

The Efficacy of Information Policy: A Review of Archon Fung, Mary Graham, and David Weil's *Full Disclosure: The Perils and Promise of Transparency*

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The economics of information has identified an important role for government to correct situations where competition is not sufficient to reveal valuable information to consumers. Archon Fung, Mary Graham, and David Weil's Full Disclosure: The Perils and Promise of Transparency provides a thorough discussion of government-mandated disclosure policies. I use their book to frame an empirical assessment of whether these—and other information policies—have significantly reduced the costs to consumers created by imperfect information. My conclusion, which calls for more research, is that government information policies have amounted to weak solutions in search of a problem.

1. Introduction

Any microeconomic problem that draws national attention is likely to be approached in distinctive ways by the news media, the general public, scholars, and policymakers. Representatives of the media frequently describe economic problems as a debate—often cast in ideological terms—between advocates of the free market and advocates of an active government. Members of the engaged public call for solutions to address their sometimes conflicting interests. Scholars draw on research that conceptualizes and, if possible, quantifies the social costs

and benefits of alternative policies to address the problem, including the alternative of no government action, and recommend the policy that would generate the greatest gain to society. Policymakers weigh various considerations, especially how their most powerful constituents would be affected, before deciding on a course of action. If policymakers can reach agreement, they enact a policy. The process is then repeated when the next economic problem arises.

If policymakers could be certain whether the policies they have previously enacted are benefiting the nation, they would not have to assess every economic issue from “square one” and could learn from past mistakes. Economists have helped build a valuable knowledge base, consisting of what is known

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in theory and in practice, about the gains and losses associated with the nation's most important microeconomic policies. Recent contributions include Peter H. Schuck and Richard J. Zeckhauser's (2006) analysis of social policies, which identifies common problems, "bad bets" and "bad apples," that increase various programs' costs and prevent them from achieving their social goals, and my 2006 book, which synthesizes the empirical evidence on government's efforts to correct market failures and finds that the cost of government failure may be considerably greater than the cost of market failure.

In their thoughtful and constructive book, *Full Disclosure: The Perils and Promise of Transparency* (Cambridge University Press, 2007), Archon Fung, Mary Graham, and David Weil provide an in-depth assessment of government-mandated disclosure policies intended to reduce the costs to consumers created by imperfect information. In general, if consumers are uninformed or misinformed about the quality of a product or a service and if workers are uninformed or misinformed about the safety of their workplaces, they will make suboptimal consumption and occupational choices. Consumers' choices could be distorted by false advertising and by firms' failures to disclose relevant information about their products and services, including information that would enable consumers to assess the safety of potentially risky products. Similarly, workers may become injured or ill because firms have not disclosed information about the health risks at their workplaces. At the same time, truthful competitive advertising can lead to product improvements.

Federal, state, and even local governments have instituted policies to address the problems caused by imperfect information. The federal government has empowered regulatory agencies to direct firms to provide complete and accurate information about their products and workplaces and to ensure that

consumer products and workplaces meet acceptable safety standards. Individual states and local governments have enacted a variety of policies to supplement federal policies, including "lemon laws" that enable purchasers of new automobiles to obtain a refund if their vehicle is hopelessly defective, occupational licensing to ensure that practitioners in hundreds of occupations are competent, and the like.

Fung, Graham, and Weil focus their coverage of information policy on the objective of "targeted transparency." As they explain on pages 37–38, "targeted transparency represents a distinctive category of public policies that, at their most basic level, mandate *disclosure* (emphasis added) by corporations or other actors of standardized, comparable, and disaggregated information regarding specific products or practices to a broad audience in order to achieve a specific public policy purpose. Thus, targeted transparency does not require specific technologies, performance targets, or taxes. Instead, it relies on thousands of individual choices by information disclosers and users who interact to establish acceptable risk levels or improve organizational performance."

The authors' use of the term "disclosure" encompasses information policies that require firms to provide information about their product on labels and, where appropriate, to report government grades about certain attributes of their product (e.g., vehicle rollover safety) and service (e.g., restaurant hygiene). The government alert system to improve public safety and government-mandated report cards to improve public education are also considered to be a form of disclosure. Other information policies that are not covered by the authors include product and workplace standards, advertising regulation, and occupational licensing.

