

Government and Markets

Toward a New Theory of Regulation

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ONE

Government Failure vs. Market Failure:
Principles of Regulation

Joseph E. Stiglitz

The subject of regulation has been one of the most contentious, with critics arguing that regulations interfere with the efficiency of the market, and advocates arguing that well-designed regulations not only make markets more efficient but also help ensure that market outcomes are more equitable. As the economy plunged into a recession, with more than 3 million Americans already having lost their homes as this chapter goes to press and millions more likely to do so (unless the government intervenes more successfully than it has), and as the government spends hundreds of billions in bailouts to prevent the economic recession from growing worse, there is a growing consensus: There was a need for more government regulation. Even the high priest of *laissez faire* economics, Alan Greenspan, has admitted that he may have gone too far in believing that markets could be self-regulating.¹ Responding to these calls – as if to close the barn door after all the horses have gotten out – the Federal Reserve has tightened some regulations. If it is the case that better regulations could have prevented, or even mitigated, the downturn, the country, and the world, will be paying a heavy price for the failure to regulate adequately. And the social costs are no less grave – as hundreds of thousands of Americans will not only have lost their homes but also their lifetime savings. Home ownership has long been thought of as

¹ There is a certain irony in all of this: One of the responsibilities of the Federal Reserve is to manage a key price in the economy, the short-term interest rate. Almost no one believes that this should be left totally to the market.

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contributing to the strength of communities; with the share of home ownership falling, communities too will be weaker. The foreclosures will exacerbate the decline in housing prices, and property tax bases will erode – a further knock on effect of inadequate regulation.

The systemic effects of banks' bad lending have imposed high costs on our entire society. The collapse of stock market prices has put in jeopardy individual retirement savings. Constraints on credit availability are forcing firms into bankruptcy. Taxpayers are picking up a tab reaching into the hundreds of billions of dollars. Workers are losing their jobs (in the first eight months of 2008, net job loss exceeded 1.2 million), millions more are now worried that they too will be receiving pink slips any day soon, and millions more are working part time because they cannot find full-time work.

There is by now a long list of disasters that have occurred because of inadequate (or poorly designed) regulation. Several of these have been in the financial sector. Milton Friedman, the then high priest of market economics, succeeded in persuading Chile's dictator Augusto Pinochet to try unregulated banking. The ensuing banking crisis led to a deep recession, and it took the country two decades to pay off the bills. At the beginning of this decade, confidence in our financial markets was shaken by a series of scandals involving accounting (the accountants figured out how to apply the tricks they had learned to deceive tax authorities and investors as well) and analysts. Enron became the symbol of everything that was wrong with corporate America.

But though an inadequately regulated financial sector has had more than its fair share of problems, others have suffered as well from inadequate regulation. Failure to regulate air pollution led to London's pea soup smog, a threat to the health and well-being of Londoners. California's deregulation of electricity led Enron to engage in market manipulation, threatening both that state's high-tech industry and budget. The artificially induced scarcity (which advocates of deregulation tried to blame on existing environmental regulations) miraculously disappeared once market regulation was restored.²

When Upton Sinclair's novel *The Jungle*³ depicted the terrible sanitary conditions in America's stockyards, Americans turned away from meat; and

² The list is not meant to be exhaustive: Houston shows what happens to a city when there is inadequate regulation of land use. Inadequate enforcement of antitrust laws has led to banks that are too big to fail – contributing to their excessive risk taking – and Microsoft's anticompetitive practices that arguably undermine innovative incentives by potential competitors, as they watched Microsoft squelch innovative rivals like Wordperfect, Netscape, and Realnetwork.

³ Upton Sinclair, *The Jungle*. New York: WW Norton, 2002 (originally published by Doubleday, 1906).

the meat packing industry asked for government food safety regulation to restore confidence. When the Enron/WorldCom scandal eroded confidence in America's financial markets and accounting firms, there was again a demand for stronger regulation to restore confidence. Whether Sarbanes-Oxley, the bill that was passed to try to rectify the problems by improving regulation of accounting firms and strengthening corporate governance, went too far or not far enough may be debated, but what is not debatable is that such regulations were viewed, at least by many Americans, as essential for restoring confidence in America's markets, where scandal had touched every accounting firm, most of the major investment banks, and many of its leading corporations.

Today, America's air and water are cleaner – and Americans are living longer – because of environmental regulations. No one can imagine a world today without food, safety, and environmental regulations. The debate is only whether we have gone too far and whether we could have gotten the desired results at lower costs.

