little effort to distinguish the different types of reporting requirements so as to analyze administrative burdens, measure their trends, and estimate their economic impacts. A notable recent exception is Kalmenovitz (2021) who

5. Daily updated statistics are available at <https://www.reginfo.gov/public/do/PRAReport?operation=11>

undertakes an extensive analysis of data from OMB's information collection activities to define regulatory intensity and empirically analyze the effects of regulatory intensity on the cost of goods sold in a number of industries.⁶ Other developed countries have attempted to isolate and estimate administrative burdens in order to reduce them. One notable effort was undertaken by the Netherlands Central Bureau of Economic Analysis (CPB) (Tang & Verweji [2004](#)). The analysis of administrative costs was undertaken using the framework contained in the Standard Cost Model (SCM) developed by the Dutch and subsequently applied by dozens of OECD countries (OECD [2010](#), 17).

The SCM seeks to measure administrative burdens that are attributable to regulation, as distinct from administrative costs that a normal, well-functioning enterprise would need to incur in the course of doing business. (The distinction between the bottom right and left boxes in Figure 1.) Interviews with typical businesses in the target group, along with external advisors and other experts, determine "how much time the businesses use on the individual activity that is associated with a data requirement" (SCM n.d., 10).

The analysis of regulation-induced administrative costs assumes that these costs largely take the form of wages that firms must pay workers to comply with regulations. Accordingly, the presumption is that lowering regulatory burdens will free time and resources of regulated businesses for other more productive activities.

The basic formula the Netherlands CPB used to

6. While this approach is promising, the measure of regulatory "intensity" is broader than the focus of this paper in that it covers non-regulatory information (e.g., related to tax collection) and isn't limited to increasing the efficiency of achieving particular goals.

estimate administrative cost burden (Kox [2005](#)) is

$$A_c = T_c \cdot W_c + M_c \cdot P_c$$

Where: AC = cost per information event; TC = company time required for information event; WC = average company wage rate; MC = purchased services from external suppliers; PC = price of external services.

The total administrative cost burden of regulatory compliance is given by:

$$A_T = \sum_{c_1}^E A_c \cdot F_c$$

Where: AT = total annual company administrative costs of regulatory compliance; FC = frequency with which a particular time event occurs within a year; and E = (C_1.....E) is the set of time events mandated by regulatory compliance.

The types of information activities covered by the above analysis are summarized below.

1. Notification or announcement of...
2. Apply for permit to
3. Apply for qualification acknowledgement for....
4. Implement registration and /or measurement of
5. (Periodically) Conduct research on (or investigation into)
6. (Periodically) report data on (e.g. company data for statistical office)
7. Take care for an assessment of for reasons of (e.g. safety, environment, labour laws)
8. Apply for permit or exemption for
9. Take care for updating company contingency plans, programmes and procedures for....
10. Labelling of products and installations for third parties

11. Mandatory information supply to third parties on.... (e.g. consumer information)
12. Supply documents on
13. Update knowledge on actual legislation and regulations
14. Redress or appeal procedures on
15. Obligatory compliance with complaint procedures
16. Filing data in register.

Source: [SCM](#) n.d., Box 13, 25-26

Using the above framework, the CPB estimates that administrative costs required to comply with regulations amount to €16.4 billion and correspond to 3.6% of Dutch GDP ([SCM n.d.](#)). Gelauff and Lejour (2006) use the CPB estimate of administrative costs as a share of GDP and simulate the effects of reducing these costs by 25% on the GDP of the entire EU, concluding that a reduction of administrative costs of this magnitude would increase the level of EU-wide GDP by 1.5%.

The Dutch analysis is arguably one of the most detailed efforts to estimate the economic magnitude of administrative compliance costs. While other countries have adopted the SCM to quantify and reduce administrative burdens (OECD [2010](#)), there does not appear to be an even remotely comparable analysis for the U.S., though the Information Collection Budget should be conducive to such an effort.

The estimated impacts in the Netherlands can be used to provide some illustrative rough “order of magnitude” estimates of the potential economic benefits associated with reducing the administrative costs of regulatory compliance.

We do this by applying the same percentage change in GDP from the Dutch study to the U.S. Census Bureau of Economic Analysis estimates of GDP

for several U.S. states (U.S. Census [2002](#)). For the three individual states in the U.S. with the highest GDPs (California, Texas, and New York), this approach yields estimated administrative cost burdens ranging from over \$60 billion (New York) to \$120 billion (California). Among the three states with the smallest GDPs (Vermont, Wyoming, and Alaska), the range is correspondingly lower: from \$1.3 billion in Vermont to \$2.0 billion in Alaska.

The CPB analysis does not identify specific ways of reducing administrative burdens while at the same time maintaining the objectives of regulation. However, a report issued by the European Commission provides examples of initiatives undertaken by members of the EU including the Netherlands to simplify administrative burdens. These include:

- An initiative in the Netherlands to reduce the number of permits required to comply with environmental regulations from around 25 to one;
- Replacing the requirement to file a permit with a requirement to notify in the case of certain activities (Sweden);
- Providing a single contact point for permit related questions (German state of Schleswig Holstein);
- Creating one-stop shops for answering a range of questions related to regulation, business formation, and regulations (Italy) (European Commission [2006](#)).

Other countries, including Canada and the UK, have tried to incentivize efforts to reduce administrative burdens through a modified regulatory budget (Trnka & Thuerer [2019](#)). The preliminary step in executing such a budget is to quantify existing burdens (using the SCM or similar methods). The Canadian approach built on the experience of the province of British

Columbia (BC). To initiate its Regulatory Reform Policy in 2001, each BC ministry surveyed its regulations to develop a baseline count of “regulatory requirements,” defined as individual “action[s] or step[s] that must be taken, or piece[s] of information that must be provided in accordance with government legislation, regulation, policy or forms, in order to access services, carry out business or pursue legislated privileges” (Jones [2015](#), 15). The province made that baseline database public, committed to a one-third reduction in requirements, and issued quarterly reports on progress toward that goal. Before imposing a new regulatory requirement, ministries completed a checklist as to why they were necessary and cost-effective; they also had to identify regulatory requirements to offset any new requirements. BC’s economic performance improved dramatically after the reforms were introduced compared to previous years and relative to other provinces. Jones ([2015](#)) acknowledges the difficulty of attributing the gains to administrative burden reductions (vs. other reforms undertaken at the same time) but observes:

- “Economic growth in BC was 1.9 percentage points below the Canadian average between 1994 and 2001 but 1.1 percentage points above the Canadian average between 2002 and 2006.
- “BC’s real GDP growth was lower than Canada’s as a whole in six of the nine years between 1992 and 2000, but BC’s GDP grew faster than Canada’s every year between 2002 and 2008.
- “Per capita disposable income in BC was C\$498 below the national average in 2000, but by 2006, it was C\$60 above the national average, third behind Alberta and Ontario.
- “The number of incorporations in BC jumped from 20,759 in 1998 to a high of 34,036 in 2007. The number of incorporations between 2008 and 2013 were a bit lower, ranging

from 26,431 to 32,225, but even the lowest year was higher than any time in the 1990s.