The central goal of the book is to provide constructive guidance to policymakers for crafting policies that work by identifying and

explaining why certain disclosure policies are effective and why others are much less effective. My interpretation of the empirical evidence on the economic effects of disclosure policies, however, differs from that of the authors because I believe that no persuasive evidence exists proving any of the disclosure policies that the authors consider—or of other information policies that they do not consider—have been effective. Accordingly, I reach different policy conclusions.

2. *A Brief Summary of the Book*

The introduction motivates the idea of targeted transparency and gives examples of disclosure policies with this objective. For example, the 2000 Transportation Recall Enhancement, Accountability, and Documentation Act introduced SUV rollover ratings based on simple five-star ratings (with one star the lowest and five stars the highest) to indicate each model's rollover risks so that consumers can make more informed vehicle choices. The second and third chapters document the increasing use of disclosure policies in the United States and distinguish them from other information policies. The fourth chapter is the most important chapter in the book because it provides the authors' analysis of the factors that contribute to an effective disclosure policy. Eight policies are thoroughly discussed, with the authors concluding that three—corporate financial, mortgage lending, and restaurant hygiene disclosure—are effective; that three—nutritional labeling, toxic releases disclosure, and workplace hazards disclosure—are moderately effective; and that two—patient safety and plant closing disclosure—are ineffective. The fifth chapter explores the factors enabling a disclosure policy to maintain and even improve its effectiveness. The sixth and seventh chapters assess international disclosure policies and consider how collaboration among nations can improve policy effectiveness. The final

chapter pulls the discussion together by suggesting ten principles that can enable policymakers to craft effective disclosure policies. An appendix contains a detailed discussion of the specific policies that shape much of the discussion in the book.

Because one of the authors is a political scientist (Fung), one a lawyer (Graham), and one an economist (Weil), they take a multidisciplinary approach to their topic. Thus the reader is treated to a wealth of institutional, political, and legal information surrounding a disclosure policy's formation, and the book is informed by concepts from psychology, political science, organizational behavior, and economics that explain how consumers react to a policy and the policy's effects. The economics of information literature is used to identify how imperfect information can create inefficiencies and market failure and to motivate the constructive role that government disclosure policy may play.

3. *Disclosure Policy Successes?*

As noted, Fung, Graham, and Weil conclude that financial, mortgage, and restaurant hygiene disclosure policies are effective and they use these successful policy interventions to suggest how policymakers can, in general, craft effective disclosure policies. But the authors do not provide a quantitative basis for concluding that a government intervention has been successful; hence, it is useful to take a close look at the available empirical literature—most but not all of which is cited by the authors—to assess whether the claimed successes have actually provided significant consumer benefits.

Before proceeding, it is useful to ask whether empirical evidence exists that identifies a serious systemic information problem that calls for government action in financial, mortgage, restaurant, or other markets. Unfortunately, no evidence is presented by the authors beyond anecdotes involving

Enron, Bridgestone/Firestone, and the like. For that matter, the reader is not directed to evidence obtained by economists who, as stated on page 31, have “scuttled the neat predictions of social welfare economics.” Joseph E. Stiglitz (2000) is cited in footnote 28 of that page as providing a complete overview of the literature, but he provides no evidence of the existence of significant inefficiencies caused by imperfect information and no evidence that government policy has ever ameliorated the situation. This is not to say that there are not situations where consumers have clearly been harmed because firms have exploited information deficiencies. But the relevant policy question is what government intervention has done to address any systematic abuses effectively—to the extent they exist—that are attributable to imperfect information.

3.1 *Financial Disclosure*

Corporate financial disclosure policy has evolved through a series of acts that have required firms to disclose certain pieces of information, presumably to aid investors by increasing stock returns. The 1933 Truth-in-Securities Act requires an issuer of securities worth more than \$300,000 to file a statement for potential investors that contains material facts such as the firm’s capital structure. George J. Stigler (1964), George J. Benston (1973), and Gregg A. Jarrell (1981) found that average stock returns did not change much after the act was imposed and concluded that it provided few benefits to investors. A possible explanation for this finding is that the information required by the law did not appear to go beyond the information required by the New York Stock Exchange (NYSE). Indeed, the NYSE signaled investment quality by its decisions on which securities to list. Carol J. Simon (1989) found that the law did not affect mean returns at the NYSE, although returns were somewhat higher for initial public offerings in other

(regional) stock exchanges. Simon also found that the variance of returns was reduced for some issues of stock, but she argued that the Securities Act may have produced costs by shifting riskier over-the-counter securities to lower-cost, unregulated markets.