In this chapter, I want to outline the principles underlying the modern theory of regulation. Section I presents the rationale for regulation – why regulation is required. Section II discusses the forms that regulation can and should take. Section III applies these principles to three subjects of current concern: sovereign wealth funds, financial market regulation, and environmental regulations directed at greenhouse gases.

I. The General Theory of Regulation

The general theory of regulation begins with a simple question: Why is regulation needed? This is, in turn, divided into two subquestions: Why do markets by themselves not suffice? And if there is to be government intervention, why does it take the form of regulations?

a. The Need for Government Intervention

i. Conventional Market Failures

Adam Smith (it is widely believed) argued that markets by themselves are efficient.⁴ He argued that individuals and firms in the pursuit of self-interest would be led, as if by an invisible hand, to actions that maximized general

⁴ Actually, his analysis was far more subtle than modern free-market economists would have one believe.

using taxes as a form of regulation) is that it economizes on transaction costs.¹⁰

A variant of Coase's argument is that those injured should (be entitled to) sue those who are doing the injury. With a good tort legal system (including class-action suits), in which those who are injured can sue those causing harm, individuals will have appropriate incentives. Interestingly, conservatives (like those in the Bush Administration) argue both for less regulation and reduced capacity to recover damages. They sometimes have a valid argument against the legal system: As currently constituted, in many areas it provides excessive recovery – providing excessive incentives for care, reflected in defensive medicines – at the same time that in other areas it provides insufficient incentives (without class actions, the transactions costs are so large that recovery of damages is impossible). Ensuring that a firm does not pollute is, in fact, a public good. Ensuring that firms do not emit greenhouse gases is a *global* public good; citizens all over the world benefit.

More generally, the sums required to compensate for damage done to individuals may not provide appropriate incentives; by linking the two together, incentives are not in general optimized. Moreover, in many cases, there is no adequate monetary incentive: Someone whose child has died as a result of lead poisoning can never really be adequately compensated. Ex post compensation is not enough. We have to stop the bad behavior *ex ante*, if we can.

Other forms of market mechanisms, it is now realized, also are insufficient. One is reputation mechanisms. Firms might not cheat their customers even in the absence of regulations prohibiting such behavior, because they know if they do so customers will go elsewhere. Reputation mechanisms do help, but they do not ensure efficiency. Firms are often too shortsighted. A restaurant may reason it can make money today by cutting corners on the quality of food. Present profits are more important than the forgone future profits. This is especially true if it is located in a tourist area, where there are few repeat customers.

Regulations Can Thus Play an Important Role in Addressing Market Failures.

When markets fail to produce efficient outcomes there is a rationale for government intervention. There are several particular categories of market failures to which I want to call attention.

¹⁰ There are some limited contexts in which Coase's conjecture might have some validity. One could imagine in a small meeting, assigning the air rights to nonsmokers. The smokers might be able to bribe the nonsmokers to accept the air pollution.

The first relate to externalities, where an individual or firm's actions have consequences for others for which he neither compensates nor is compensated. We have regulations designed to mitigate the extent of *externalities*. These include, for instance, zoning restrictions and environmental regulations.

A second is concerned with competition. We have regulations designed to maintain competition (restrictions on anticompetitive practices) and to ensure that in those situations where competition is not viable (the so-called natural monopolies) firms do not abuse their monopoly position (utilities regulations).

Several categories of regulation are related to problems of information. We have a large set of regulations aimed at protecting consumers (ensuring that the banks where they deposit their money are sufficiently sound, that food and products are safe, or that they are not taken advantage of by unscrupulous merchants, advertising, or lenders). Obviously, if information were perfect, individuals would not deposit their money in a bank that could not repay it; or individuals would not buy food that is unsafe. Disclosure requirements (forcing firms to reveal truthfully information about their products) are important, but the regulations go well beyond disclosure, for reasons that I explain below. There are two broad forms that such regulation takes.

One arises when government provides insurance. Private-sector contractual arrangements often have what would appear to be regulatory structures. A fire insurance firm requires that the insured install sprinklers. Sometimes, insurance companies use the price system, that is, they give a discount if sprinklers are installed. But sometimes they simply will not write the insurance policy if sprinklers are not installed. Many government regulations are similarly motivated: Government absorbs risk, and to reduce its risk exposure, imposes constraints; it provides flood and earthquake insurance – explicitly in some cases and implicitly in others (if an earthquake occurs, it knows that it cannot deny assistance to anyone) – and demands that houses be constructed to reduce the risk of loss. Because of moral hazard (when individuals are insured, they put less effort into reducing the likelihood of the insured against event occurring) – or even because of a failure to perceive accurately the magnitude of the risk¹¹ – individuals will take insufficient care. Government provides deposit insurance. Indeed, even when governments do not have explicit deposit insurance, they often bail out banks (as we see in the United States today) either because they worry about the

¹¹ See the discussion below.

systemic consequences of a bank failure or because of what are viewed as intolerable adverse effects on ordinary citizens.

