

The New “Benefits” of Environmental Regulation

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Executive Summary

Although the U.S. economy has been slow to recover from The Great Recession, the nation has experienced a boom in regulation, in both the number of significant regulations and the estimated net social benefits. Environmental regulations have, as usual, accounted for the majority of the reported benefits. A closer examination reveals that the rapid increase in claimed regulatory benefits has resulted from the inclusion of private benefits and co-benefits of recent EPA regulations. These categories of benefits differ substantially from the traditional externality benefits of environmental protection. Private benefits arise when regulation forces firms and consumers to invest in technologies regulators think make them better off, but which people do not believe are valuable. Co-benefits are spillover benefits and result when a regulation to address one pollutant reduces a second pollutant.

We examine in this paper the economic arguments for private benefits and co-benefits and consider some costs of regulation ignored in recent EPA cost-benefit analyses. Arguments for the existence of private benefits likely to be captured through regulation are weak. Failure to purchase the most energy efficient products on the market is not a sign of irrationality requiring government action. The substantial co-benefits of recent EPA regulations are highly dubious. The existence of substantial co-benefits from incidental reductions of fine particulate matter is troubling given the existing air quality standard for this pollutant. If the air quality standard for fine particulate matter has been set properly, there cannot be thousands of avoidable deaths available as co-benefits of other regulations. And while the EPA has diligently included co-benefits, negative side effects or co-costs have been downplayed or ignored. Some

omitted co-costs include the value of personal autonomy compromised by paternalistic regulations, reduced productivity due to regulation, and the increase in auto fatalities due to fuel economy regulations.

Cost-benefit analysis properly done provides evidence on whether the social costs of an externality are worth addressing through regulatory action. The emergence of private benefits and co-benefits in environmental regulation indicates that the EPA is moving away from the traditional externality justification for regulation and into uncharted waters.

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I. Introduction

The United States has been slow to recover from the Great Recession, but is seemingly experiencing a significant boom in well-being brought about by regulation. By one scorecard, the Obama administration has delivered \$91.3 billion in monetary benefits from regulation in its first three years versus George W. Bush’s \$3.4 billion of benefit in its first three years (Zeder 2012).¹ A White House report for 2011 finds that the aggregate benefits of regulation are between \$132 billion and \$655 billion, compared with costs of between \$44 billion and \$62 billion (Report to Congress on the Benefits and Costs of Federal Regulations 2011). The U.S. is also experiencing a boom in the number of regulations enacted. Figure 1 reports the number of economically significant Federal regulations by year. The Obama administration has passed more such rules (45) in their first three years in office than previous administrations; the estimated monetized benefits of these new final rules for the administration’s first three years range from \$46 billion to \$181 billion.² The Obama administration has seemingly discovered an orchard full of regulatory low-hanging fruit that either escaped the attention of or was willfully neglected by the Bush administration.

¹ The story can be found here: <http://www.law.harvard.edu/news/spotlight/public-service/sunstein-on-new-directions-in-regulatory-policy.html>

² http://www.whitehouse.gov/sites/default/files/omb/oira/draft_2012_cost_benefit_report.pdf

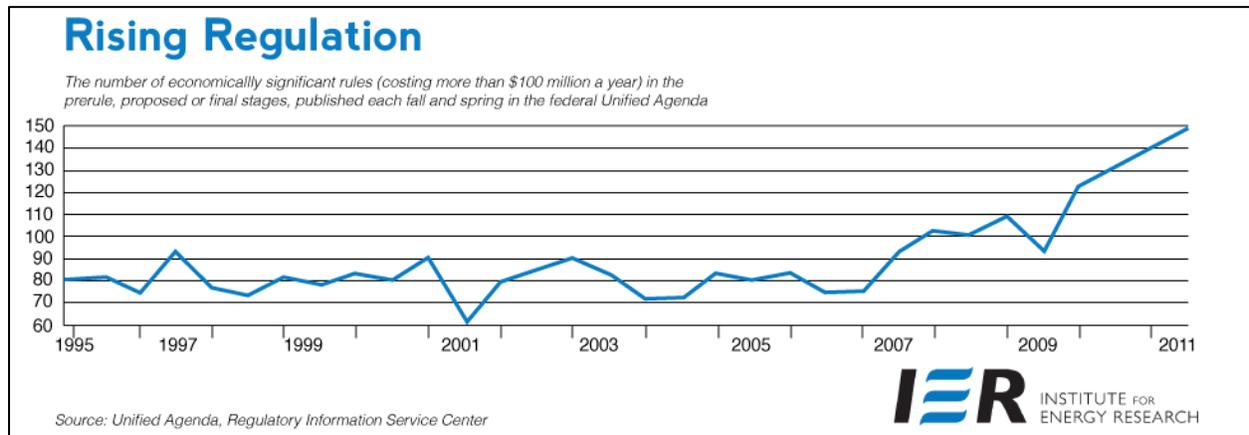


Figure 1

The Environmental Protection Agency (EPA) provides the overwhelming bulk of the reported benefits, estimated at between \$82 billion and \$551 billion, as well as costs, at between \$23 billion and \$29 billion.³ Closer examination reveals that the difference in regulatory performance is due in large part to the treatment of coincidental benefits (henceforth, “co-benefits”) and private benefits from regulation.⁴ Under the Bush administration, co-benefits and private benefits were significantly downplayed, but they have been brought front and center during the Obama administration, highlighted by Cass Sunstein, the regulation czar until August 2012. This change in cost-benefit calculus has significant consequences for the balance between the private sector and the regulatory state, and ultimately the public’s overall quality of life.

³ http://www.whitehouse.gov/sites/default/files/omb/inforeg/2011_cb/2011_cba_report.pdf

⁴ See the *Economist* magazine (February 18, 2012) story about the co-benefits disagreement here: <http://www.economist.com/node/21547772>. Crain and Crain (2010) estimate the total costs of federal environmental regulation in 2008 was \$1.75 trillion, up from \$1.1 trillion in 2005. Dawson and Seater (2009), meanwhile, estimate that US GDP could have been \$11.3 trillion higher if the opportunity cost of federal regulations was fully accounted for.

According to conventional economic theory, a case for environmental regulation can be made when private actions impose spillover costs on third parties, which economists refer to as externalities. Electricity production, for example, may have costly effects on the health of others and may also contribute to increased carbon dioxide emissions. Ideally, policy would fully internalize these externalities through Pigouvian taxes, emissions charges, or a tradable discharge permit program.⁵ With perfect information about the social costs of the externality, regulation could reduce electricity output and raise price to reflect the full costs of production. Environmental regulations addressing well-established market failures have since 1970 led to improving air and water quality without halting economic growth. Addressing untreated externalities or devising means of regulating more efficiently are two ways the EPA could generate new regulatory benefits. The rapid growth of claimed regulatory benefits has not resulted from documented benefits of new regulations. Instead they have arisen from private benefits and co-benefits of new economically significant regulations.