The 1964 Securities Act Amendments extended mandatory disclosure regulations to large firms traded over the counter. Michael Greenstone, Paul Oyer, and Annette Vissing-Jorgensen (2006) found that shareholders valued the disclosure requirements. But the authors cautioned that they could not conclude that the amendments had a positive welfare effect because they could not rule out the possibility that shareholders’ gains were offset by managers’ losses. Allen Ferrell (2003) reported that a simple comparison of stock returns in the years before and after the 1964 act was implemented showed no increase in returns—median monthly abnormal returns were slightly worse after the act. Ferrell discouraged a literal interpretation of this finding by arguing that the market may have anticipated the benefits of mandated disclosure. But, in my view, it is inappropriate to completely ignore the information generated by stocks after the 1964 act was in effect.

The Williams Act of 1968 regulated corporate takeovers by requiring a bidder to disclose certain facts and figures and by instituting a minimum tender period, thus protecting target firms’ shareholders by providing them with more information about the acquiring firm, and by giving them more time to decide whether to tender. Jarrell and Michael Bradley (1980) concluded that shareholders of target firms were better-off because the Williams Act increased cash tender premiums. But the authors also noted that the higher premiums created substantial costs by deterring some takeovers that would have improved economic efficiency and by harming shareholders of firms that would have been acquired absent the takeover laws.

Regulation Fair Disclosure (“Reg FD”) was instituted in October 2000 by the U.S. Securities and Exchange Commission, and was intended to stop the practice of “selective disclosure,” in which companies gave material information only to certain selected analysts and institutional investors before disclosing it publicly. (This is not the same thing as insider trading.) Armando Gomes, Gary Gorton, and Leonardo Madureira (2004) found that the regulation had the unintended consequence of causing a welfare loss to small firms because they faced a higher cost of capital. Apparently, small firms used selective disclosure to transmit useful information to analysts but, after Reg FD was imposed, analysts stopped following some of these firms.

Finally, in the wake of various accounting scandals, the Sarbanes–Oxley Act of 2002 (SOX) specified new standards for corporate governance. In particular, it required a firm’s management and an outside auditor to assess annually the effectiveness of the firm’s internal controls over financial reporting. In addition, it tightened disclosure rules and strengthened the independence of the board of directors and the auditor. Surveying the relevant empirical accounting and finance literature, Roberta Romano (2005) was among the first to argue that the act was ill conceived and was likely to provide few benefits. Estimating the costs and benefits of SOX is currently an active area of research, but a survey of the initial empirical studies by Ehud Kamar, Pinar Karaca-Mandic, and Eric Talley (2007) suggests that the act has had a decidedly negative impact on smaller firms by raising their accounting and auditing costs and decreasing firm value. Further work is needed to determine the overall welfare effects of SOX.

In sum, I believe that it is fair to conclude from the available empirical evidence that corporate financial disclosure legislation has generated, at best, modest gains to certain investors and, taking into account the wel-

fare of firms’ managers and all shareholders, has had mixed effects that do not support the conclusion that such legislation has both revealed the existence of serious and systemic information imperfections and been effective in addressing them.

3.2 *Mortgage Lending Disclosure*

Discrimination by firms toward particular members of society is not typically interpreted as a market failure but as undesirable social behavior that is unlawful in the United States. Accordingly, it might be expected that discrimination in mortgage lending would be addressed through the proper legal channels. But Fung, Graham, and Weil point out that the Home Mortgage Disclosure Act (HMDA) was enacted in 1975 by Congress, and substantially expanded in 1989, to enable federal authorities and the public to monitor minority access to the mortgage market by requiring “banks, savings and loan associations, and other lending institutions to report annually the amounts and geographical distribution of their mortgage applications, origins, and purchases disaggregated by race, gender, annual income, and other characteristics” (p. 203).

Presumably, if the data disclosed that lenders were engaging in discrimination by approving loan applications from white applicants at a much higher rate than they were approving loan applications from blacks and Hispanics, *ceteris paribus*, then they would be under legal and public pressure to discontinue this practice. Of course, it is inadvisable to use only descriptive information on the share of approvals for a mortgage loan by racial category to determine the existence of discrimination because many factors besides race influence a lending company’s decision about whom to approve for a loan. Indeed, the data generated by the HMDA were flawed because they did not include information on a loan applicant’s credit history, debt burden, and the like that could plausibly explain differences in approval rates.