The second category concerns what might be called certification. The meatpackers wanted certification that their products were produced in a safe and humane manner. They also knew that the only credible source of such certification was the government – if the meatpackers paid the certifiers directly, there would be a conflict of interest.

Recent troubles in accounting and rating agencies highlight the problems of private certification. The Enron scandal highlighted that the accounting firms' incentives were distorted; and though Sarbanes-Oxley improved matters, it did not fully resolve them.¹² Similarly, with the rating agencies being paid by the financial firms to rate the complex products they were creating, it is perhaps no surprise that they gave AAA ratings to highly risky products.

Information is a public good.¹³ All individuals want to be assured that if they put money in a bank, the bank will be there when it comes time to withdraw the money. Government bank regulation is in part certification: it sets certain standards that a bank must satisfy and inspects that it fulfills those standards. It could, of course, stop there, allowing individuals to deposit their money in uncertified banks (and in a sense, it does that – there are many noncertified financial institutions). But it goes beyond that: it does not allow banks to operate unless they satisfy certain conditions. And that, in part, is because it knows that if a bank fails, it may have to be bailed out. As one astute observer put it: There are two kinds of governments – those who provide deposit insurance and know it; and those who do so and don't know it.^{14,15}

¹² See J. E. Stiglitz, *Raising Nineties*, New York: WW Norton, 2003.

¹³ A public good is a good that benefits all. Knowing that a bank is sound is of benefit to any depositor. This is a theme to which I will return. We have already discussed the incentive problems that arise when the seller pays for certification. In most cases, it is hard to design systems where the buyer pays for certification; others, observing the behavior of those who have purchased the information, can free ride. That is, they can enjoy the benefits of the knowledge without paying for them. Private markets will underprovide public goods.

¹⁴ This is sometimes called implicit insurance. There are good reasons why governments provide such insurance, noted above and elaborated on in J. E. Stiglitz, "The Role of the State in Financial Markets," *Proceeding of the World Bank Conference on Development Economics 1993*, Washington, D.C.: World Bank, pp. 41–6, and J. E. Stiglitz, "Perspectives on the Role of Government Risk-Bearing within the Financial Sector," in *Government Risk-Bearing*, M. Suiderman (ed.), Norwell, MA: Kluwer Academic Publishers, 1993, pp. 109–30. (Paper prepared for Conference on Government Risk Bearing, Federal Reserve Bank of Cleveland, May 1991.)

¹⁵ Some have argued that deposit insurance gives rise to a moral hazard problem – depositors take less care in inspecting the creditworthiness of the banks in which they put their money. But because information is a public good, it is inefficient for each individual to gather and

This in turn means that to mitigate the moral hazard problem, restrictions on banks have to be imposed.

ii. Irrationality

The market failure approach growing out of an analysis of the standard assumptions required to establish the Pareto efficiency of the economy¹⁶ is, however, only one of at least three strands of analysis underlying the demand for regulation. A second focuses on *market irrationality*. The standard competitive equilibrium model assumed that all individuals were rational; it explained why rational individuals (households) interacting with profit (or value) maximizing firms in a competitive marketplace might not result in Pareto efficient allocations. But individuals may not be rational and may deviate from rationality in systematic ways. Individuals (and even more so societies) have to be saved from themselves. Markets suffer from irrational exuberance and irrational pessimism. Individuals may not save adequately for their retirement.

Until recent work on behavioral economics, economists typically looked askance at such paternalistic arguments for government intervention. Why, it was argued, should there be any presumption that governments are more rational or better informed than individuals? Who are we to impose our beliefs of what is rational on others? Part of the answer was provided by the classic theory of market failure: One might argue that as long as the individual only harms himself, there is no reason for government intervention. But individual actions may adversely affect others (there are, in effect, externalities). Regulation may reduce the likelihood of these adverse effects occurring and their impacts when they do.