- “The number of business bankruptcies in BC also decreased considerably over the same time period, from 1,031 in 1998 to 454 in 2008. The number of business bankruptcies per year has been falling since 2003 and was only 189 a year by 2013.” (Jones [2015](#), 23-24)

C. Implicit Costs of Delay and Uncertainty

Aside from the time and money that must be devoted to administrative compliance, the manner in which regulations are administered can increase uncertainty facing businesses and/or consumers, and delay the process of making business decisions and investments.

Regulation-induced lags and uncertainty may make it difficult for firms to assess risks and opportunities and may inhibit their investment in new technologies (Marcus [1981](#)). Regulatory procedures that generate uncertainty or delay firms’ investment decisions impose opportunity costs as they wait to gather more information and gain assurances about future regulatory changes. On the flip side, Porter and Linde ([1995](#)) suggest that, to the extent “regulation reduces the uncertainty that investments to address the environment will be valuable,” it can increase innovation and productivity (p. 100). (As noted above in the discussion of performance vs. design standards, they also find that such beneficial regulations must set clear goals and be performance- or market-based.)

Sinclair and Xie ([2021](#)) find that, in the aggregate, sentiment about regulation may play a more important economic role than uncertainty about the regulatory environment, but increased uncertainty does appear to have at least temporary negative

effects on output and employment. Furthermore, variation by regulatory area suggests there may be more gains in addressing some areas than others. They rely on novel news-based measures of sentiment and uncertainty about regulation in the U.S. over time to examine their relationships with macroeconomic performance. Other studies of delay and uncertainty focus on individual regulations or groups of regulations (such as energy-sector regulation).

One area that has received significant attention is land-use regulation. The use of land is central to the economic life of urban communities; it is widely acknowledged that regulating how land is used both serves a social purpose and entails potentially significant costs of compliance, not only for affected businesses but for governments as well.

Important forms of local land use regulation include zoning laws, building codes, and building permitting. All three modes involve what Wrenn and Irwin (2015) call implicit costs in the form of delay and increased uncertainty. These regulations impose costs through several channels: (1) by restricting the supply of land that is available for development, particularly in more restrictive areas; (2) by delaying the commencement of development, and (3) by increasing uncertainty facing developers as to whether and when their project will be complete.

There is widespread agreement in the literature that these land use regulations, individually and collectively, contribute to higher prices of both residential and commercial buildings. In the case of zoning laws, zoning-induced restriction of the supply of land for urban development makes housing more expensive than it would be in the absence of zoning restrictions. Analyses, such as Gyourko and Krimmel (2021), find that these effects can be quite substantial in some urban areas,

imposing an effective “zoning tax” on housing that is on the order of hundreds of thousands of dollars. Gyourko et al. (2021) also find that the size of the zoning tax may be large enough to affect housing affordability and the distribution of wealth, especially in coastal markets where the zoning tax is “1 to 4 times the relatively high typical household incomes in these markets” (2021, 3).

Gyourko et al. (2008) note that local building regulation can affect housing supply, costs, and economic development not only by directly prohibiting a project, but indirectly by increasing “costs by delay, design restriction or the ease with which court suits can be used to challenge development rights” (693). Their empirical research finds that the “average delay time between application and approval for a standard project is three times longer in the most highly regulated places versus the least regulated places” (695).

In a more recent paper, Gyourko et al. (2021) describe an increasingly difficult regulatory environment that homebuilders must navigate. Their 2018 survey revealed an increasing number of regulatory approvals required for “any development project requiring a variance to the local zoning code” (3). Even in lightly regulated areas, they found “the average time span between submitting a project for approval and receiving a decision is 3.7 months” (2). In the more heavily regulated areas, delays averaged 8.4 months.

Quigley et. al (2008) argue that regulatory stringency is consistently associated with higher costs for construction, longer delays in completing projects, and greater uncertainty about the elapsed time to completion of residential developments. Their modeling suggests “the addition of one required review to the development process is associated with price increases of about 4 percent” (295).

We find strong evidence that regulatory restrictiveness leads to higher house prices and higher rents in the jurisdictions imposing the regulations. These effects are quite large. An increase of one standard deviation in the number of governmental reviews required to authorize residential development (i.e., from a mean of five required agency reviews, to a total of seven) is associated with an 8 percent increase in the average prices of single-family housing in the existing stock. Regulation clearly seems profitable to the owners of existing housing (297).

Wrenn and Irwin (2015) develop and use an econometric model to estimate the effect of delay on the probability of development going forward. Their estimates imply that a one-month delay in approval of a development project reduces the predicted probability of completing development by more than 10%. The authors also find evidence that zoning and other land use restrictions change the pattern of development, favoring exurban development, which may contribute to urban spatial expansion.

Delays and other complexities of zoning, such as building codes, also impose an implicit cost by increasing the uncertainty developers face regarding time, cost, and probability of completion. A report from the Brookings Institution notes that “[t]he process of building new homes is full of uncertainty and unexpected obstacles. Regulatory barriers make it riskier, longer, and more expensive, which has consequences for housing affordability” (Schuetz 2020).

Each step required by local governments during the land development process has a purpose, whether it is preventing environmental damage (Lewis 2012), preserving neighborhood aesthetics, or providing essential infrastructure. But there are also costs associated with the process: fees for lawyers,

surveyors, and specialized consultants as well as infrastructure costs. Time spent by local officials (Montgomery County [n.d.](#)) in reviewing documents and holding hearings also represents an opportunity cost for the public sector.

Who ultimately pays the costs associated with land development—whether it comes out of developers’ profits, landowners’ assets, gets passed along to consumers of new housing, or borne by would-be purchasers who cannot afford to buy—may not be immediately obvious. What is clear is that a longer and more uncertain process increases the costs of development (Wrenn & Irwin 2015).

Building codes are intended to achieve outcomes such as quality and safety in both residential and commercial structures, as well as environmental objectives such as energy efficiency and the promotion of renewable energy sources, such as solar power. Just as in the case of emissions regulation discussed above, the regulatory objectives of building codes can be achieved either through prescriptive standards, or performance-based regulation.

A useful example is the case of building codes designed to achieve energy efficiency. As discussed by Senick and Abramson (2020): a performance-based code would require meeting specified energy use intensity, while a standard, prescriptive code would stipulate a minimum wall insulation level among other specific measures. By holding buildings to a performance target, performance-based codes allow building owners the flexibility to try new (and modify existing) energy conservation measures or, more likely, bundles of conservation measures that are designed to achieve optimal energy performance (Senick & Abramson 2020).

Similar possibilities exist for substituting performance for prescriptive standards in other building code areas such as fire safety, and construction.