Under the direction of Alicia H. Munnell et al. (1996), the Federal Reserve Bank of Boston collected comprehensive information on a large sample of loan applicants that included their financial profile, demographic characteristics, and whether their application was approved. The authors found that race played a role in lending decisions and concluded that, given the same financial and personal characteristics, white applicants enjoyed a general presumption of creditworthiness that black and Hispanic applicants did not.

But given that the Federal Reserve Bank data are much richer than the data required by the HMDA, it is not clear how HMDA data disclosure requirements would be able to significantly improve access to the mortgage credit market. Raphael Bostic and Brian J. Surette (2000) investigated changes in the racial disparity of home ownership between whites and minorities (blacks and Hispanics) and the source of these changes between 1989 and 1998 and found that the disparity shrank only 2 percentage points during the period and was still very large: nearly 70 percent of white families, but somewhat less than 45 percent of minority families, owned their own homes. Bostic and Surette suggested that the observed decline in disparity rates could be attributed to changes in the housing market, such as lower interest rates, while Keith D. Harvey et al. (2001) attributed the decline to improvements in economic conditions that affected default loss estimates and credit standards in a way that disproportionately benefited minority and low-income applicants. Both explanations cast doubt that federal disclosure policy played much of a role in reducing any racial discrimination that could account for the disparity in home ownership rates.

Current information issues in the housing market focus on sub-prime mortgages and whether homebuyers were aware of the risks that such loans entailed. In addition,

the entire process of securitizing and rating mortgages may have been compromised by conflicts of interest and moral hazard. New research is necessary to document the causes of the housing crisis, to ascertain the extent that mortgage companies mislead consumers and ignored the risks that securitization presented to the ultimate mortgage owners, and to identify specific government policies, if any, that could address information problems effectively in the home mortgage market.

3.3 *Restaurant Hygiene Disclosure*

Restaurants in U.S. cities are subject to hygiene inspections to protect the health of customers, but the results of these inspections are not disclosed to the public unless a restaurant is forced to close to fix a serious problem. In January 1998, Los Angeles County required the results of its inspections to be revealed to consumers via a standard format letter grade card that was prominently displayed in the window of each restaurant (A is the highest grade, numerical grades could be given for performance below a C). Ginger Zhe Jin and Phillip Leslie (2003) estimated that the grade cards caused a 20 percent decrease in hospitalizations related to foodborne illnesses—a finding that they concluded on page 450 “seems remarkable” and is certainly supportive of Fung, Graham, and Weil’s classification of restaurant hygiene disclosure as effective. But this positive assessment may be premature because national trends indicated a reduction in foodborne illnesses (and hospitalizations) during the same period that the grade cards were introduced in Los Angeles County.

During the last decade, the nation’s attention to foodborne illnesses was triggered by a deadly *E. coli* bacterial epidemic in 1993 that was linked to Jack in the Box, a Southern California based chain of fast-food hamburger restaurants. Shortly thereafter, Jack in the Box and Vons, a Southern California based supermarket chain, became embroiled

in a heavily publicized lawsuit in which Jack in the Box sued Vons, claiming that the epidemic was caused by a strain of *E. coli* that was present in meat that Vons supplied to Jack in the Box, and Vons countersued, claiming that the epidemic was caused by Jack in the Box because their restaurants undercooked hamburger patties in violation of state requirements for minimal temperatures. The case reached the U.S. Supreme Court and was finally settled in March 1998, while drawing considerable attention—especially in Southern California—to the perils of tainted and undercooked meat. Indeed, in August 1997, shortly before the Jack in the Box–Vons settlement, Hudson Foods, a supplier to Burger King and other hamburger chains, recalled twenty-five million pounds of hamburger meat.

The meat industry has also been sensitive to the problem and actually sought government regulation. Hazard Analysis and Critical Control Points (HACCP) is used in the food industry to identify potential food safety hazards and to initiate steps to prevent the hazards from being realized. In 1996, the American Meat Institute and a coalition of food associations petitioned the federal government to institute mandatory HACCP testing in meat and poultry processing plants. HACCP was established for these plants in 1998 by the U.S. Department of Agriculture.