Private benefits and co-benefits differ substantially from the traditional benefits of environmental protection. Private benefits come about when regulation forces firms and consumers to invest in technologies which government officials allege make them better off, but which people fail to recognize as valuable. For example, when new energy efficiency standards are implemented on automobiles, some consumers experience significant private gains from having to fill up their cars less often. These savings were not fully known in advance of the regulation and were only realized *ex post*. Co-benefits are spillover benefits from new

⁵ Pigouvian taxes refer to taxes placed on a good whose production or consumption results in a negative externality, while emissions charges would be a tax levied directly on the amount of a pollutant emitted into the environment. A tradable permit system sets a quantity of emissions to be allowed over a period of time and creates permits which allow the holder to emit this quantity of pollution. The permits can be traded among the different sources of pollution.

regulations and result when a regulation trying to address one pollutant has the side effect of reducing a second pollutant or otherwise addressing other public bads.

In this paper, we attempt to carefully distinguish between the direct social benefits from internalization of an externality, private benefits resulting from imperfect information, and co-benefits. We examine the existence and magnitude of the private benefits and co-benefits mentioned above. To the extent that they exist and are large in magnitude, there could very well be a gap between the economically efficient level of regulation and the actual level of regulation we observe.

Several conclusions will be reached. First, arguments for the existence of private benefits likely to be captured through regulation are weak. The new literature in behavioral economics asks us to rethink our ideas about individual maximization, but the results emerging from this literature are shaped largely by the way studies are designed and the issue is framed. In addition, the behavioral economics literature ignores the potential gains to entrepreneurs of devising ways to help consumers capture these benefits. We specifically examine an application of private benefits relevant for environmental regulation known as the Energy Paradox, a failure of households and businesses to make energy conservation investments. A consistent subjectivist approach reveals unaccounted firm-specific costs and uncertainties that make these investments far from the guaranteed savings promised by engineers. Failure to purchase the most energy efficient light bulbs on the market is not a sign of irrationality requiring corrective governmental action.

Second, the substantial co-benefits estimated for recent EPA regulations are highly dubious. Recent regulations that generate co-benefits have two curious coincidences: they

typically have no quantified direct benefits, and the co-benefits tend to arise from reductions of one particular pollutant, fine particulate matter ($PM_{2.5}$). A National Ambient Air Quality Standard (NAAQS) for $PM_{2.5}$ was established in 1997. A NAAQS is supposed to be set to provide a margin of safety, without regard to cost. Unless the EPA has been derelict in the setting a $PM_{2.5}$ NAAQS, there cannot be thousands of avoidable deaths available as co-benefits for other regulations. Most troublingly, co-benefits have been essentially the only quantified benefits of several significant regulations in recent years. The failure to quantify any direct benefits undermines the rationale for several recent major regulations. In practice, the EPA treats $PM_{2.5}$ deaths like a reservoir of benefits to apportion out to justify any new regulation.

Third, while the EPA has diligently included positive side effects as co-benefits in cost-benefit analyses, negative side effects, or co-costs, are downplayed or ignored. If side effects of regulation are to be included and quantified, consistency demands both the negative and positive side effects be included. Regulations that force industries to adopt new technologies raise costs, particularly for small and new firms. An increasingly concentrated market structures and higher barriers are a co-costs of regulation. Regulation is also known to slow the pace of innovation, which would be another co-cost. And finally, regulations correcting for alleged deficiencies in individual decision-making compromise individual autonomy. People value making important decisions in their lives. While being forced to use a more energy efficient light bulb or purchase a more fuel-efficient car does not abolish freedom, having a choice forced upon oneself causes anger and frustration and constitutes a co-cost of private benefit regulation.

II. The Traditional Rationale for Environmental Regulation and the Rise of Other Rationales

A. The Traditional Rationale

The traditional rationale for environmental regulation requires a brief discussion of externalities and market failure, which is now standard fare in any principles or intermediate microeconomics course. Pollution is a classic example of a negative externality and has spillover costs. The spillover costs are not fully accounted for by the two parties—a consumer and an energy producer—in a market exchange. The spillover effects, costs directly from the polluter, fall on third parties not engaged in market exchange. Economists have devised ways to internalize the externality at the lowest overall social cost. When this can be done, regulation enhances the well being of the general public. Efficient policies provide flexibility in the tools used to reduce pollution and in the amount of abatement by any source of pollution. Ideally environmental regulation seeks to correct market prices for third party effects but continues to use the decentralized decision-making that drives the power of the market. The design of an efficient policy response assumes that the external costs can be accurately estimated.

The public interest rationale for environmental regulation is to correct market failures whenever the benefits of doing so outweigh the costs. Surveys looking at economists' attitudes towards regulations find that “most economists are supporters of safety regulations, gun control, redistribution, public schooling, and anti-discrimination laws” (Klein and Stern 2006,

331).⁶ Economists also generally view environmental regulation as an important activity that should be handled by the government.

Some economists accept the rationale for environmental regulation but argue that the scope for internalization of externalities in the market economy is greater than commonly recognized. Demsetz (1969) argued that people calling for correctives to market outcomes suffer from the “nirvana fallacy”: they compare actual outcomes with an unrealizable, far more costly ideal. When the costs of moving towards the ideal are fully taken into account, the actual market outcome could very well end up being second-best efficient. Coase (1960: 153) chided economists for their failure to “reach correct conclusions about the treatment of harmful effects” and argued for a “transaction costs” approach to understanding the benefits and costs of different regulatory policy options. Coase showed that parties affected by externalities can, when transactions costs are not prohibitive, negotiate directly with polluters. Once negotiations begin, the externality is internalized and the outcome will be as efficient as the bargaining process. Externalities cannot be defined independently of institutions and the scope for bargaining in the economy. When an external effect is identified today, bargaining could by tomorrow internalize the externality and eliminate a need for regulatory intervention. Cheung (1973) provided additional evidence of Coase’s proposition by documenting the contractual arrangements between beekeepers and orchard owners to internalize the spillover benefits of pollination. The positive spillover from bees serves as a textbook example of an externality creating a need for corrective government action, yet closer examination revealed that the market had already internalized the externality. The legal system also provides a means to internalize externalities without government action. Meiners and Yandle (1998) describe how

⁶ http://econfaculty.gmu.edu/klein/PdfPapers/KS_PublCh06.pdf

the common law set rules for air and water pollution, namely, that they would be treated as torts under the law. Once rules were in place, negotiations could and did occur between industrial plants and neighboring property owners until the Federal government took control over environmental protection. Further development of a common law approach might have been a viable alternative to regulation in some cases.