There is a fairly extensive literature extolling the benefits of allowing greater flexibility by increased reliance on performance rather than prescriptive building codes (Listokin & Hattis [2005](#); EPA [2021](#)). Somewhat surprisingly, however, there do not appear to be estimates of the size of potential cost savings from adopting performance-based building codes that are similar to those that exist for performance-based environmental regulation. If, however, substituting performance-based for prescriptive building codes offers comparable flexibility in compliance to those shown to exist for environmental regulation, the economic benefits could be substantial.

One way governments have found to reduce delays and inefficiency is by providing accessible platforms where businesses or citizens can receive guidance on requirements and handle required approvals in one place. Motta et al. ([2010](#)) find that “well-functioning one-stop shops” and other efforts to reduce the number of steps required to start a business are “associated with an increase in the creation of new firms estimated at 5-6 percent” (2). They note that “[c]ross-country studies show that a 10-day reduction in the time to start a business is associated with a 0.3 percentage point increase in the investment rate and a 0.36 percent increase in the GDP growth rate, and that a cut in registration costs (from the 75th to the 25th percentile) is associated with a 14 percent increase in value added per worker” (Motta [2010](#), 4-5).

IV. Relationship between Reducing Regulatory Costs and Economic Development

Regulatory costs that are not necessary for achieving goals can have a significant effect on productivity and economic growth (Parker & Kirkpatrick [2012](#), Haider [2012](#), Jalilian et al. [2007](#)). For example, the Swedish Agency for Growth Policy Analysis found a negative relationship between economic growth and regulatory burdens. It concluded that the indirect economic costs are much larger than the immediate, direct business costs of administering and complying with regulation (Parker & Kirkpatrick [2012](#)). Gorgens et al. ([2003](#)) find that heavily-regulated countries grow on average “about 2-3% less than a liberal one” (2003, 15). The potential benefits to be gained from better design of regulations have been recognized in the U.S. since the early 1980s (CEA [1980](#)). Governments across the world in recent years have focused less on “deregulation” as a means of reducing regulatory costs than on regulating “smarter” or “better” (Parker & Kirkpatrick [2012](#)). This often involves following good regulatory practices, such as making regulatory compliance more flexible, less uncertain, and generally less time-consuming and cumbersome.

It is useful to distinguish between regulatory reform initiatives that substantively alter regulations and their outcomes from those that lower costs by providing broader compliance options and making regulations more efficient by streamlining compliance burdens and administrative red tape without affecting regulatory goals or benefits. As noted above, reducing cost inefficiencies is not only desirable in its own right but also can have beneficial knock-on effects by reducing barriers to local economic growth and

development (Parker & Kirkpatrick [2012](#)). Government regulation at the federal, state, and local levels in the U.S. is ubiquitous. While such regulations are intended to benefit members of society, regulatory compliance inevitably imposes costs on businesses and individuals. The manner in which regulations are designed and implemented can have potentially significant effects on the costs of regulatory compliance. Lowering the cost of achieving a given level of regulation (reducing inefficiencies) can be a net gain for society not only by lowering costs per se, but also by increasing regulated party buy-in (Shapiro & Borie-Holz [2020](#)) and ultimately reducing the effect of regulatory compliance costs on economic growth and development.

Streamlining regulatory compliance so that objectives are achieved more efficiently could have positive effects on economic development through several channels or mechanisms. First, increasing flexibility in the means of compliance can reduce costs and spur innovation in achieving regulatory goals. Experience in the environmental area suggests that replacing means-based design standards with performance- or market-based regulations (such as tradable permits or taxes), which set clear goals and allow firms to innovate in how they meet those goals, can yield significant reductions in compliance costs and reallocation of resources to more productive uses. Though not as well-quantified or documented, the same appears to be true in building codes.

Second, jurisdictions that have identified administrative burdens associated with compliance, and conscientiously worked to remove those that

are unnecessary for achieving regulatory goals, report significant reductions in business costs and some have associated those with improvements in economic growth (as measured by GDP and income). For example, the Canadian province of British Columbia attributed gains in GDP and per-capita disposable income to its initiative to reduce unnecessary regulatory requirements (Jones 2015). The CPB (Tang and Verweij 2004) study does not estimate the cost savings from individual administrative reforms in the Netherlands, but it does estimate the economic effect of reducing regulation-related administrative costs by 25%. The analysis assumes that the cost reduction is achieved by making the administrative process more efficient, without undermining government regulations. Using the WorldScan dynamic equilibrium model,⁷ the CPB estimates that a 25% reduction in administrative costs would translate into a long-run increase in the level of GDP of 1.4%.

If one accepts an increase in GDP of 1.4% as a rough estimate of the improvement in economic performance that might be possible from a 25% reduction in administrative costs, a reasonable question is whether such an amount is significant. One way of gauging significance is to compare a 1.4% increase with increases attributable to other types of policy changes. For example, Dennis et al. (2004) undertook simulations using several different models of a policy which reduced income taxes by 10%. Depending on the model, and underlying assumptions about financing for the tax cut, the simulated impact on real GDP of the simulated tax cut were all less than 1% of GDP. A different analysis of reducing the number of federal income tax brackets to 3 presented by the Tax Foundation resulted in an increase in GDP of 1.1%

7. Available at <https://www.cpb.nl/sites/default/files/publicaties/download/worldscan-model-international-economic-policy-analysis.pdf>

(York et al. 2022).

Haider (2012) estimated a pooled time-series cross section model for 172 countries for the years 2006-2010 in which the dependent variable is the annual growth rate in GDP and one of several explanatory variables is an index variable that is scaled from 0 to 10 depending on the number of regulatory reforms adopted (using a World Bank index of regulatory reform). Examples of regulatory measures included in the index are starting a business, paying taxes, obtaining licenses, getting credit, protecting investors, employing workers, international trade, property registration, closing a business and enforcement of private contracts. Haider finds that adoption of a single regulatory reform was associated with a 0.15% increase in the growth rate and that adopting the greatest number of possible reforms (as identified in the index) was associated with a GDP that is 3.45% higher. As the author observes these effects are sizable since the mean growth rate in the sample was 3.93%.

Costa and Aubyn (2012) examine the macroeconomic effects of simplifying legal structures generally. Using time series econometric techniques, they estimate that implementing what they describe as a “typical program” of simplifying legal structures improves total factor productivity—an important factor in economic growth—by 0.6%.

Third, reducing the “pure” administrative burden of complying with regulations not only saves explicit costs of time and resources that could be used for more productive ends, it also can reduce “implicit costs” of project uncertainty and delay. Business confidence improves when governments are clearer about the purpose of requirements and are perceived to be working to make them as efficient as possible (Shapiro & Borie-Holz 2020). As noted by Sinclair and Xie (2021) regulatory perceptions

are positively related to economic growth.

Kohli ([2011](#)) observed that the UK's regulatory modernization initiative led to a 10% increase between 2007 and 2010 in surveyed businesses who reported that compliance with regulations was straightforward. Because "time is money," reducing the time needed for regulatory approval also increases the likelihood that developers will undertake development projects (Wrenn & Irwin [2015](#)).