Nationwide the incidence of foodborne illnesses related to bacteria on meat and poultry products began to decline noticeably during the late 1990s. Using the baseline years of 1996 to 1998 compared with 2005, the Centers for Disease Control and Prevention (CDC) reported that the incidence of foodborne illness related to *E. coli* declined 29 percent, *Listeria* 32 percent, *Campylobacter* 30 percent, and *Salmonella* 9 percent. (The CDC monitors the incidence of these infections by conducting active, population-based surveillance of laboratory tests of patients

who seek medical attention but who are not necessarily hospitalized. Data are collected from ten states in dispersed geographical areas.) In addition, the incidence of bacteria on meat and poultry products, based on samples tested by the U.S. Department of Agriculture, has also decreased significantly during the period. Paul A. Simon et al. (2005) present data which indicate that the rate of foodborne disease hospitalizations in California declined during 1993 to 2000 and that the rate of decline was even faster, especially since 1994, in Los Angeles County.

Thus the reduction in foodborne hospitalizations that Jin and Lesile attribute to grade cards that were introduced in Los Angeles area restaurants in early 1998 could be capturing a nationwide improvement in food safety that was spurred by a major epidemic and product recalls that focused the public's and the meat industry's attention on the safety of the U.S. meat supply. Such attention and perhaps more careful plant inspections as part of HACCP, caused suppliers to exercise greater care that their meat was safe, caused restaurants to exercise greater care that the meat they served was not undercooked, and caused consumers to take greater care not to eat undercooked meat. Isolating nationwide responses to major food-safety events during the 1990s—which were not related to the introduction of restaurant grade cards—from Los Angeles residents' responses to the introduction of restaurant grade cards in 1998 is difficult but essential before one can be confident that this disclosure policy has been effective.

A further consideration is that the extent of *E. coli* in beef may be subject to cycles for reasons outside of the control of the meat industry. Indeed, by 2006 the decline in the incidence of *E. coli* illnesses that began during the late 1990s had clearly reversed course and, in 2007, the second largest beef recall in U.S. history took place after more than forty people became sick from contaminated

beef. The U.S. Department of Agriculture has only speculated about the source of the recent problems.

4. *Disclosure Policies and Alternative Actions*

Fung, Graham, and Weil conclude that three disclosure policies—nutritional labeling, toxic releases disclosure, and workplace hazards disclosure—produce limited changes in disclosure behavior or mixed responses that may conflict with regulatory aims. In my view, these policies are of particular interest because they show that consumer welfare is likely to have been enhanced as much, if not more, by market forces or alternative policies than by disclosure policies. This point is also relevant to the preceding case of mortgage lending discrimination, where it would be expected that vigorous enforcement of the nation's antidiscrimination laws would be much more effective in reducing discrimination in lending markets than would a disclosure policy that does not produce sharp conclusions from the reported data.

In some cases, firms have been prevented by law from disclosing potentially useful information to consumers. For example, Debra Jones Ringold and John E. Calfee (1990) point out that Federal Trade Commission advertising regulations prevented sellers of less harmful cigarettes, as determined by the then-accepted standards of the public health community, from making claims about the dangers of smoking that raised valid health concerns. And, until the mid-1980s, manufacturers were prohibited from promoting the health content of their food products through advertising. Pauline M. Ippolito and Alan D. Mathios (1990, 1995) showed that, when the prohibition was lifted, the consumption of fiber cereals increased and the consumption of fat and saturated fat decreased.

Despite the potential effectiveness of advertising to promote more healthy life-

styles, policymakers have tried to improve on market competition by requiring certain sellers to provide nutritional labeling as mandated by the 1990 Nutritional Labeling and Education Act and by subsequent rules issued by the Food and Drug Administration. But in the absence of these disclosure policies, Calfee (1997) has documented the positive externalities associated with advertising, including better information about diet and health, opportunities to improve health through drug therapy, and the dangers of smoking. Given that many consumers do not comprehend and sometimes misinterpret labels, as pointed out by Fung, Graham, and Weil, the information conveyed by advertising may have provided consumers with more useful information.

Industrial pollution is widely regarded as a classic example of market failure. But economists have long been critical of the Environmental Protection Agency's (EPA) "command and control" policies to address this negative externality because they impose excessive costs on U.S. industry. Implementing efficient effluent charges would reduce the cost of improving the environment.

In 1986, the EPA introduced the Toxic Release Inventory Program (TRI), which required facilities that handle threshold amounts of specific chemicals to provide annual reports of their releases of these toxic substances and where they end up. Thus, instead of using an efficient pricing policy to influence plants to reduce their emissions, the EPA has introduced a disclosure policy to help do so—and one that was poorly conceived. As pointed out by James T. Hamilton (2005), TRI does not expose levels of toxicity or environmental damage, and publicly available pollution data for most of the pollutants that TRI covers were not available before the start of the program. Fung, Graham, and Weil's summary suggests that the program has failed to produce any demonstrable social benefits.