There is a special category of externalities that arises in democratic societies. Societies cannot stand idly by when they see someone starving – even if it is a result of the individual's own mistakes, say, not saving enough. Society will bail out the individual (or a bank, which is too big to fail). Knowing that, individuals have an incentive to save too little (or banks to take too much risk). Knowing that, government should impose regulations to ensure that individuals do save enough (or banks do not undertake excessive risk).

¹⁶ process this information. Indeed, it is virtually impossible for them to do so. If individuals did that, they would have no time to make money to put into the bank. They can hire services (credit rating agencies) to evaluate the banks in which they deposit their money, but there are well-known market failures in these markets.

¹⁷ This is sometimes referred to as the First Fundamental Theorem.

But the new behavioral economics puts a new perspective on these issues: Individuals may, in some sense, be better off if they are compelled to undertake some actions or are circumscribed from undertaking others. A potential alcoholic or drug addict may realize that he may be tempted to consume these toxic products and then become addicted. He knows *before he becomes addicted* that he will regret getting it, but once he is addicted, he will not be able to change his behavior. He therefore wants the government (or someone else) to make it impossible, or at least more difficult, to become addicted. (Matters are made worse by the fact that there are firms, such as those in the tobacco industry, that profit by taking advantage of addiction. By increasing the addictive properties of their products, they reduce the elasticity of demand and increase profitability.)

Similarly, individuals may know that they can easily be induced to save very little or a great deal simply on the basis of the default set by the employer in choosing the fraction of income to put into a savings account. Accordingly, they might want the government to force the firm to undertake a kind of analysis that sets the default rate in ways that enable the individual to have a reasonably comfortable retirement without excessively sacrificing current levels of consumption.

A formal welfare analysis of such regulations within the traditional welfare economics paradigm is, of course, difficult: Do we evaluate the impacts of the policy intervention using individuals' ex ante expected utility (their incorrect beliefs, for instance, about the consequences of their actions) or using ex post realized (average) utility?

iii. Distributive Justice

There is a third category of rationale for government interventions: The best that can be said for the market economy is that it produces *efficient* outcomes; there is no presumption that it produces outcomes viewed as socially just. Regulations may be an important instrument for achieving distributive objectives, especially when governments face tight budgetary constraints (or other administrative constraints). CRA (Community Reinvestment Act) lending requirements or health insurance mandates may be effective for helping poor individuals when the government cannot afford other ways of helping them.¹⁷

¹⁷ Typically economists argue that a Pareto improvement could be achieved, e.g., by imposing taxes and providing subsidies for health insurance for the poor. But there are deadweight losses associated with raising taxes, and it may be harder to target the subsidies very well. Here we are concerned with the rationale for government intervention. Later, we shall discuss at greater length the relative merits of different forms of intervention.

b. Regulations vs. Other Forms of Intervention

Critics of regulation argue the objectives of regulation can be achieved better at lower costs by using market-based interventions, that is, taxes and subsidies. If smoking gives rise to an externality, tax smoking. If greenhouse gases give rise to global warming, tax greenhouse gas emissions. Price interventions have much to commend them: They are general, simple, and often have low transaction costs. But research over the last quarter century has clarified an important set of limitations. Indeed, the very conditions (such as imperfect and asymmetric information) that imply that markets by themselves do not in general lead to (constrained) Pareto efficient outcomes also imply that price interventions by themselves will not suffice.¹⁸

i. Imperfect Information and Incomplete Contracting

Most importantly, in the presence of imperfect information and incomplete contracting, optimal incentive schemes typically are highly nonlinear (they do not take the form of a price intervention) and may even impose constraints (like rationing and terminations).¹⁹

In a sense, most regulations can be recast as (typically simple) forms of nonlinear price schedules. There are, for instance, penalties to be paid if the level of pollution exceeds a certain level. Optimal regulation – and optimal

¹⁸ For a broad discussion of this perspective, particularly in the context of regulations for natural monopolies, see D. Sappington and J. E. Stiglitz, "Information and Regulation," in *Public Regulation*, E. Baitly (ed.), London: MIT Press, 1987, pp. 3–43. Greenwald and Stiglitz, *op. cit.* focus on price interventions, but Martin Weitzman ("Prices vs. Quantities," *The Review of Economic Studies*, 41(4), October 1974, pp. 477–91) makes clear that in contexts in which there are imperfect risk markets, quantity interventions may be preferable to price interventions. For a discussion in the context of capital market regulations, see J. E. Stiglitz, José Antonio Ocampo, Shari Spiegel, Ricardo Ffrench-Davis, and Deepak Nayyar, *Stability with Growth: Macroeconomics, Liberalization, and Development*, The Initiative for Policy Dialogue Series, Oxford: Oxford University Press, 2006.