Fourth, reducing red tape also should encourage new business entrants (Jones [2015](#), 23). While incumbents may have the experience and resources necessary to cope with complex regulatory systems and delays, smaller, newer firms may find the costs of understanding and complying with administrative requirements prohibitive, and choose to apply their ideas and resources in less-regulated areas. This can not only reduce innovation in fields characterized by excessive administrative burdens, but may keep prices higher as well by limiting competition.

New companies bring job opportunities, innovation, and economic growth (EIG [2017](#), 6). In the U.S., according to the Economic Innovation Group ([2017](#)), they "create an average of 2.9 million jobs per year, while established companies tend to be net job destroyers" (EIG [2017](#), 5).

Since larger companies are more likely to have the resources and scale to understand and absorb administrative burdens, smaller firms are more adversely affected (Bailey & Thomas [2017](#); OECD [2020a](#)) by regulations that require excessive paperwork. Sandström et al. ([2019](#)) find that smaller entities bear a greater burden of regulatory compliance. Relatedly, Sunstein ([2020](#)) finds that red tape can disproportionately affect vulnerable communities, and Gyourko and Krimmel ([2021](#))

conclude that zoning regulation in major coastal markets may be "large enough to affect the aggregate distribution of wealth" (14).

The following table summarizes the mechanisms by which these costs may have economic impacts and offers possible approaches to reducing those impacts.

Table 1. Costs, Impacts and Solutions

Type of Cost	Identified Relationship to Economic Impacts	Possible Solutions
Compliance costs	<p>Prescriptive standards reduce incentives to find lower cost ways to comply. (Carrigan & Harrington 2015; EPA 2019; Maloney & Yandle 1980, 1984; OMB 2003; OMB 2011a).</p> <p>When the financial and human costs of compliance are greater than necessary to achieve a given outcome, businesses will have fewer resources for other productive activities. (Boettke & Coyne 2009, Parker & Kirkpatrick 2012).</p>	<p>Compliance flexibility such as performance-based or market-based regulation. (Aldy & Stavins 2012; EPA 2021, 2022; Lade & Rudik 2020; Listokin & Hattis 2005; Maloney & Yandle 1980, 1984; OMB 2011a Senick & Abramson 2020).</p>
Administrative costs	<p>“Red tape” requirements that do not contribute to achieving desired outcomes divert resources from productive activities (Bozeman 1993; Marneffe & Vereeck 2011; Parker & Kirkpatrick 2012).</p> <p>Administrative costs can reduce new business entry (Ciccone & Papaioannou 2007; Djankov et al. 2002; Parker & Kirkpatrick 2012), reduce competition to the benefit of incumbents and detriment of economic growth (Klapper et al. 2006; Sandström et al. 2019), and disproportionately burdening small businesses (OECD (2020a); Shapiro & Borie-Holz 2020).</p> <p>Excessive burdens negatively affect business sentiment about regulation (Shapiro & Borie-Holz 2020; Sunstein 2020) which can negatively affect economic growth (Sinclair & Xie 2021).</p>	<p>Modernizing forms, inspections, reporting and recordkeeping (Kohli 2011).</p> <p>Periodic review (Mandel & Carew 2013; Sunstein 2020). Measure costs (baseline & incremental change) (Gelauff & Lejour 2006; Tang & Verweji 2004).</p> <p>Modified regulatory budget (Jones 2015; Trnka & Thuerer 2019).</p> <p>Consult with (especially small) businesses (Jones 2015; Shapiro & Borie-Holz 2020).</p>
Delay and uncertainty	<p>Regulation-induced delays and uncertainty can:</p> <ul style="list-style-type: none"> • Reduce firms’ willingness to hire and invest (Bloom 2014), • Lower the probability that new development will be undertaken (Wrenn & Irwin 2015), and • Reduce supply, which can increase housing costs (Schuetz 2020), and may affect housing affordability and the distribution of wealth (Gyourko et al. 2008, 2021; Gyourko & Krimmel 2021). 	<p>Allow greater flexibility via increased reliance on performance rather than prescriptive building codes (Listokin & Hattis 2005; EPA 2021).</p> <p>Provide accessible platforms where businesses can receive guidance on requirements and handle required approvals in one place, such as one-stop-shops (European Commission 2006; Motta et al. 2010; OECD 2020a).</p>

V. Conclusions and Further Study

Studies that quantify the relationship between regulation and economic growth generally do not disaggregate regulatory costs in a way that would allow estimation of the gains to be achieved by making regulation more efficient, without changing its objectives. For example, Greenstone (2002) measures the economic impacts of more stringent air quality requirements in regions of the U.S. classified as being in “nonattainment” with the Clean Air Act. Between 1972 and 1987, he finds that, relative to counties in attainment, nonattainment counties “lost approximately 590,000 jobs, \$37 billion in capital stock, and \$75 billion (1987 dollars) of output in pollution-intensive industries” (1176). While his findings suggest regulatory compliance can have a significant impact on state level economic outcomes, parsing out the effect of inefficient regulatory burdens from those necessary to achieve the regulatory goals is often not possible.

Nevertheless, experience in the U.S. and other OECD countries suggests that regulatory reforms that A) allow firms to achieve compliance goals more efficiently, B) reduce unnecessary administrative requirements, and C) reduce the delays and uncertainty associated with investments can yield economic benefits.

A. Compliance Costs

Experience in the U.S. reveals that performance-based or market-based approaches can achieve savings over design or means-based standards. Much of the evidence supporting such approaches comes from national policies to reduce air pollution, however opportunities for state-level actions exist, as well. For example, under the Clean Water Act, state governments are responsible for reducing pollution from “non-point” sources (such as runoff from agricultural or urban areas) and EPA encourages them to consider implementing market-

based programs to ensure water quality in their watersheds (EPA 2022).

B. Administrative Burdens

Other OECD countries have focused more concerted efforts on reducing administrative burdens and regulatory delays than the U.S. has. This is despite the fact that Congress passed the Paperwork Reduction Act in 1980 to track administrative costs. For example, the OECD reports that more than two dozen countries have applied the SCM to measure and streamline regulatory compliance, however, the U.S. is not among them. State initiatives along the lines of those adopted in other countries may provide opportunities for better understanding these costs as states serve as “laboratories of democracy.” In Canada, efforts to identify and reduce unnecessary administrative burdens were first utilized at the provincial scale, and later adopted by the federal government. Comparative research across states, similar to the Greenstone research above that relied on different regulatory constraints in different regions of the U.S., could yield useful insights.

Evidence from other OECD countries suggests that streamlining regulatory compliance can save businesses and governments substantial money without altering regulatory outcomes. Low-hanging fruit may be replacing paper forms with electronic forms (Kohli 2011) and providing one-stop-shops (either virtual or physical) (OECD 2020a).