The public choice revolution in the 1960s and 1970s challenged market failure theorists for their naiveté about bureaucrats and politicians. Even if a market failure could be corrected, governments might fail to enact regulation to internalize externalities. Public choice economists advanced a vision of politics “without romance” (Buchanan 2003), focusing instead at the incentives politicians and regulators face. Bureaucrats, for example, were often found to focus

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primarily on growing their agencies (Niskanen 1968); producers often “capture” regulators and use their political clout to protect themselves

from competition (Stigler 1971); and inefficient regulations were found to persist because interest groups are concentrated and voters are dispersed (Olson 1965). Public interest rationales often provide cover for regulations advancing a private interest, as in the case of bootleggers benefiting from prohibition brought about by the political lobbying of Baptists (Yandle 1983). Public choice analysis documented ways in which environmental regulations were shaped by political concerns, not the dictates of efficiency (e.g., Pashigian 1985). By treating political actors like ordinary, economizing individuals, public choice theorists brought a dose of realism to welfare economics and weakened the case for efficient regulation.

The other main criticism of traditional welfare economics came from the Austrian school of economists (Hayek 1969; Kirzner 1973). The Austrian economists focused on the embedded knowledge and information contained in market prices. Regulators will generally lack the requisite knowledge to do so efficiently, and they are without any kind of map to guide their actions. Moreover, their interventions thwart entrepreneurial solutions to market failures, which come about naturally whenever significant inefficiencies exist.

Together these criticisms comprise a strong, sustained challenge to traditional welfare economics, because the realities of regulatory implementation render the market failure rationale for regulation problematic. Furthermore, these critiques provide a timely warning to the public and regulators today: Theoretical rationales for regulation open the door for a tremendous amount of intervention, and closer examination reveals that many interventions fail to address the problems identified by theory. The old arguments for environmental regulation are alive and well in Washington, even though the criticisms and concerns discussed above remain as true today as they before. But, the regulatory door—thanks to advances in information and behavioral economics—has been opened wide, with the old criticisms largely ignored.

B. The Rise of Behavioral Economics

Behavioral economics maintains that individuals deviate significantly from economic models of rationality in the real world. People are mistake-prone, unable to balance the short-run and the long-run, suffer from numerous biases, and quite often need a “nudge” (Thaler and Sunstein 2008) to take actions obviously in their self-interest. These nudges are part of a program called “new paternalism” or “libertarian paternalism” (Thaler and Sunstein 2003).

Many behavioral economists think that the flaws in decision-making warrant significant government interventions and a full-fledged rewriting of economics, finance, and legal studies textbooks.

Many behavioral economists propose policies which they maintain are “libertarian” because they “maintain or increase freedom of choice” and yet are still “paternalistic” because they want to “influence choices in a way that will make choosers better off, *as judged by themselves*” (Thaler and Sunstein 2008, 5, emphasis in original). Libertarian paternalism does not forcibly prevent people from investing naively or smoking or eating fatty foods but instead encourages smart investing, healthy eating, and nonsmoking in allegedly non-coercive ways. One nudge sets the “right thing” as the default option and requires individuals wanting to engage in deviant behavior—smoking, overeating, naïve investing—to actively override the default.

At first glance, the idea of tweaking defaults and other gentle nudges might seem fairly harmless. Why shouldn’t the default on investing, for instance, be a diversified, low cost mutual fund that tracks the overall market? Asking people with their limited cognitive abilities, knowledge of finance, and time for research to make investment choices on their own is probably asking too much. Shifting the default allows those not wanting to track the market the freedom to opt out. An adjustment to the default holds the promise of greater overall welfare for society and it does not harm any participants. Other harmless-seeming nudges include an automatic tax return for many taxpayers and automatic savings programs linked to pay raises.

The behavioral economics project in its entirety, however, raises concerns about the practical implications for regulators and “choice architects.” A 2006 *Economist* magazine article warned that the choice architects responsible for framing our choices could “rig” them for

“partisan ends,” thereby “hijacking the whole effort.” Bringing public choice economics insights to bear, the article worried about whether politicians with their own motivations would exercise their paternalistic powers in a libertarian fashion. Glaeser (2006: 34), echoing Friedman and Friedman (1980), observes that the incentive of a bureaucrat to make a citizen’s life better is weak relative to the citizen’s incentive to make her own life better. And regulatory bureaucracies can be expected to use behavioral economics arguments to expand their budgets and scope of activities.

Knowledge problems can also impact libertarian paternalism, as choice architects will require both scientific knowledge and relevant local knowledge, which is dispersed and not

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available to any one mind (Rizzo 2009). In addition, if decision-making maladies are truly omnipresent, policymakers will also suffer from biases and make mistakes (Benjamin, Brown, Shapiro; forthcoming).

Furthermore, any learning process envisions the freedom to be wrong and then learn from our errors; libertarian paternalists want to take this very important element of discovery away from market participants (Buchanan 2005).

Traditional microeconomics attempts to understand consumer behavior through a subjectivist, rational approach. Consumers are assumed to be rational, and choose between means to accomplish their desired goals. And the means-end framework must be constructed consistent with the consumers’ subjective perception. Evidence of irrational behavior on the part of consumers or businesses must ensure that the subjects’ available information and preferences are accounted for. Many of the alleged private, suboptimal energy efficiency

enhancements can, in fact, be explained through the lens of subjectivist microeconomic theory as rational, individual choices.

Despite the criticisms and concerns we are raising about behavioral economics and the concept of libertarian paternalism, the idea has taken off intellectually and has also become embraced by policymakers in the US and overseas. Portfolio managers and public pension fund directors around the world have revisited investing defaults thanks to Richard Thaler and Shlomo Benartzi's contributions (2001; 2002). Cass Sunstein's (2001) work has affected labor contract defaults in many workplaces. And environmental regulation is being radically reshaped by insights from behavioral economics.⁷

Sufficient evidence has accumulated that most economists will agree that people do not always act rationally as described by traditional economic models. But occasional deviations from rationality do not necessarily create systematic mistakes correctible by paternalistic regulators. The burden of proof should be squarely on regulators to establish private benefits in a specific case, particularly given the long history of public interest rationales being used as cover for regulations that actually benefit some special interest (Posner 2003: 533-542).

C. Regulation Driving Technological Change

Michael Porter has argued that many environmental and safety regulations actually encourage innovation and enhance the overall competitiveness of a regulated industry (Porter 1991; Porter and van der Linde 1995). Firms either fail to recognize the increase in productivity

⁷ Sunstein (2005) is one of the best starting points for those wanting to understand what behavioral economics means for environmental and regulatory policy.

that will result from these innovations, or fail to implement them. Modernization of firms to comply with regulations is alleged to increase average productivity, and reduce the firms’ costs in the long-run. Broad, transformative regulations, for example, can break industries out of “lock-in,” disrupt them and put them on new, more productive frontiers of production (Ashford and Hall 2011). To assure that innovations are induced from environmental regulation, according to Porter hypothesis advocates, is to make sure the regulation is strong enough to encourage other producers or providers to enter the market (Ashford and Hall 2011: 278-283).