¹⁹ Much of the discussion below views the problem of regulation through the lens of principal-agent problems. The fundamental problem is that the regulator has imperfect information about the firm that it wishes to regulate, e.g., its costs, or even its behavior. It can affect behavior (and thereby outcomes) by controlling or otherwise affecting through incentives those things that are observable, which may include *processes* (what the firm produces and how it produces it), precluding some actions, mandating others, subsidizing some observable inputs or outputs, taxing others, etc. Changing information that is available affects, of course, the nature of the principal-agent problem, including the optimal incentive structures. Many of the problems being considered here may be viewed as "layered" principal-agent problems; the regulator is ultimately interested in the well-being of consumers, but he is simultaneously trying to affect the behavior of firms, directly as well as indirectly, through effects on the behavior of other agents in society (consumers, investors).

incentive structures — typically entail restrictions/payments based not only on output but also on inputs and processes. Environmental regulations may entail standards as well as fines.²⁰

Much theoretical literature has focused on designing a regulatory structure for a well-specified environment. Part of the problem, however, is that the economic environment may change rapidly, and there may be disagreement among policymakers about the salient aspects of the economic environment (e.g., how market participants might respond). That is why it is important to identify *robust* regulatory structures, those that work well under a range of conditions.²¹

ii. Prices vs. Quantities

Though there is seldom reason to resort to extremes of a pure price or pure quantity intervention, much of the literature has been couched in exactly these extremes.²² It has been argued, for instance, that, depending on the nature of the shocks (to the demand and supply curves), quantity interventions (regulations) may lead to a higher level of expected utility than price interventions.²³

This literature has made one important contribution: it has undermined the presumption among many economists that price interventions are always preferable. If import supply functions are highly variable but domestic demand and supply conditions do not vary, then setting a tariff leads to high variability in price, domestic output, and production; setting a quota eliminates this costly source of “imported” risk. Tariffication (shifting from quotas to tariffs) may, accordingly, not be welfare enhancing.²⁴

²⁰ Few price schedules used in the private or public sector are in fact anywhere near the complexities of those that emerge from optimal incentive schemes. Whether a particular regulatory structure is better or worse than a particular simplified nonlinear price system may be hard to ascertain; and in any case, viewed through this lens, the distinction between regulatory systems and (nonlinear) price systems is more a matter of semantics than anything else.

²¹ In the context of financial markets, this idea has been developed by P. Honohan and J. E. Stiglitz, “Robust Financial Restraint,” in *Financial Liberalization: How Far, How Fast?* G. Caprio, P. Honohan and J. Stiglitz (eds.), Cambridge, U.K.: Cambridge University Press, 2001, pp. 31–63.

²² Of course, there are some forms of behavior not easily amenable to simple price interventions, e.g., anticompetitive behaviors, though fines and other penalties can be an important part of an incentive scheme to induce firms not to behave in an anticompetitive manner.

²³ See, in particular, M. Weitzman, *op cit*.

²⁴ See P. Dasgupta and J. E. Stiglitz, “Tariffs Versus Quotas As Revenue Raising Devices Under Uncertainty,” *American Economic Review*, 67(5), December 1977, pp. 975–81.

Similarly, it may be preferable to limit the magnitudes of capital inflows or outflows rather than imposing a tax on inflows and outflows.

One has to be careful, however, in applying this analysis. Consider, for instance, the problem of greenhouse gases. Some have suggested that this is a classic case where quantity regulation is preferred. With price interventions, the level of greenhouse gas emissions is uncertain; a change in the demand or supply curve will mean that we will have less or more emissions than desirable.

But the argument is hardly persuasive: Global warming is related to the level of concentration of greenhouse gases in the atmosphere, and what matters for this is not the level of emissions in any particular year. There is, in fact, even some uncertainty about the relationship between emission levels and changes in concentration levels and about the relationship between the level of concentration of greenhouse gases and the (precise) change in climate. There will have to be, in any case, adjustments to the allowable levels of emissions over time. Using prices (emission taxes), there will have to be adjustments too, with one additional factor of uncertainty: The relationship between taxes and emissions. But provided that adjustments are made in a relatively timely way, there is little additional risk in the variables of concern, the level of concentration of greenhouse gases, and climate change.