C. Costs of Delay and Uncertainty

Land use zoning and building codes can improve the quality of neighborhoods and buildings, but unnecessary steps or unclear procedures can contribute to delays as well as uncertainty regarding whether investments will reach fruition. Research comparing different regions of the

U.S. suggest that cumbersome requirements delay construction, increase housing costs, and disproportionately harm lower-income families (Schuetz [2020](#)). Reducing the number of steps required for approval, especially duplicative requirements, and clearly tying requirements to legitimate goals can reduce uncertainty and frustration.

Of course, there are factors other than land use regulations that influence local economic development. For example, a recent study finds that commuting costs can have effects on local development that are comparable to those identified for zoning and building regulations (Larson, et al. [2022](#)).

D. Lessons for States

Despite the benefits of increasing the efficiency of regulatory implementation, the question remains as to whether these benefits are worth the costs. Government efforts to reduce regulatory burdens entail costs themselves. The Dutch example involved extensive interviews with regulated parties to gather the information needed for the SCM. However, Torriti ([2012](#)) finds that although the costs to government and regulated parties of quantifying and consciously reducing administrative costs of regulation are significant, the countries that have undertaken those efforts using the SCM (his focus is on the Netherlands and the UK) found the economic benefits worth the costs.

States interested in undertaking efforts to regulate more efficiently might consider some best practices that emerged from this literature review in the text box on the following page.

E. Further Research

While the U.S. experience demonstrates the benefits of more flexible compliance options (e.g., performance- or market-based) and reduced delays (e.g., by comparing zoning requirements in different regions), there is much less evidence on the benefits of minimizing unnecessary administrative burdens. For those, international comparisons provide the most rigorous information on potential savings and economic gains. The drawback to these international comparisons is that, even among OECD countries, observations may not be relevant in the U.S. context, given the strong rule of law, long-standing ex-ante requirements for regulatory impact analysis, and limited corruption. Therefore, state-level initiatives patterned after those adopted in the Netherlands, UK, and Canada could offer natural experiments that provide valuable information on feasible reforms and possible economic outcomes.

A promising database for comparative analysis in the U.S. is Teague's ([2016](#), 305) 50-state database of "measures of accessibility to applications, the fees associated with entry, the time it takes to register, and occupational licensing proxies," as well as composite measures of barriers to entry that could be used to test empirically the relationship between regulatory compliance costs, entrepreneurship, and economic development. The raw data could facilitate research on the effect of different levels of administrative regulatory burdens on economic measures.

Best Practices for Reducing Unnecessary Regulatory Costs

1. When possible, a reliance on performance or market-based tools to achieve regulatory goals can reduce compliance costs and achieve outcomes more efficiently (OMB [2011a](#), 6).
2. In focusing reform efforts and communicating with the public, it is valuable to distinguish between cumbersome but unproductive “red tape” and necessary regulation (Jones [2015](#), 24).
3. Measurement is important, both to establish a baseline of target requirements, and for tracking changes associated with the reform initiative. This includes instituting appropriate definitions, metrics, and models (such as the SCM). The British Columbia experience also suggests that measures be clear, comprehensive, easy to update, and readily communicated to the public (Jones [2015](#), 25).
4. Consultation with businesses, especially small businesses, can help identify the most burdensome requirements and opportunities to reduce compliance challenges. For example, offering better guidance on compliance could reduce business costs (Kohli [2011](#)). Increasing awareness of the purpose of regulatory requirements that are necessary, in tandem with reducing those that are not, can improve business sentiment (Shapiro & Borie-Holz [2020](#)).
5. Regulatory reform initiatives impose burdens on regulatory agencies, so understanding—and modifying—their incentives is an important element of success. Several countries have set goals of reducing red tape by a certain percentage (e.g., the Netherlands and the UK). Some have supplemented those quantitative targets with requirements to offset new regulatory requirements by removing existing ones (e.g., the UK and Canada). In British Columbia, one regulator commented that the reform initiative changed her perception of her role “from regulation ‘maker’ to regulation ‘manager’” (Jones [2015](#), 19). Some researchers suggest that creating an impartial external commission with authority to identify unnecessary regulatory costs would avoid problems associated with expecting agencies to evaluate themselves (Mandel & Carew [2013](#)).

F. Closing Observations

The purpose of this review has been to identify ways in which existing state and local regulations could be made less costly, without altering their existing level and scope. In economics, this analysis would be described as a form of sub-optimization. Namely, minimize the cost of achieving a given level of output (in production) without determining whether the level of output itself is the optimum.

In the case of regulation, striving to implement a regulation at least possible cost is a laudable objective. It does not however ensure that the level and scope of a regulation are necessarily the most desirable. It is possible, even likely, that in some cases the greatest reductions in “undesirable” regulatory burdens require changing the level and scope of the regulation itself. Such a discussion is outside the scope of this analysis.

Regulatory Compliance Burdens Literature Review and Synthesis Appendix MATRIX OF QUANTITATIVE STUDIES

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Aghion, P., Bergeaud, A., & Van Reenen, J. (2021). “The impact of regulation on innovation” (No. w28381). <i>National Bureau of Economic Research</i>.	Firm size above or below “regulatory threshold” (labor regulations in France apply to firms with >50 employees)	Innovation measured by patent data (citations and text-based measures of novelty)	<p>Test hypothesis that the growth benefits of innovation are lower due to the implicit regulatory tax on larger firms.</p> <ul style="list-style-type: none"> Investigate non-parametrically how innovation changes with firm size Using panel data, quantitatively examine the heterogeneity in firm responsiveness to demand shocks by firm size Estimate the impact of the regulation on aggregate innovation and welfare. <p>Geography: France</p>	<ul style="list-style-type: none"> There is a sharp fall in the fraction of innovating firms just to the left of the regulatory threshold. On average, firms innovate more when they experience a positive shock, but relationship significantly weakens when a firm is just below the regulatory threshold. Innovation at the macro level is about 5.4% lower due to the regulation, a 2.2% consumption equivalent welfare loss. Regulation’s negative effects only matter for incremental innovation. A more regulated economy may have less innovation, but when firms do innovate, they tend to do so with more radical (and labor saving) actions.