The “Porter hypothesis” argues that firms are not fully aware of the benefits these technologies would deliver. Thus the Porter hypothesis assumes systematic errors on the part of firms, who are unable to discover the private benefits of new technologies unless compelled to install them to comply with environmental regulations. Consequently these technological benefits could be seen as a type of private benefit, and our discussion regarding whether private benefits represent genuine gains from regulation would apply here as well. Although the EPA has not included Porter hypothesis private benefits to date, this could represent a dimension for future inflation of the benefits of regulation.⁸

⁸ The evidence provided by Porter advocates in support of their thesis is anecdotal and has been challenged by many academic economists and outlets like the *Economist* magazine (1995), which described the Porter hypothesis as “bunk.”

II. The Private Benefits of EPA Regulation

A. The Alleged Benefits

EPA regulation is responsible for most of the alleged benefits of regulation (OMB 2011), and as discussed above, recent environmental regulations provide three separate types of benefits: direct social benefits, private benefits, and co-benefits. Although co-benefits are not the largest component of reported benefits of recent environmental regulations (Smith 2011), private benefits represent the most radical change in benefit calculation by the EPA as well as

Private benefits account for over 85 percent of the reported benefits of the 2014-2018 truck and 2017-2025 passenger car standards.

dramatically recasting the relationship between the citizen and the state. Private benefits for environmental regulation stem from energy efficiency. Private benefits have been estimated by the EPA for several recent regulations, most prominently the 2014-2018 model year fuel economy standards for medium and heavy trucks and the 2017-2025 model year proposed Corporate Average Fuel Economy (CAFE) regulations for passenger cars and light trucks. Specifically the EPA presumes that households and businesses will be better off if forced to buy cars costing thousands of dollars more (Wagner, Nusinovich, and Plaza-Jennings 2012) than those they would choose to buy on their own. For both of these fuel economy regulations, only the inclusion of private benefits make the net benefits positive (Gayer and Viscusi 2012). Private benefits account for over 85 percent of the reported benefits of the 2014-2018 truck and 2017-2025 passenger car standards.

Recent EPA claims of private benefits relate to academic research on the substantial literature originating in the 1970s has documented barriers in the dissemination of energy

conservation measures, like energy efficient light bulbs and appliances, insulation, and fuel efficient cars. Numerous engineering studies allege to document the short amount of time (in some cases less than three years) needed for these conservation measures to return their cost in energy savings. Yet households and businesses often will not invest in energy conservation as much as regulators assume they should. Academic research on the Energy Paradox has led to a variety of tax credits, subsidies and other government incentives for conservation measures. Jaffe and Stavins (1994a) describe five notions of optimality and acknowledge that market failure explanations can explain sub-optimal energy-efficiency outcomes; they remain agnostic, though, on the issue of whether or not these failures are present and insist they are only creating a guide for further discussions about optimal energy use. But until the emergence of behavioral economics, regulatory economists would have scoffed at a proposal to include the energy savings consumers choose not to capture as benefits in a cost-benefit analysis. From the traditional economic perspective, a consumer choice not to purchase a good implies that the value as she reckons it must be less than the cost. Mandating the purchase would make the consumer worse off (although spillover benefits to third parties may generate additional benefits to offset the cost).

Behavioral economics has discovered the Energy Paradox in recent years, resulting in a new wave of research on the subject. Now mandating a consumer to purchase a light bulb she determined was not worth the cost can be counted in cost-benefit analysis as having generated private benefits to the consumer in excess of the cost. The market is leaving money on the table, and energy-efficiency is not being invested in optimally and “non-price based, behavioral interventions” (Alcott and Mullinathan 2010: 1204) should play a role in reducing energy consumption and helping people save money. One way of nudging people towards greater

energy-efficiency involves sending them electric bills that compare their energy use to that of similar households. For those with excessive energy use, energy-saving tips and information on the money that could be saved should be included. These “injunctive norms” imposed minimal cost on customers and resulted in significant reductions in energy use (Alcott 2011). Since people procrastinate, goal setting and commitment devices can set a reference point and help them overcome putting off change; goal setting has been shown to reduce electricity and gas use by 22% (McCalley 2006). And, since people tend to stick with defaults, green energy plans enjoy higher participation rates when people are defaulted into the green energy plan and have to opt out (Pichert and Katsikopoulos 2008). Other research has explored goods with “shrouded attributes” like appliances where the benefits of reduced energy use in the future may be obscured to consumers (Gabiak and Laibson 2006).⁹

B. The Case for Dismissing These Alleged Benefits

Studies documenting the cost effectiveness of energy conservation measures have been conducted primarily by engineers, who approach decision-making very differently than economists. The engineering studies make illustrative calculations to demonstrate energy efficiency, and then take adoption of these measures as the goal. Economists view efficiency very differently. For instance, engineers consider it problematic when consumers choose not to invest in costly conservation measures when energy prices are falling, but this is simply rational decision-making, not a market failure (Jaffe and Stavins 1994b, Sutherland 1991). And the

⁹ People also struggle with statistics and interpreting data (Kahneman 2011). US energy policy tends to focus on improving the miles per gallon efficiency of automobiles when, in fact, the appropriate measure for efficiency involves a representation of fuel efficiency in terms of gas consumed for a given distance, for example gallons per 100 miles (Larrick and Soll 2008). Government could play a role in improving individual decisions by presenting the most relevant data and forcing firms to do the same.

engineering calculations are at the same time both very elaborate but too simple. The Department of Energy (DOE) (2009) recently attempted to calculate the net present value to consumers from new furnaces and boiler efficiency standards. The result was 18 pages of assumptions, computations, and explanation of discount rates used, input costs, etc. Assumptions were made about shipping costs, unit efficiencies, maintenance costs, and future energy prices (2009: 7) and incorporated into a NPV calculation. The DOE claims that a heating/cooling combination could yield savings of \$739 (2009: 10). They then take their estimates of savings and run NES and NPV calculations at 7% and 3% discount rates to see if the cumulative NPV is positive, and, sure enough, the benefits are large in most of their computations. The DOE's calculations can serve as a useful tool in decision-making but the results of their estimates and many other regulatory impact analyses often go one step farther, from serving as one input to policy to instead serving as the be-all and end-all of policy. As yet such detailed studies fail to capture all of the complexities and dynamic changes in price and cost that actually occur in the market. The engineering studies presume that economic knowledge is like scientific knowledge, which is general and enduring. Yet as Hayek (1945) detailed decades ago, economic knowledge is very different and is time and place specific. We will return to such factors presently, but households or businesses failing to make calculations in line with the engineering studies are seen as irrational.