Workers may face health hazards at their workplaces because conditions are dangerous and they are unaware of risks. The federal government's primary regulatory intervention to improve worker safety has been to establish the Occupational Safety and Health Administration (OSHA), which is empowered to set safety standards, conduct inspections to see that workplaces conform to them, and assess penalties on employers who do not.

The rate of occupational injuries in private industry has declined since the early 1970s, but research by economists suggests that OSHA's contribution to the decline is questionable. My 2006 summary of the evidence concluded that the improvement in workplace safety can be attributed to market forces (that is, companies have to pay employees higher wages, or compensating differentials, if they are offered work in hazardous conditions), the workers' compensation system (which ties workers' compensation insurance rates to a firm's injury experience), and in all likelihood, to increasing societal wealth. OSHA's ineffectiveness appears to be explained by poorly designed safety standards, weak enforcement, and a lack of a significant safety problem at most workplaces.

Against this background, it does not seem likely that workplace hazardous chemical disclosure requirements would contribute much to improving workplace safety—although the policy did cause employers and manufacturers to incur administrative costs. Fung, Graham, and Weil report that, because workers experienced difficulties in understanding the information about chemical hazards, they did not noticeably change their work habits, and employers were not able to reduce workers' exposure to risk.

5. *Other Information Policies*

Fung, Graham, and Weil conclude their assessment by noting that patient safety and

plant closing disclosure policies have been ineffective. Given the prominent role that the liability system plays in deterring (if not excessively deterring) medical malpractice and the large costs to practitioners if they are unable to obtain medical malpractice insurance, it is difficult to believe that physicians exploit information imperfections to reduce the quality of health care. Hence, required information on the risks of medical procedures would be expected to have little effect on doctors' and patients' behavior.

It is understandable that firms may not want to give much advance notice about plant closings because morale and productivity may fall during the period before the plant closes. Thus, the 1989 Worker Adjustment and Retraining Notification Act requires firms to provide employees with sixty days advance notice of a plant closing that results in "mass layoffs," which are defined as one-third of the workers at any one site. But as pointed out by John T. Addison and McKinley L. Blackburn (1994a, 1994b) among others, firms have tended to ignore or evade this legislation by, for example, dismissing less than one-third of workers at a site or by keeping the firm afloat with new financing that would be imperiled by a lay-off announcement.

Additional perspective on the disclosure policies discussed by the authors can be obtained by summarizing what is known and not known about other information policies. Since the 1910s, the Federal Trade Commission has tried to promote truth in advertising by preventing deceptive acts or practices. However, trying to measure the credibility of advertising is difficult and economists have yet to determine conclusively whether FTC advertising regulation has enabled consumers to make more informed choices. At the same time, economists have pointed out that certain restrictions on advertising have prevented consumers from making more informed choices.

Instead of compelling automakers to disclose crash test information, the National Highway Traffic and Safety Administration has tried to inform consumers by making the results of automobile crash tests available to the public. But George E. Hoffer, Stephen W. Pruitt, and Robert J. Reilly (1992) argued that consumers paid little attention to the government's information and relied on other sources of safety performance such as trade publications. Fung, Graham, and Weil approve of the SUV five-star ratings that automakers were required to report, but they do not report any evidence that the ratings disclosure requirement improved vehicle safety. Given that automobile consumers do care about the safety of their vehicles, that information about safety performance is available from many sources including friends, the media, trade publications, and the like, and that automakers and suppliers may be subject to costly liability suits for safety defects in their vehicles, it is not clear that government required ratings have improved the safety of SUVs.

The regulatory agency counterpart to OSHA for product safety is the Consumer Product Safety Commission (CPSC), which has broad authority to overcome information problems that may create risks to consumer safety by setting standards to ensure that products are not flawed when they appear on the market and by ordering recalls for severely hazardous products. In the case of drugs, the FDA seeks to verify that new drugs pose minimal risks to consumers before they appear on the market.

Henry G. Grabowski and John M. Vernon (1978) and W. Kip Viscusi (1985) analyzed the effect of CPSC regulations on the home accident rate and found that it was statistically insignificant. In the wake of recent concerns about the safety of new toys manufactured in China and sold in the United States, it has become clear that the CPSC has extremely limited manpower to conduct careful and thorough tests of products.