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Bailey, J. B., & Thomas, D. W. (2017). “Regulating away competition: The effect of regulation on entrepreneurship and employment.”	U.S. regulatory intensity by industry as defined by RegData.	Firm births and employment from the Statistics of US Business.	Run fixed effects regressions to show that more-regulated industries experienced fewer new firm births and slower employment growth in the period 1998–2011 Geography: United States	<ul style="list-style-type: none"> ○ A 10% increase in the intensity of regulation as measured by the RegData index leads to a statistically significant 0.47% decrease in overall firm births. ○ The finding supports the idea that incumbents usually benefit from regulation—regulation drives away new entrants (as seen in the reduced number of firm births) but it does not put existing firms out of business (there is no increase in firm deaths). ○ Evidence supports the idea that regulation has a negative effect on new firm creation and employment growth for all firms in an industry. Small firms are affected more dramatically than are large firms.
Balla, J., Pérez, D. R., Prasad, A., & Xie, Z. (2018). (rep.). “The Relationship Between Regulatory Form & Productivity” The George Washington University Regulatory Studies Center.	A taxonomy that categorizes the Code of Federal Regulations according to the form each part takes. Focus is on CFR parts that affect agriculture	Growth in productivity as measured by crop yield.	Empirical analysis & theoretical discussion examines agricultural productivity with a focus on different forms of regulation. Geography: United States	<ul style="list-style-type: none"> ○ The econometric findings suggest that growth in total regulation has a negative relationship with land productivity growth (i.e., yield growth), and the relationship differs depending on the form of regulation. Specifically, growth in command-and-control, administrative, and entry-and-exit regulations is negatively associated with yield growth. ○ Growth in monitoring, reporting and verification requirements, permitting, and certification has the largest negative relationship with yield growth. Meanwhile, growth in transfer and information-based regulations has a positive relationship with yield growth.

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Ciccone, A., & Papaioannou, E. (2007). Red Tape and Delayed Entry. <i>Journal of the European Economic Association</i>, 5(2/3), 444–458.	Time taken to obtain legal status to operate a firm and comply with government entry procedures in 45 countries.	Employment growth and the growth in the number of establishments during the 1980s.	Uses countries listed in Djankov et al (2002) combined with industry-level data on employment growth and the increase of firms in the 1980s. Geography: International/Cross-sectional	<ul style="list-style-type: none"> ○ In countries where the legal status to operate firms can be obtained more quickly, there is significantly more entry in industries that experienced expansionary global demand and technology shifts, ○ Cutting “red tape” fosters entrepreneurship in industries with the potential to expand.
Costa, L.F. & St. Aubyn, M. (2012). “The Macroeconomic Effects of Legal Simplification Programmes,” Working Papers Department of Economics 2012/12, ISEG - Lisbon School of Economics and Management, Department of Economics, Universidade de Lisboa.	Effects of legal simplification programs in terms of improving the quality of institutions in industrialized countries.	Total factor productivity	Uses a Factor-Augmented VAR approach for a panel of 40 countries from 1996 to 2009 to measure the long-run impact of legal simplification programs in total factor productivity. Geography: International/Cross-sectional	<ul style="list-style-type: none"> ○ Enactment of a legal-simplification program that leads to a permanent increase in the quality of the institutions is estimated to have a “significant long-run impact on total factor productivity of about 0.6 per cent, on average, ranging from 0.1 per cent to 1.1 per cent, with two standard-deviation bands.”

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Djankov, S., La Porta, R., Florencio Lopez-de-Silanes, & Shleifer, A. (2002). The Regulation of Entry. <i>The Quarterly Journal of Economics</i>, 117(1), 1–37.	World Bank data set measuring entry requirements in 85 countries: the number of procedures, official time, and official cost that a start-up must bear before it can operate legally.	Entry costs to firms by country.	Cross-country comparisons. Geography: International/Cross-sectional	<ul style="list-style-type: none"> ○ Based on startup firms in 85 countries, evidence of high official costs of entry in most countries and countries. ○ Countries with heavier regulation of entry have higher corruption and larger unofficial economies, but not better quality of public or private goods.
Djankov, S., McLiesh, C., & Ramalho, R. M. (2006). Regulation and Growth. <i>SSRN Electronic Journal</i>.	World Bank Doing Business database – aggregate index of business regulations based on seven components of costs of doing business, such as starting a business, registering property, enforcing contracts, closing a business.	Annual average GDP per capita growth rate 1993-2002.	Associations established with ordinary least squares regression. Causality established with 2-stage least squares regression. Geography: International/ Cross-sectional (135 Countries)	<ul style="list-style-type: none"> ○ A statistically significant relationship found between regulatory burdens on business and the economic growth of a country. ○ Findings indicate moving from the worst to the best quartile of business regulation implies a 2.3 percentage point increase in average annual growth. ○ “Findings imply that identifying and implementing such reforms can accelerate economic growth.”

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Economic Innovation Group. (2017), February). <i>Dynamism in retreat - eig.org. Dynamism in Retreat: Consequences for Regions, Markets, and Workers.</i>	Does not measure regulation per se, but attributes declining dynamism, in part, to regulation.	Comprehensive and relational survey (U.S.) of dynamism punctuated with new insights on the slowdown of new firm starts.	<p>Draws from a wide range of publicly available data sources (U.S. Census Bureau, Bureau of Economic Analysis, or Bureau of Labor Statistics) and academic literature to consolidate available the evidence and implications of declining economic dynamism in the United States.</p> <p>Geography: United States</p>	<ul style="list-style-type: none"> ○ In spite of the steadily declining rate of new business formation, 117,300 more firms opened than closed on average each year from 1977 to 2007. Since 2008, firm deaths have outpaced firm births on average. ○ Firm creation significantly diminished with each of the last four recoveries. The U.S. economy added only 104,600 firms between 2010 and 2014, compared to nearly half a million from 1983 to 1987. ○ The U.S. economy has become less innovative and entrepreneurial. From 1977 to 2014, the number of new firms per \$1 billion in GDP fell from 95 to 25, and the number of patents outside of health and IT per \$1 billion halved relative to the 1980s.
Gelauff, G., & Lejour, A. (2006). <i>Five Lisbon Highlights, the economic impact of reaching these targets, CPB. Retrieved August 31, 2022, from</i>	Implementing “Lisbon strategy,” one element of which is reducing administrative burdens.	Job creation and GDP.	<p>Uses a general equilibrium model to simulate the impact of reducing administrative costs (along with other strategy elements) on labor, productivity, and GDP growth.</p> <p>Geography: International/Cross-sectional</p>	<ul style="list-style-type: none"> ○ Reducing administrative costs by 25% would increase labor efficiency by 1.5% and yield a long-term change in GDP volume of 1.5%.

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Gorgens, T., Paldam, M. and Wuertz, A. (2003), —How Does Public Regulation Affect Growth? , Working Paper No. 2003-14, University of Aarhus.	Fraser Institute Economic Freedom Index (Size of government, economic structure, and use of markets, freedom to use alternative currencies, etc.)	GDP Growth	Multiple regression. Geography: International/Cross-sectional	<ul style="list-style-type: none"> ○ Heavily regulated economies, on average, grow 2-3% less than less heavily regulated ones. ○ The effect is non-linear, and observed between moderately and high regulated regimes.
Gyourko, J., Hartley, J.S. and Krimmel, J. (2021). The local residential land use regulatory environment across U.S. housing markets: Evidence from a new Wharton index. <i>Journal of Urban Economics</i> 124.	The “zoning tax” as measured by the difference between the value an existing homeowner puts on having more land (i.e., the intensive margin value) and the value that a builder places on the same amount of land with the right to build on it (the value of land on the extensive margin). .	Zoning tax estimates	Comparisons of zoning tax in different regions. Geography: United States	<ul style="list-style-type: none"> ○ Our results are broadly consistent with previous findings that zoning taxes are especially burdensome in large coastal markets. ○ Zoning taxes highest in coastal markets, especially on the west coast. ○ The typical zoning tax on “a quarter acre plot of land is about \$400,000 in the San Francisco metro, ranges between \$150,000-\$200,000 in three other large coastal markets (Los Angeles, New York City and Seattle), and is over \$100,000 in the San Jose metro area.” ○ “Zoning taxes of the magnitudes reported above in our major coastal markets also look large enough to affect [housing affordability and] the aggregate distribution of wealth.”