The use of price interventions has one major advantage — it encourages us to think carefully about the social cost of emissions at different dates. Because what matters is the long run level of concentration of greenhouse gases in the atmosphere, the social cost of emissions at all dates (and at all places) should be the same.

In general, with imperfect information (and incomplete contracting) it is optimal to use a complex set of controls that entail both (generalized) incentives and constraints.

II. Instruments of Regulation

Regulation takes on a number of forms: Information requirements, prescriptions (things firms may not do), or mandates (things firms must do).

a. Disclosure

Recent discussions have favored information requirements. Who can object to more transparency or better information? (Actually, hedge funds, and their representatives in Treasury, have objected: They have argued that those investing in information need to get a return on their investments; if they

disclose what they do, they are, in effect, giving this asset away. Some of the same individuals who made this argument in connection with hedge funds are now demanding more transparency for sovereign wealth funds, even when these funds invest heavily in research.)

Recent discussion of disclosure seems predicated on the belief that but for information imperfections, markets would be efficient. Correct this one market failure, and one will have efficient markets. Similarly, the provision of better quality information drove New Deal reconstruction of the securities markets.

Actually, there is little support for this conclusion, as the broader discussion of market failure should have made clear.²⁵

Market forces do not necessarily lead to full (or efficient) disclosure of information, so there is a good rationale for disclosure requirements. Markets cannot function well with distorted and imperfect information; hence, requirements that lead to improved information can (by and large) lead to better resource allocations.

The design of disclosure requirements, however, often entails more complex issues than one might have thought. The disclosure of a chemical substance in a product may be interpreted as *prima facie* evidence that its presence is dangerous, even when there is no scientific evidence that that is the case. Disclosures may be done in ways that in fact do not alert consumers to risks when they are there. That is why the form of cigarette warnings has been tightly regulated. All investment prospectuses describe a large number of risks that the investor may face – they are fully disclosed but in ways that may not be helpful in distinguishing the level of risk.

Disclosures concerning stock options, which dilute shareholder value, are still done in a manner that does not convey relevant information to most shareholders in an effective way. Those companies (and those that work with them) have lobbied strongly and so far successfully against such disclosure requirements. There are technical details in calculating the value of the dilution, but what is clear is that assigning a zero value is incorrect.

Disclosure of potential conflicts of interest, ownership, or remuneration may help market participants interpret the actions of others. For instance, knowing that a salesman gets a higher commission from selling one product than another may shed some light on his praise of the product generating higher commissions; knowing that analysts' pay is not related to the accuracy of their prediction of stock performance but to the investment deals they

bring in sheds some light on the reliability of their forecasts; knowing that CEOs are remunerated on the basis of *reported* earnings may affect judgments about the reliability of those reports; and knowing the structure of remuneration of hedge fund managers should lead to an expectation that they will engage in excessive risk taking.

Disclosure requirements seem less invasive than other regulations, such as the restrictions and mandates to be described below, but it should be clear that in many areas disclosure itself does not fully address the market failures discussed earlier. This is partly because market participants do not know how to process fully the information that has been disclosed and partly because even if market participants *know* what firms are doing, firms may still not behave appropriately. Citizens may put pressure on firms that have been disclosed to be polluting the atmosphere – disclosure has been shown to have some effects on some firms – but some firms continue to pollute excessively. And there are some firms willing to take advantage of individuals who remain uninformed – even when the information is potentially available – for instance, by producing unsafe products. That is why regulations entail restrictions and mandates.

b. Restrictions

The most direct restrictions are proscriptions on behaviors: Firms are not allowed to collude in price setting or to engage in other anticompetitive practices, and banks are not allowed to engage in insider lending.

(There is a peculiar variant of regulation that has become popular in the United States, self-regulation, which I view as an oxymoron. Banks are told to have good risk management systems, to regulate their own risks. But what else would one expect a bank to do? In fact, such self-regulation proved totally ineffective. And such regulation does not identify systemic and external effects that should in fact be a focus of real regulation.)

One would like to be able to tell banks only to give “good loans.” But regulators cannot tell what is a good or a bad loan. They can tell when there might be distorted incentives. Regulation thus often focuses not on behaviors so much as on factors that might affect behaviors. It attempts to proscribe conflicts of interest (e.g., recent restrictions on accounting firms) or to ensure that the firm has enough wealth not to act in a reckless way²⁶ (e.g., capital requirements on banks and airlines).

²⁵ Indeed, in a second best world in which there is imperfect risk markets, better information can lead to more volatility and lower expected utility.