The FDA has been criticized for being too cautious and reducing the flow of new drugs on the U.S. market. Of course, these delays could be justified if FDA regulations have kept harmful drugs from appearing on the market. Tomas J. Philipson and Eric Sun (2007) shed light on the dynamic welfare trade-off of deterring harmful drugs from reaching U.S. consumers and getting new drugs to consumers in a timely manner by analyzing the effects of the 1992 Prescription Drug User Fee Act, which required pharmaceutical firms to pay fees to the FDA so the agency could hire new-drug reviewers in the Center for Drug Evaluation and Research to improve the speed and efficiency of reviews. The authors conclude that the present value of consumer benefits from faster review times clearly exceeds the costs of reduced drug safety, suggesting that safety has been overprovided at the cost of getting new medical products to consumers more slowly.

States use occupational licensing to regulate more than eight hundred occupations, representing nearly 20 percent of the nation's workers. Licensing may overcome information problems if consumers are likely to be harmed because they are not able or not willing to judge the competence of individuals who provide an important service. Sidney L. Carroll and Robert J. Gaston (1981) argued that occupational licensing could have an unintended effect of reducing the quantity of workers, which could reduce the quality of services and consumer safety. They presented suggestive evidence of this effect in the case of electricians—fewer electricians were associated with more accidental deaths by electric shock because more people tried to do their own electrical work—dentists, plumbers, and so on. Morris M. Kleiner and Robert T. Kudrle (2000) also concluded that occupational licensing did not raise the quality of service that consumers received.

In sum, my assessment of the available empirical evidence on the effects of federal

and state information policies, including but not limited to disclosure policies, suggests that they have not made consumers significantly better informed and safer. Future research may alter this conclusion if it finds that consumers have gained from certain policies whose effects have yet to be studied, or whose effects have not been fully studied (e.g., FDA drug regulations), or whose effects are in doubt because they were not obtained from a complete counterfactual analysis (e.g., restaurant grade cards).

6. *Policy Guidance*

Fung, Graham, and Weil conclude their book by offering ten principles for designing effective disclosure policies, which incorporate the positive features of the three disclosure policies that they characterize as effective and avoid the negative features of the five policies that they characterize as less effective. Because I conclude that the empirical evidence does not persuasively indicate that any information policy has been effective, I believe it is premature to draw on existing disclosure policies to guide policymakers on how they can craft effective disclosure policies in the future.

Instead, I think it is useful to reflect briefly on the possible circumstances when an information policy could be effective. Many markets are composed of firms that offer products of varying quality (however defined); thus, high-quality producers have an interest in informing consumers of the quality of their products. Several channels exist to enable firms, as well as experienced consumers and independent assessors, to convey this information, including broadcast media advertising, print advertising, word-of-mouth, Internet blogs and forums, a major investigation conducted by the media, and so on. Consumers therefore have several ways to become informed about high-quality and low-quality producers' products.

However, consumers may not be adequately informed and may suffer harm when firms are concerned about a negative *industry* externality associated with a particular dimension of quality which leads to a lack of information-driven competition. For example, the fast food restaurant industry would suffer reputation costs and any restaurant (or chain) would face retaliation if it raised concerns about the safety of its competitors' food. In addition, the consequences of fast-food restaurant health practices are not always well-exposed by standard information channels and are sometimes difficult to link with a consumer's illness. Thus, consistent with Jin and Leslie's (2003) findings, an information policy intervention could be effective if the government requires firms to provide information in a consistent, credible manner that most of the industry would like to provide but is concerned that, if individual firms voluntarily do so, negative externalities could result. Further research and empirical testing are clearly needed to determine whether these conditions, or alternative conditions, form the basis for a sound theoretical guideline that can suggest when an information policy toward industry is likely to generate significant gains to consumers.

Unfortunately, as Fung, Graham, and Weil point out, disclosure policies have often been developed in response to a perceived crisis, instead of being carefully crafted before a serious social problem actually arises. Policymakers then claim that they are addressing their constituents' concerns in a timely fashion and firms seek to generate goodwill and possibly avoid a prolonged investigation and a possible lawsuit by cooperating with specific disclosure requirements. And although government actions have generally turned out to produce negligible benefits, the public and policymakers cannot generally be counted on to determine whether in retrospect government policies have been effective.