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Gyourko, J., Saiz, A., & Summers, A. (2008) A New Measure of the Local Regulatory Environment for Housing Markets: The Wharton Residential Land Use Regulatory Index. Urban Studies, 45(3), 693–729	Wharton Residential Land Use Regulatory Index, Survey of over 2000 jurisdictions across all major housing markets in the US.	Data on how the stringency of land use control varies across markets.	Comparison across U.S. housing markets. Geography: United States	<ul style="list-style-type: none"> Local building regulation can affect costs and economic development not only by directly prohibiting a project, but indirectly by increasing “costs by delay, design restriction or the ease with which court suits can be used to challenge development rights” (693). The “average delay time between application and approval is three times longer in highly regulated areas” (694). Distributional: “The strong correlation with community wealth suggests that researchers and policymakers should seriously consider exclusionary desires as a motivation [for stringent regulation] in many cases” (P. 695)
Haidar, Jamal Ibrahim. (2012) The impact of business regulatory reforms on economic growth. Journal of the Japanese and International Economies 26 (3): 285-307.	Created a 5-year (2006-2010) dataset on business regulatory reforms in 172 countries from the World Bank’s Doing Business reports.	Economic growth as measured by GDP & income per capita.	Regression analyses test the hypothesis that business regulatory reforms increase economic growth, using data on micro-economic reforms. Geography: International/ Cross-sectional	<ul style="list-style-type: none"> The results provide support for the claim that business regulatory reforms are good for economic growth. Over the period 2006–2010, there is statistically significant evidence, across 172 countries, for economic growth response to business regulatory reforms. There is robust evidence of positive impacts of regulatory reforms and these estimated impacts are sizeable and plausibly large. Each additional reform during 2006–2010 is associated, on average, with a 0.15% increase in economic growth.

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Jalilian, H., Kirkpatrick, C., & Parker, D. (2007). The impact of regulation on economic growth in developing countries: A cross-country analysis. <i>World Development</i>, 35(1), 87–103.	World Bank indicators of “regulatory quality, based on regulatory burden on business of ineffective quantitative controls, and regulatory governance, based on quality of public provision, competence of civil servants and credibility of government” decisions.	Average per capita growth 1980-99	Multiple regressions using cross-sectional and panel data. Geography: International	<ul style="list-style-type: none"> ○ Statistically significant and positive causal relationship between the quality of regulatory policy and governance and economic growth. ○ Results demonstrate “the importance of regulatory quality for economic growth in the context of wider institutional capacity building.”
Jones, L. (2015). “Cutting Red Tape in Canada: A Regulatory Reform Model for the United States?” Mercatus Research, Mercatus Center at George Mason University.	Regulatory reform and red tape reduction initiatives in British Columbia, Canada.	Various measures including GDP growth, per capita disposable income, business startups and failures	Compare outcomes before and after implementation of regulatory reforms. Geography: Canada (British Columbia)	<ul style="list-style-type: none"> ○ Economic growth in BC was 1.9 percentage points below the Canadian average between 1994 and 2001 but 1.1 percentage points above the Canadian average between 2002 and 2006. ○ BC’s real GDP growth was lower than Canada’s as a whole in six of the nine years between 1992 and 2000, but BC’s GDP grew faster than Canada’s every year between 2002 and 2008. ○ Per capita disposable income in BC was C\$498 below the national average in 2000, but by 2006, it was C\$60 above the national average, third behind Alberta and Ontario. ○ The number of incorporations in BC between 2008 and 2013 were a bit lower than previous, ranging from 26,431 to 32,225, but higher than any time in the 1990s.

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
				<ul style="list-style-type: none"> ○ The number of business bankruptcies in BC also decreased considerably over the same time period, from 1,031 in 1998 to 454 in 2008. The number of business bankruptcies per year has been falling since 2003 and was only 189 a year by 2013. (23-24)
Klapper L., Laeven L., and Rajan R. (2006) “Entry regulation as a barrier to entrepreneurship.” Journal of Financial Economics. Volume 82. Issue 3, 2006, Pages 591-629.	Entry regulation	Growth of new entrants. Comprehensive database of European firms	Multiple regression analysis to study the effect of market entry regulations on the creation of new limited-liability firms, the average size of entrants, and the growth of incumbent firms Geography: International/Cross-sectional	<ul style="list-style-type: none"> ○ Costly regulations hamper the creation of new firms, especially in industries that should naturally have high entry. ○ These regulations also force new entrants to be larger and cause incumbent firms in naturally high-entry industries to grow more slowly. ○ Results hold even when corrected for the availability of financing, the degree of protection of intellectual property, and labor regulations.
Lade, G. and Rudik, I. (2020) Costs of inefficient regulation: Evidence from the Bakken, Journal of Environmental Economics and Management, Volume 102,2020, 102336	Construct firm-specific marginal abatement cost curves	Compare costs of regulation with modeled (lower) cost achievable with compliance flexibility.	Use well-level data on oil firms’ operations in North Dakota to study the effects and efficiency of a new regulation aimed at reducing gas flaring in the state. Rely on reduced-form methods to estimate the average treatment effects of the regulation. Geography: United states	<ul style="list-style-type: none"> ○ Results suggest that the regulation has been effective. Well operators have reduced flaring rates by 14-20% percentage points, most of which is attributed to the observed reduction in flaring at new wells to the regulation. ○ Find that the same quantity of flaring reductions could have been achieved at 44% lower cost by taxing flared gas instead of imposing firm-specific requirements. ○ While the regulation was effective at reducing flaring in the state, substantive costs from abatement misallocation caused by heterogeneous compliance costs and the regulation being enforced uniformly across firms.