Consider the case of fuel efficiency and the demand for automobiles. The idea that car buyers always irrationally ignore fuel economy would come as a shock to U.S. automakers, who lost market share so rapidly to fuel efficient Japanese imports in the late 1970s and early 1980s that they turned to the Federal government to pressure Japanese automakers into voluntary export restraints. Econometric analyses of the prices of new and used cars confirm that

consumers do value fuel economy. Dreyfus and Viscusi (1995) find that consumers value fuel efficiency in the used car market at an interest rate consistent with the market rate for auto loans at that time. But car buyers also value other features like size, handling, acceleration, and safety. Consumers also differ in their preferences over these attributes: some will place a high premium on fuel economy, others will care more about performance. The engineers and behavioral economists imply that valuing any characteristic other than miles per gallon is irrational; yet they really seek to substitute their preferences for consumers. Gayer and Viscusi (2012, p.23) conclude, “The behavioral justifications offered by the National Traffic Safety Administration (NHTSA) and EPA offer very little evidence that consumers are causing self harm in their vehicle-purchasing decisions and would thus accrue private benefits by having their options restricted.” Even the NHTSA and EPA recognize the wide variation in studies of consumer response to fuel economy, and conclude,

Researchers in DOE laboratories or EPA bureaucrats may be convinced of the value of specific conservation measures, but self-certainty is not truth.

“estimating consumer response to higher vehicle fuel economy is still unsettled science.”¹⁰

The given of the Energy Paradox – that specific conservation measures offer sure savings – is problematic epistemologically and methodologically. In the real world, circumstances in which someone truly knows the efficiency of an investment virtually never arise, even if someone, somewhere does possess such “true knowledge.” Economic knowledge depends, as Hayek (1945) demonstrated, on the circumstances of time and place. Thus, *even if* a firm would

¹⁰ 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, Final Rule, p.996. Available at http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/2017-25_CAFE_Final_Rule.pdf

benefit from an investment, this knowledge must be credibly conveyed to them. Researchers in DOE laboratories or EPA bureaucrats may be convinced of the value of specific conservation measures, but self-certainty is not truth. The Federal government has been convinced of the value of investments in renewable energy for decades, and Solyndra is only the most recent reminder that self-assurance is no guarantee of truth. Of course, government officials are not the only ones to fall victim to such exaggerated certainty: *Business Week* named Enron as the best run company in America, and investors trusted Bernie Madoff with their life savings. The tendency to not recognize the limits of one’s knowledge lies at the heart of what Hayek termed the “Fatal Conceit” of government planners. Methodologically the engineering approach to energy efficiency is diametrically opposed to the subjectivism of economics. Economists try to model the behavior of households and firms, as these subjects understand their situations. The rationality of households or firms, and by contrast inferences about decision-making inferences, must be evaluated based on the means-ends framework *as viewed by the subjects*.

Consider how an investment in more energy efficient lights will appear to the manager of a business. The manufacturer of the lights, which are more expensive than standard lights, claims that they will pay for themselves in reduced electricity costs within just a few years. But dozens of potential suppliers at any given time are making the same claim about their products and services. A manager has many different potential uses for available funds, from IT to supply chain management, theft and risk management, and shipping, each of which may reduce costs. The manager might also be interested in introducing new products or selling to new customers to expand the business. Even on the narrow front of energy conservation, worthwhile investments must be sorted out from worthless gimmicks and gadgets. Businesses will see the

great energy conservation opportunities differently, and inevitably some good investments will be missed.

A manager's concerns will extend beyond the general efficiency of the new lights. The manager will care about how much money *her* company will save with the new lights, not how much an average firm will save. Heterogeneity among firms, or the reality that one size does not fit all, can result in a conservation measure that yields substantial net present value for most businesses failing to deliver benefits in excess of costs for a given firm. Heterogeneity among firms even in the same industry is substantial, and is responsible for the high cost of command-and-control environmental regulations. The variance in return on energy conservation, which reflects heterogeneity, is substantial. Sutherland (1991) reports that energy savings predicted by engineers in commercial building retrofits usually differed by more than 20% from actual savings. Gayer and Viscusi (2012) observe that managers rejected half of the energy-saving suggestions outside engineers thought would reduce costs for their firms. Firm-specific factors, difficult for outside experts to assess, are very important in determining the actual profitability of conservation investments. Overall average realized savings equaled projected savings on measures adopted by firms despite the variance of projected from actual savings (Sutherland 1991). This demonstrates that managers are doing well in identifying which energy saving lights will actually benefit their business. This variance would presumably be even larger if managers did not offset the effect of heterogeneity in choosing when to invest in energy saving investments. The subjective perspective emphasizes that a major challenge in adoption for a business (and for households) is validating claims about cost savings.

The manager might turn to the Federal government for assurances about the potential cost savings. The EPA and DOE have operated the Energy Star Program to certify energy efficient appliances and products since 1992. Energy Star certified products are generally (supposed to be) 10 to 25 percent more efficient than minimum Federal standards (GAO 2010). Thus these are some of the energy efficient products businesses are allegedly irrational for not purchasing. But a Government Accountability Office report found that the certification requirements of the Energy Star program are very lax (GAO 2010). The GAO was able to receive Energy Star certification for 15 bogus products, including a gas-powered alarm clock and an air purifier with a feather duster attached to it. Only two bogus products submitted by the GAO were actually denied certification by the EPA or DOE. The exact reasons for these failures are not relevant for this discussion. The important point is that EPA and DOE representations of energy efficiency cannot be regarded as guarantees that energy efficient lights will actually save money.

Claims that firms fail to invest “enough” in energy saving products with short payback periods are more problematic than similar claims for households because economists assume firms maximize profit effectively, make decisions like this more frequently than households, have greater amounts of money at stake, and are less likely to face capital constraints. Yet systematic irrationality on the part of firms with respect to energy conservation has not been established. There are many valid reasons managers might discount engineers’ recommendations on energy saving investments.¹¹ In addition, DeCanio (1998) observes that within-firm variation accounts for much of the variability in payback periods observed in

¹¹ In addition to those enumerated here, a variety of economic factors like expectations of future energy prices are relevant (Jaffe and Stavins 1994b, Sutherland 1991). A failure to accurately forecast energy prices over the next decade does not demonstrate decision-making incompetence.

adoption of energy conservation measures. DeCanio interprets his findings as evidence of “shortcomings of corporate decision processes,” (p.454) but if firms invest in some energy conservation measures, their decision not to invest in others cannot be attributed to a total disregard for energy efficiency. It is consistent with heterogeneous firms attempting – likely imperfectly – to identify measures which will benefit their firm.