²⁶ Bankruptcy means in effect that even risk-averse owners/managers may behave in a risk-loving way.

Some forms of behavior are easy to identify and restrict. Insider lending is prohibited, even though one might have better information about relatives than others. The temptation to provide a risky loan is simply too great.

Rapid expansion of lending portfolios, it has been suggested, is very risky.

A critical issue is the specificity of the restrictions. The economy is constantly changing; this is particularly so in the financial sector. Financial innovators will figure out a way of getting around any set of regulations – and, in what has come to be called regulatory arbitrage, make a great deal of profits in doing so. In some states, laws and regulations have been passed (like the Martin Act) that have a broad target, recognizing that the specific means by which these “antisocial” objectives can be achieved will change. The Martin Act also provides extensive investigatory powers. In return for the lack of specificity in actions, the punishments are more muted: Fines that will recapture the ill-gotten gains rather than prison terms. It was these laws that were among the most effective in addressing the series of scandals in which financial firms were involved in the late '90s and early years of this decade, including those involving analysts, stock options, the investment banks, and CEOs.

Similar issues have arisen in antitrust. Firms have been extraordinarily clever in devising ways of reducing competition. Microsoft bundled its Internet browser with its operating system in a successful attempt to crush Netscape. AT&T was told that it had to provide interconnection with other providers, but it did so in ways that gave it a competitive advantage. If regulators impose restrictions on particular behaviors, monopolies will innovate to find new ways of acting anticompetitively that are consistent with the rules (but obviously against the spirit of the rules). The only way to reduce the scope for such anticompetitive behavior is to affect incentives, that is, structural remedies, such as breaking up the firm or limiting the scope of intellectual property protections.²⁷

c. Mandates

Mandates have increased in popularity because they enable the accomplishment of public purposes without the expenditure of money. But as critics point out, they are often a hidden form of taxation, though the incidence

²⁷ See, e.g., Jason Furman and J. E. Stiglitz, “U.S. versus Microsoft, Declaration as Part of The Turney Act Proceeding,” commissioned by the Computer & Communications Industry Association, Jan. 28, 2002.

of the tax is often difficult to assess, and the tax/expenditure programs that are implicit are often inefficient and inequitable.

Yet some mandates may be viewed as efficient ways of addressing complex societal problems involving externalities. The CRA requirements (that banks provide certain levels of funding to underserved communities) have arguably expanded access to finance for minorities, and many banks today claim that – after paying the initial costs of entering these markets – their returns are just as high as elsewhere. Granting a license to a bank is a privilege, with market value. Governments do not typically auction off licenses to the highest bidder (doing so might not be the best way to get the best bankers²⁸). So society engages in a kind of barter: Rights (e.g., access to the Fed discount window) are exchanged for responsibilities (e.g., to lend in underserved communities). This kind of exchange has become particularly common as a part of zoning – restrictions on land usage. The lack of transparency is disturbing, offset in part by how effective it often is, particularly in the presence of budgetary constraints.

Mandates related to interconnectivity in networks represent another category, related in part to anticompetitive behavior. Consider Microsoft's control of the PC operating system. From a social perspective, the more users and the more applications written for the operating system, the better and more valuable the network. If there were many networks competing with each other, the owner of each would try to maximize these network benefits. But Microsoft, as a monopolist, must weigh these benefits from the monopoly profits that it can extract by, say, undermining competition in applications. Mandates (regulations) that establish protocols that enhance interconnectivity may thus be welfare enhancing.

The health insurance mandate proposed by several candidates in the 2008 election illustrates the advantages and disadvantages of mandates. America has an employer-based system for the provision of health insurance. But there are some 50 million Americans without health insurance. In many cases, when these uninsured individuals require major medical care, they are not able to pay fully the costs. The burden is shifted to others. Often they postpone receiving needed care, and this raises the costs further. Firms that do not provide such health insurance may have a competitive advantage over those that do. The market is thus distorted. A mandate would thus increase coverage and reduce cost shifting. But the mandate can be viewed as a

²⁸ This is a standard problem of adverse selection. See, e.g., J.E. Stiglitz and A. Weiss, “Credit Rationing in Markets with Imperfect Information,” *American Economic Review*, 71(3), June 1981, pp. 393–410.

hidden health insurance tax, with complicated incidence, imposing higher costs on some firms than on others. It distorts behavior – encouraging firms to hire young and healthy workers. It would be better to finance health insurance through a tax. But increased taxes in the current environment are politically unpopular, and there is some preference for incremental changes, the consequences of which can be more easily assessed than large systemic changes.