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Maloney, M.T. and Yandle. (1980). “Clean Air at Lower Cost: Bubbles and Efficiency.” Regulation. May/June	Costs of complying with a regulation to reduce emissions of hydrocarbons at DuPont plants by 85%	Comparative costs of achieving 85% reduction by means of (1) prescriptive design standards at each plant; (2) performance standard applied to each plant; and (3) performance standard applied to all 52 plants analyzed.	Analysis of engineering cost data made available to the authors by DuPont. Geography: United States	<ul style="list-style-type: none"> ○ Allowing greater flexibility in achieving the 85% target by substituting performance standards in place of prescriptive design standard, resulted in significant savings in compliance costs ranging from 63% (single plant-based standard) to 92% (multi-plant standard).
Motta, M.; Oviedo, A.M. and Santini, M. (2010). An Open Door for Firms. Viewpoint: Public Policy for the Private Sector; Note No. 323. World Bank, Washington, DC	International firm startup cost and regulatory stringency	Number of new firms & economic performance, including employment and economic activity.	Survey/summary of findings of studies that quantify effect of reducing the time and cost of business entry with economic activity. Geography: International/Cross-sectional	<ul style="list-style-type: none"> ○ More firms enter the market when registration procedures and costs are cut. ○ A large percentage of new firms survive and grow. New firms increase competition, forcing incumbents to become more efficient or to exit the market and boosting overall productivity and investment. ○ Entry reforms have greater impacts when coupled with other investment climate reforms. ○ Cross-country studies show that a 10-day reduction in the time to start a business is associated with a 0.3 percentage point increase in the investment rate and a 0.36 percent increase in the GDP growth rate, and that a cut in registration costs (from the 75th to the 25th percentile) is associated with a 14 percent increase in value added per worker.”

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Quigley, J., Raphael, S. and Rosenthal, L. (2008). Measuring land-use regulations and their effects in the housing market. Berkeley Program on Housing and Urban Policy, Berkeley Program on Housing and Urban Policy, Working Paper Series.	Analyze regulatory land use stringency and administration by examining budgetary facts, construction, and housing prices in the San Francisco Bay Area.	Housing prices and rents.	<ul style="list-style-type: none"> ○ OLS regression Geography: United States (California)	<ul style="list-style-type: none"> ○ Regulatory stringency is consistently associated with higher costs for construction, longer delays in completing projects, and greater uncertainty about the elapsed time to completion of residential developments. ○ The OLS models suggest that the addition of one required review to the development process is associated with price increases of about 4 percent. ○ Strong evidence that regulatory restrictiveness leads to higher house prices and higher rents in the jurisdictions imposing the regulations. ○ An increase of one standard deviation in the number of governmental reviews required to authorize residential development (i.e., from a mean of five required agency reviews, to a total of seven) is associated with an 8 percent increase in the average prices of single-family housing in the existing stock. ○ Regulation clearly seems profitable to the owners of existing housing.
Sinclair, T & Xie, Z (2021). Sentiment and Uncertainty about Regulation. GW Regulatory Studies Center Working Paper.	Regulatory sentiment and uncertainty dataset derived from lexicon-based sentiment analysis from 493,418 news articles related to regulation from seven leading U.S. newspapers.	Employment & GDP	<ul style="list-style-type: none"> ○ Impulse response functions? Geography: United States	<ul style="list-style-type: none"> ○ Impulse response functions indicate that a negative shock to sentiment about regulation is associated with large, persistent drops in future output and employment, while increased regulatory uncertainty overall reduces output and employment temporarily. ○ These results suggest that sentiment about regulation plays a more important economic role than uncertainty about regulation. ○ Economic outcomes are particularly sensitive to sentiment around transportation regulation and to uncertainty around labor regulation.

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Tang, P., & Verweij, G. (2004). Reducing the administrative burden in the European Union. CPB Netherlands Bureau for Economic Policy Analysis, 93.	Use the Standard Cost Model (SCM) administrative burden of complying with regulations in addition to “normal” administrative tasks required of a well-functioning enterprise.	GDP	Uses a computable general equilibrium model to simulate the effect a 25% reduction in regulatory administrative burdens on steady-state Gross Domestic Product. Geography: International/Cross-sectional	<ul style="list-style-type: none"> ○ The added administrative burden of regulatory compliance equals 3.6% of GDP. ○ Reducing regulatory-induced administrative compliance costs is simulated to increase annual GDP by 1.2%
Teague, M. (2016), "Barriers to entry index: a ranking of starting a business difficulties for the United States", Journal of Entrepreneurship and Public Policy, Vol. 5 No. 3, pp. 285-307.	Present a new data set documenting various costs to starting a business across the 50 US states for the year 2011. Measures of accessibility to applications, the fees associated with entry, the time it takes to register, and occupational licensing proxies are included as raw data and also as composite measures of barriers to entry across two indexes.	N/A	The data set follows the empirical cross-country barriers to entry literature generally documenting the accessibility of registration, the total costs of registering, and the final time it takes to fully process applications for limited liability corporations (LLCs). Geography: United States	<ul style="list-style-type: none"> ○ This paper presents a data set that allows researchers to more fully explore effect of various regulatory instruments (including measures of accessibility to applications, the fees associated with entry, the time it takes to register, and occupational licensing proxies.

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
<p>Torriti, J. (2012). ‘Standard Cost Model: Three Different Paths and their Common Problems’, Journal of Contemporary European Research. Volume 8, Issue 1, pp. 90-108.</p>	<p>Administrative burdens as measured by SCM.</p>	<p>The impact of red tape reduction on business growth.</p>	<p>Compares three national initiatives, in the Netherlands, UK, and Italy, aimed at cutting red tape by using the Standard Cost Model.</p> <p>Geography: Europe (Netherlands, United Kingdom, and Italy).</p>	<ul style="list-style-type: none"> ○ Cost to government and regulated parties of applying the SCM are significant but countries that have undertaken it (the Netherlands and the UK) found the benefits worth the costs. ○ “The Dutch government’s emphasis on the SCM and reduction of administrative burdens is justified by its hope to increase competition and give companies more scope for their business activities. Reducing administrative compliance costs means eliminating non-productive expenditures for business (den Butter and Hudson, 2009). ○ Intuitively, money spent in fulfilling administrative tasks cannot be re-invested in profitable activities. At the macroeconomic level, diminishing administrative burdens would cause the GDP to increase in the medium term, because the time and money saved would be redeployed in more productive activities (Dutch Cabinet, 2005).” ○ “The 2005 report by the [UK] Better Regulation Task Force had already suggested that adopting the SCM in the UK might bring about “an outstanding return on investment for the UK - potentially an estimated £16 billion increase in GDP for an investment of some £35 million”

Study	Measure of regulation	Measure of economic outcome(s)	Empirical Method(s)	Top-level findings
Wrenn, D.H. & Irwin, E. G., 2015. “Time is money: An empirical examination of the effects of regulatory delay on residential subdivision development,” Regional Science and Urban Economics, Elsevier, vol. 51(C), pages 25-36.	Micro-level data set on timing of subdivision approvals	Timing and pattern of residential subdivision development	<p>A nonparametric measure of implicit costs based on past approval-time data and use that variable as a proxy for implicit costs in a series of proportional hazard models.</p> <p>Geography: Maryland, U.S.</p>	<ul style="list-style-type: none"> ○ A 1% increase in average expected approval time results in a decrease in the probability of development by 0.94%. ○ “These results provide the first empirical evidence of the important role that cost heterogeneities, generated by land use regulation, play in influencing land development outcomes and urban spatial patterns and underscore the importance of supply-side factors that, to-date, have received limited empirical attention.”

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