The Energy Paradox was seen as a result of asymmetric information prior to the recent behavioralist interpretation. Yet asymmetric information does not necessarily produce a remediable (meaning correctible by government policy) market failure when a proper institutional comparison is made. Businesses and households must be convinced of both the general utility of a conservation measure (as opposed to a fraudulent gimmick) and its value in their usage, taking heterogeneity into account. Information asymmetry can be seen as increasing the cost of credibly communicating. Sellers typically must establish a reputation to convince buyers of the quality of their product. The cost of energy saving lights includes the costs of manufacture plus the cost of credibly convincing businesses and households of the resulting cost savings. The cost of credibly is a type of selling cost, which should be included in the full cost of a product (Kirzner 1973). The standard practice in economics of ignoring information related to selling costs results in a comparison of the real world, where knowledge must be validated (Sowell 1980), with a utopia where truth is costlessly divined by all. This is exactly the nirvana fallacy Demsetz (1969) warns against. While we have no evidence on the size of these selling costs, they have not been considered within the context of the energy paradox, and consequently a rigorous case for market failure has not been established.

Placing the Energy Paradox in the proper comparative institutional or constitutional perspective demonstrates that the prospects for government regulation to improve on the market outcome are weak. We have two sets of institutions to evaluate and disseminate energy saving products – the voluntary transactions of the market economy, and coercive government policies, in which buyers can be denied freedom of choice (Brennan and Buchanan 1985). In the market entrepreneurs and firms devise energy saving products and attempt to convince households and businesses of the value of their product. When successful, a conservation measure will be widely adopted, while a failure to convince many consumers consigns the invention to the dustbin of economic history. Alternatively the designers of energy conservation products can lobby legislators and bureaucrats to either force their product on consumers or provide subsidies to cover losses. Authors who view the Energy Paradox as a market failure ultimately believe that the EPA or DOE will make better choices than the market process.

One might wish that the EPA would only step in for products where the engineering studies provide overwhelming evidence that an economically efficient product has fallen through the cracks. Such cases are possible, because markets are efficient, not perfect. Yet isolated, one-time-only interventions of this nature are not possible. They create the precedent for regulatory action, and other firms will try to follow the precedent and similarly claim that their product has been wrongly rejected by the market. The precedent of government intervention to compel use of a product sets in motion rent seeking by later firms. Other manufacturers might commission engineering studies to demonstrate the amazing savings offered by their products. The public choice arguments discussed in Section II now apply and indicate that politicians and regulators will not make these decisions well. The failings of the Energy Star program is but one example of how bureaucrats lack the incentive and information needed to

choose only truly efficient products. The Energy Paradox relies on a given, that we “know” that an energy saving measure is truly economically efficient. Yet this knowledge is never “given” to any individual or policy maker in the economy.

IV. Coincidental Benefits (“Co-benefits”) of EPA Regulation

The largest component of quantified benefits of recent EPA regulations are “co-benefits.” The inclusion of co-benefits is consistent with the principle of cost-benefit analysis. Many times regulations by government or actions by private individuals will be undertaken for one reason but have secondary or side effects. For example, a person might begin an exercise regimen with the direct goal of improving his health. As he becomes more fit, however, he finds that the exercise gives him more energy during the day and that his wife finds him more attractive. These co-benefits of exercise should be included in an evaluation of the exercise regimen.

A regulation designed to reduce mercury may also reduce particulate matter, like the EPA’s MATS rule. If such a secondary benefit can be documented, it should be monetized and included in a cost-benefit analysis of the mercury regulation. So in principle, co-benefits are not objectionable. Intuition suggests that such side benefits should be smaller in magnitude than the primary benefit of a regulation. For instance, documented co-benefits might be a decisive factor when the primary benefits of a proposed regulation are close in magnitude to the costs. Co-benefits in excess of primary benefits suggest that at a minimum the regulation is mislabeled, and perhaps unfounded. The emergence of co-benefits in the EPA’s regulatory cost-benefit

analysis has led to the even more problematic result that for many regulations, only co-benefits are quantified, and the co-benefits almost always are reductions in fine particulate matter, PM_{2.5}. For instance, the MATS rule regulates emissions of mercury, arsenic, cadmium, lead and other “Toxics” from electric utility generating plants. The cost-benefit analysis quantifies social benefits in 2016 of \$53 to \$130 billion (at a 7% discount rate); direct benefits of this regulation are \$6 million, and non-PM related co-benefits are less than \$1 billion of the total.¹² Overall Smith (2011) finds that 10 of 12 major non-PM regulations under the Clean Air Act in 2010 and 2011 had more than half of their quantified benefits from PM_{2.5} co-benefits. For eight of these regulations, PM_{2.5} co-benefits were essentially the only type of quantified benefit. Absent direct benefits, co-benefits do not provide evidence of the need for regulation. The main benefits from regulating mercury should be from reductions in mercury.

The inclusion of PM_{2.5} co-benefits is particularly problematic because PM_{2.5} is a criteria pollutant as defined by the 1990 Clean Air Act and a National Ambient Air Quality Standard (NAAQS) for PM_{2.5} is in place. The PM_{2.5} co-benefits are almost entirely for mortality effects,

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and in combination, the number of lives saved due to PM_{2.5} reductions as side effects of other regulations is huge.

These effects, however, are inconsistent with the guidelines for setting NAAQS. The NAAQS are to be set without regard to cost to provide an adequate margin of safety. If the standard for PM_{2.5} has been set in accordance

with the law, there cannot be thousands of deaths attributable to PM_{2.5} available as co-benefits of other regulations. The benefit-cost analysis for the Cross-State Air Pollution Rule, for

¹² See the regulatory impact analysis at <http://www.epa.gov/ttnecas1/regdata/RIAs/ToxicsRuleRIA.pdf>

instance, estimates that between 13,000 and 34,000 PM_{2.5}-related premature deaths will be avoided annually. Significant PM_{2.5} co-benefits are an admission of guilt by the EPA, of either failing to set a proper NAAQS for PM_{2.5}, or fraudulently claiming co-benefits.¹³ The EPA should not justify the Cross-State Rule on the basis of co-benefits.

The regulations producing PM_{2.5} co-benefits could, in principle, be rationalized as instruments to achieve the NAAQS for PM_{2.5}. Economists believe the world is characterized by

Significant PM_{2.5} co-benefits are an admission of guilt by the EPA, of either failing to set a proper NAAQS for PM_{2.5}, or fraudulently claiming co-benefits.

diminishing returns. Diminishing returns produce increasing marginal costs – the cost of producing an extra unit of output increases with output. For environmental regulation, this means that the cost of

tightening an air quality regulation will rise. If the EPA has several regulatory instruments available to reduce PM_{2.5} emissions – and PM_{2.5} co-benefits exist only if this is true – using all of these instruments in coordination might be the lowest cost way of reducing PM_{2.5} to meet a NAAQS. The old adage “all things in moderation” turns out to provide a good guide to policy, as the economic costs of using only one instrument are usually greater than using several instruments each at a more modest level to achieve the same goal. But if the EPA is regulating mercury emissions from power plants to reduce PM_{2.5} emissions (a plausible interpretation as this regulation has no quantified direct benefits), the mercury standard needs to be set in coordination with the NAAQS for PM_{2.5}; Smith (2011) illustrates the mathematical details of the required coordination. The current EPA practice of claiming that thousands of PM_{2.5} related

¹³ The science behind the EPA’s attribution of mortality effects to PM_{2.5} and thus benefits to its reduction has been questioned; see Smith (2011) and Hartnett White (2012) for discussions of these weaknesses. As economists we are reluctant to weigh in on an issue beyond our field of expertise, but if EPA claims about the total number of deaths in the U.S. attributable to fine particulate matter are valid (over 10% of all deaths), the PM_{2.5} related regulations should in a very short time begin to have a nontrivial effect on life expectancy.

deaths remain on the table to provide co-benefits to justify an array of other air quality regulations with a NAAQS in place is unacceptable.