In my view, there are several reasons why policymakers should exercise considerable restraint in instituting information policies. First, the market has often responded quite effectively to potential information problems. For example, in response to concerns that motorists' undervalue vehicle occupant safety devices, Fred Mannering and Clifford Winston (1995) found that consumers' adoption of air-bag-equipped automobiles during the 1990s were spurred by their friends' experiences with airbags and media reports about experiences that other motorists had with airbags. The advent of the Internet has given consumers another powerful way to become informed about the quality of firms' products and services and to receive lower prices. For example, Florian Zettelmeyer, Fiona Scott Morton, and Jorge Silva-Risso (2001, 2005) estimated that consumers who use the Internet when purchasing a car, presumably to learn about dealers' invoice prices and actual transactions prices, have saved some \$200 million per year by using this information when they negotiate with car salespeople.

Second, firms have strong financial incentives not to produce faulty products or provide unsatisfactory services because by doing so they damage their reputations and may be subject to costly litigation. Certification markets, such as Underwriters Laboratories, exist to reduce this possibility. Indeed, the petition by trade associations representing meat and poultry plants to receive mandatory testing resulted in a form of certification. Lawrence J. White (2006) points out that an independent bond credit rating agency can provide investors with a valuable assessment of a company's creditworthiness because its access to a corporation's books is greater than the public's access. But the Securities and Exchange Commission has enacted regulations that limit the entry and effectiveness of these rating firms. Unfortunately, flawed practices at the major ratings firms may have contributed significantly to the home mortgage crisis.

Third, even in situations where a government intervention could improve market performance, such as by reducing pollution emitted by industrial plants, an information policy may not be an effective policy to use. As a recent example, federal officials have responded to growing delays in air travel by requiring U.S. airlines to disclose their on-time performance. However, federal officials could reduce delays to a much greater extent by requiring airports and the air traffic control system to introduce congestion pricing.

Finally, the authors occasionally refer to behavioral economics to motivate information policies that could address problems when consumers depart from rational behavior in particular settings. I have strong doubts whether policies based on such alleged behavior would be effective, especially because policymakers are subject to their own form of behavioral economics. Joshua D. Wright (2007) surveys the existing empirical evidence and concludes that behavioral economic analysis does not yield policies that would benefit consumers in credit card markets, supermarket transactions, and standard form contracts. Daniel McFadden (2006) raises concerns that a notable fraction of the Medicare population is poorly informed about the 2006 Medicare Part D prescription drug program and is averse to making choices about their insurance coverage. But it is far from clear that the Centers for Medicare and Medicaid Services would help consumers make wiser choices should they actually behave "irrationally" and incur costs from doing so.

7. *Final Comments*

Stiglitz (2000) argues that the economics of information has greatly helped our understanding of the limitations of the fundamental welfare theorems and has had a profound effect on how we think about economics today. McFadden (1999) concludes that experimental evidence, while circumstantial, provides no

support for preference rationality. Surely, as exemplified by Paul Milgrom's (2008) recommendation that regulation can help mitigate the costs of nondisclosure, such serious concerns about the behavior of and constraints on consumers should be reflected and addressed in a constructive information policy agenda.

Fung, Graham, and Weil shed light on this vital issue by investigating whether disclosure policies have had a positive influence on consumer welfare. The authors provide a mixed assessment but indicate cautious optimism with a constructive set of guidelines that they hope policymakers will adopt when they craft disclosure policies in the future.

I have suggested in this review that imperfect information may be less of a problem for the U.S. economy than some theorists and experimentalists have led us to believe and that insufficient evidence exists at this time to support policymakers' use of the authors' guidelines. I have also concluded that government information policies have essentially amounted to weak solutions in search of a problem and recommended that policymakers treat most alleged information problems with benign neglect.

Clearly, theory, empirics, and policy performance in this area of economics do not jibe. Could the discord be resolved if, despite their apparent drawbacks in theory and in experimental studies, markets affect their participants in subtle ways that enable them to limit their losses from apparent information failings without government intervention; or, if the true costs of imperfect information have been poorly measured and are, in fact, much larger than current estimates; or, if information policies are more effective than existing assessments suggest? Such questions merit investigation and broadly suggest that a range of economists and other researchers are needed to reconcile the theory, empirics, and policy guidance of information economics to make it more useful to the general public and

to policymakers when they consider how to address information issues that arise in the future. Fung, Graham, and Weil's book is a useful place to begin the task.

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