V. Co-Costs

The side effects of regulation should be included in a cost-benefit analysis. Economics is particularly adept at tracing out the secondary, long run, and other unintended consequences of policy measures. The EPA has been eager to embrace and quantify dubious $PM_{2.5}$ related secondary effects as co-benefits. Adverse side effects can be thought of as co-costs, and the principle of a comprehensive cost-benefit analysis means that positive and negative effects must be monetized and included. We discuss in this section several co-costs the EPA has neglected to monetize and include in the cost-benefit analysis of the recent flurry of regulation detailed in the introduction, made especially egregious given the dubious inclusion of co-benefits.

A. The Cost of Abridging Freedom

People value making their own decisions. Many times a decision forced on a person will not make them better off; the individual does not buy into the change, and without their cooperation, life outcomes do not change for the better. Court-mandated rehabilitation for drug abuse, for example, typically fails. Even in cases where regulations can genuinely produce better decisions, regulation results in a co-cost from compromising personal freedom and autonomy. Thus for a given quality of decision, say a given level of energy efficiency for light bulbs, people will be worse off when this decision is forced on them as opposed to freely chosen. The cost of compromising personal autonomy must be deducted from the

improvement in outcomes or quality of decision-making produced by the regulation. Private regulatory benefits result in a co-cost to our autonomy.

The cost of abridging freedom of choice is a type of nonuse value, and economists use stated preference survey methods to quantify such values. The EPA, National Oceanic and Atmospheric Administration, DOE, and National Science Foundation have spent millions of dollars over the decades on research on the use of stated preference methods to quantify benefits of various environmental amenities. Perhaps unsurprisingly, these agencies have not studied the cost of restricting freedom of choice through paternalistic regulations. Consequently we cannot say if the costs of abridging freedom outweigh the improvement in decision-making quality that may occur due to regulation. Nonetheless, if the EPA is going to include secondary benefits and costs in its regulatory analysis, this co-cost must be monetized and included.

B. Reduced Innovation

Innovation is the key factor driving long-term productivity. The development and diffusion of new products and new production methods is the key to lower prices and enhanced consumer well-being. New regulations raise costs and discourage innovation, but advocates of sustainable development and the Porter hypothesis say that the negative effect of regulation on innovation is overblown and, in fact, could be positive. Innovation is complex and based on numerous sources that include technology, market competition, product prices, consumer demands, future expectations, etc. Economic theory posits a negative relationship between

The growth literature has shown, quite unambiguously, that countries more heavily regulated grow more slowly.

regulation and innovation: regulations raise the costs of doing business and thereby discourage innovation.

Command and control regulations often lock firms into existing production processes. When faced with an uncertain regulatory landscape, firms would rather wait for new regulatory announcements, rather than go forward investing on their own. Environmental policies like the continuously revised desulfurization standards for coal power plants also discourage innovation: When any reduction in scrubber costs means new implementation requirements for firms, why spend time innovating scrubber technology?¹⁴

Evidence demonstrates that regulation hampers innovation and that more heavily regulated industries are less innovative than lightly regulated industries. The growth literature has shown, quite unambiguously, that countries more heavily regulated grow more slowly. Regulation is costly for businesses and hampers innovation. Each new environmental regulation will slow productivity growth and the pace of innovation. Thus a comprehensive cost-benefit analysis would include the monetized impact of the regulation on lost productivity growth as a co-cost.

C. Higher Barriers to Entry

Regulation contributes to barriers to entry. Some firms comply more quickly with new regulations, gaining a first-mover advantage over competitors, which they use to increase market share. Because incumbent firms can stay ahead of new entrants in “best practice” environmental compliance, the costs of entry rises significantly allowing early adapters to earn

¹⁴ See Bellas (1998) for more on the effect of the Clean Air Act and Powerplant and Industrial Fuel Act on scrubber innovation.

abnormal rates of profit. Attempts to gain a competitive advantage by gaming the regulatory process to a firm's benefit are numerous and well-documented.¹⁵

When compliance with environmental regulations cost millions of dollars per firm, current firms will understandably insist that new entrants face the same regulatory rules. Small firms and consumers are harmed by this because large firms are more capable of absorbing compliance costs. As small firms are squeezed out of the market, industry concentration and pricing power both rise.

One example of well-intentioned, popular energy policies designed for special interests are renewable energy purchase requirements for utilities. Twenty-nine states currently have such mandates or goals, calling for as much as 40% of electricity to be generated from renewable energy sources by a specified date. A “25 Percent Renewable Energy by 2025” resolution passed by the U.S. House in 2007 and is supported by the Obama administration.¹⁶ Under the plan, producers will be required to obtain 25 percent of their electricity from renewable sources or face fines and penalties. The plan allows considerable flexibility in introducing renewable energy sources, seemingly treating all firms equally. However, producers in regions with abundant solar and wind resources stand to benefit relative to producers firms in the South (which is often cloudy and hazy with light winds). The uniform mandate raises costs for all electricity producers, but raises costs for some significantly more than others. These relative distortions can lead to imbalances in the market and discourage new entry. Moreover, the mandate could, in regions with few renewable energy resources (e.g., southern

¹⁵ See, for example, Adler (1996).

¹⁶ On state renewable portfolio standards see <http://www.dsireusa.org>. For the Obama administration plan see <http://www.whitehouse.gov/energy>.

states in the US), result in implementation of cost-*ineffective* solar technology and wood burning.

D. Lower productivity

Economists have consistently found that economic deregulation (i.e., liberalizing prices and removing barriers from voluntary exchange) increases industry productivity (Moore 1988). The U.S. airline industry enjoyed a productivity and employment boom after deregulation began in 1978 and the Civil Aeronautics Board was eliminated in 1982. Between 1970 and 1975, U.S. airlines experienced slower growth than international airlines, while between 1975 and 1983 as the effects of deregulation were felt, U.S. airlines experienced faster productivity growth (Viscusi, Vernon, and Harrington 2004, pp. 565-6). Productivity growth was nearly nonexistent in the U.S. railroad industry in the final decades of regulation. U.S. railroads had productivity growth at an annual rate of 0.5% between 1956 and 1974, compared with 3.3% annual growth for Canadian railroads during this period (Caves, Christensen and Swanson 1981). The increased efficiency of the deregulated U.S. railroad industry improved environmental quality, as it made low sulfur Western coal more viable as a fuel source for electric utilities. The U.S. trucking industry experienced 16% productivity growth between 1980 and 1984 with deregulation (Ying 1990). Government enterprises have similarly lower productivity relative to similar private firms. Davies (1971, 1977) found that Australia’s private Ansett airlines carried more freight and passengers per employee than its government-run domestic competitor. Bennett and Johnson (1979) found private trash hauling services more efficient than municipal service in Fairfax County, Virginia. Viscusi, Vernon and Harrington (2004, p.447) summarize a

review of the evidence, “Most of these studies conclude that publicly owned firms are less efficient than privately owned firms.”

Environmental regulations will reduce productivity growth because resources, creativity, talent, and managerial attention will be diverted away from productive uses to regulatory compliance. Capital within the firm and the industry must be restructured. While the newer technologies and machinery required for abatement could lead to more efficient production and higher output, these enhancements come at a significant up-front cost in terms of their effect on productivity. Firms operating under regulatory supervision have less flexibility to pursue new opportunities. Command-and-control regulations geared to a given type of production technology will tend to lock this technology in place.

E. CAFE Standards and Auto Fatalities

The EPA and the NHTSA have recently proposed raising the CAFE standard for the 2017-2025 model years for domestically produced cars and light trucks, as discussed in Section III. EPA claimed substantial private benefits for this regulation. Increasing fuel economy beyond the level demanded by drivers creates a very significant co-cost, lives lost in traffic accidents.

One way automakers can improve fuel economy is to reduce vehicle weight, as a lighter vehicle requires less energy to move. Lighter vehicles provide less protection for occupants in the event of an accident. Studies by transportation engineers have documented the relationship between vehicle weight and safety. Crandall and Graham (1989) used this relationship to explore the effect of CAFE standards enacted by Congress in 1975 in response to the Energy Crisis of the 1970s. The CAFE mileage standard at this time was 27.5 mpg, and resulted in a

23% reduction in the average weight of vehicles in 1987 compared with 1974. Some of this weight reduction would have occurred without the regulations, since the increase in gas prices in the 1970s led car buyers to demand more fuel-efficient vehicles. Crandall and Graham estimate that the weight reduction attributable to CAFE, and then the effect of this reduction on highway deaths. They estimate that the 27.5mpg standard in the late 1980s led to the deaths of 2,200 to 3,900 Americans each year. Studies by the NHTSA and National Academy of Sciences reached essentially the same conclusion.

The cost-benefit analysis for the 2017-2025 proposed CAFE standard does not include increased highway fatalities as a cost (NHTSA 2011).¹⁷ The extent to which automakers might meet a 54mpg standard for the vehicle fleet by 2025 by reducing vehicle weight is unclear, and so the earlier findings on the effect of CAFE on deaths do not yield a prediction for the future. Automakers had only a few years to meet the 1985 standards (they were finalized in 1977, and model designs are set up to four years in advance), and might have relied on weight reduction disproportionately in this case. And there might be a point of diminishing returns in vehicle weight reductions to improve fuel economy. The discounted net present value of the proposed CAFE standard over the nine years in question is \$344 billion, which as noted above, includes almost exclusively private benefits. Even with these benefits included, an increase of about 5,000 deaths per year would, given the value of lives saved employed by EPA in its cost-benefit analysis, offset all of the estimated net benefits. Given the range of estimates of deaths attributable to the much more modest 27.5mpg standard in the 1980s, 5,000 extra deaths per year are not totally implausible.

The cost-benefit analysis for the 2017-2025 proposed CAFE standard does not include increased highway fatalities as a cost.

¹⁷ See Table 13, Executive Summary. Accident costs are included, but refer to accidents due to increased mileage driven due to lower vehicle costs per mile.

VI. Conclusion

The public sector does not face the same profit and loss constraints as businesses. Properly designed and executed cost-benefit analyses, however, can substitute for businesses' profit and loss calculations and at the same time incorporate external effects into government's calculus. Cost-benefit analysis provides citizens a tool to help direct government in its proper role of performing tasks for the general benefit that citizens are unable to do through voluntary means. Recently the U.S. has experienced a boom in the reported benefits of regulation, led by the EPA. Closer examination reveals that the benefits are highly questionable, with most problems arising from inclusion of co-benefits and private benefits. The private benefits are a new and highly speculative benefit of regulation that not long ago would have been regarded as costs. Co-benefits are not objectionable in principle, but in practice are for one pollutant – particulate matter – and substitute for any quantified direct benefits. Smith (2011) finds that of 12 major Clean Air Act regulations not involving fine particulate matter, eight had essentially only $PM_{2.5}$ co-benefits, while two regulations had almost exclusively fuel economy related private benefits. One could say based on this recent experience that the EPA has given up trying to quantify the benefits of their regulations.

The research findings by behavioral economists should not come as a complete surprise to social scientists: self-help books and self-improvement programs have long been popular, and people use the services of therapists, life coaches, and financial advisors to try to make better decisions. In many walks of life, individuals deal with their own self-control problems privately. Decision-making maladies have been used to make the case for new regulations with minimal social benefits but large private benefits. Behavioral economics leads us down a dangerous path

where (1) individuals are always wrong and leave big bills on the sidewalk; and (2) only the government—a regulatory czar well trained in behavioral economics—can pick these bills up for them.

The embrace of behavioral economics entails abandonment of consumer sovereignty for governmental “choice architects.” The role for choice architects could be expansive once the door of private regulatory benefits has been kicked open (and, of course, it has already been opened wide under the Obama administration). That individuals sometimes make poor choices does not mean paternalistic regulations passed by government will make them better off. The burden of proof should be squarely on the EPA or DOE in arguing for private benefits in a specific case, particularly given the long history of public interest rationales being used as cover for regulations that actually benefit some special interest. For better or worse, EPA has engaged in some experiments in private benefit regulation. Paternalistic regulations on free people are, in theory, justifiable if at some point in the future people realize that they were made better off by being forced to do something they did not want to do. The EPA’s recent private benefit regulations should be scrutinized in the future to verify any private benefits were in fact generated. In the meantime, private benefits should be omitted from regulatory cost-benefit analysis.

Environmental regulations have undeniably produced substantial benefits for the U.S. over the past forty years. These benefits have resulted from addressing negative externalities, the traditional rationale for environmental protection. The past several years have witnessed both an increase in the number of major regulations offered by the EPA and in the claimed benefits of environmental regulation. And yet the benefits claimed have overwhelmingly been private benefits and co-benefits, while many co-costs have been ignored. Cost-benefit analysis,

properly done, can provide evidence on whether the costs to society of an externality are worth addressing through regulatory action. The emergence of private benefits and co-benefits in environmental cost-benefit analysis reflects that the EPA is moving away from the traditional externality justification for regulation and into uncharted waters.

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