4. Ownership Restrictions

The previous subsections have described how regulations force disclosure of information (which firms might not otherwise disclose), restrict some actions, and mandate others. However, we go beyond restricting actions – partly because we often cannot easily observe actions; we observe them, or their consequences, only with a lag. Thus, we not only restrict anticompetitive actions, but we also break up monopolies because we believe it is impossible to stop them from acting in an anticompetitive way. Before the break-up of AT&T, there was an attempt to restrict its anticompetitive actions, but when those attempts failed, it was broken up. Microsoft was not broken up, and even after it agreed not to continue acting anticompetitively, it could not resist taking advantage of its monopoly power. This was the predictable, and predicted, consequence of the failure to alter incentives (e.g., by breaking up Microsoft).

Owners of banks are not allowed to make loans to themselves. It may be because their *motives* are wrong: They gain even if the government (as the insurer of deposits) is put at greater risk. But even apart from these distorted incentives, they are likely to have distorted judgments – to think that they are a better risk than they really are.

Bank regulators also regulate ownership out of fear that the “wrong” owners might have perverse incentives. Thus racketeers are not allowed to own banks. Proposed restrictions on sovereign wealth funds fall in this category (see the discussion below).

The Glass-Steagall Act of 1933 restricted commercial banks from owning investment banks and vice versa, again partially because of the potential for conflicts of interest. In discussions of the repeal of this act in the 1990s, advocates of the repeal said not to worry, they would construct Chinese Walls. But that raised the question: If these Chinese Walls were really constructed, where were the economies of scope that provided the rationale for the elimination of the restrictions? In the end, lobbying by the banks (and undoubtedly the links between Treasury and financial markets) succeeded

in getting the repeal, and worries about conflicts of interest proved justified, evidenced in the ensuing Enron/WorldCom scandals.²⁹

We may feel better knowing that a company that is selling blood is doing it not-for-profit; a profit-maximizing firm seeks to minimize costs and in doing so may buy blood from those who are desperate and unhealthy, with diseases that may not be detected.³⁰ Many governments restrict ownership of certain key assets (such as airlines) to citizens of their country. Others recognize that there is an inevitable conflict of interest in certain areas between private owners' interests and the public interest – contrary to Adam Smith. Private firms wish to minimize what they pay for natural resources on publicly owned lands; the government wishes to maximize the return. The two interests are diametrically opposed. In a world with robust competition for resources, with perfect information, the two interests can be aligned, provided that the resources are sold in an appropriate way with the right regulations. But mining and oil interests will work hard to make sure that that does not occur. In these instances, public ownership may be desirable. Regulations to ensure that the private owners act in the public interest may not suffice. Indeed, more generally, social objectives can be achieved through privatization only under highly restrictive assumptions – akin to the assumptions required to ensure that competitive markets are efficient.³¹

The Council of Economic Advisers opposed privatization of the United States Enrichment Corporation (USEC), the government corporation charged with enriching uranium (low enriched uranium is used in nuclear power plants; highly enriched uranium is the key ingredient in nuclear bombs). We believed that private incentives for the sale of enriched uranium (and the importation of the material from deactivated warheads from Russia, to be deenriched) did not coincide with national interests in nonproliferation, *and* we could not perfectly monitor their activities. The advocates

²⁹ The repeal may have played a part in the current financial problems in quite a different way. Commercial banking, lending other people's money with an implicit government guarantee, should be conservative. Investment banks, investing the assets of wealthy individuals, typically pursue riskier strategies. When the two were merged, the latter culture dominated, with serious consequences to the country's financial system.

³⁰ Richard Morris Titmuss, *The Gift Relationship: From Human Blood to Social Policy*, New Press, New York, 1997 (reissue of 1970 book); Joel Schwartz, “Blood and Altruism – Richard M. Titmuss’ Criticism on the Commercialization of Blood,” *Public Interest*, Summer 1999.

³¹ David Sappington and J. E. Stiglitz, “Privatization, Information and Incentives,” *Journal of Policy Analysis and Management*, 6(4), 1987, pp. 567–82. Reprinted in *The Political Economy of Privatization and Deregulation*, E. Bally and J. Hower (eds.), Edward Elgar, 1993.

of privatization (at least one of whom has now, ironically, expressed worries about the risks of Sovereign Wealth Funds) believed that we could. In the end, these anxieties turned out to be fully warranted.³²

For the most part, however, we do not impose ownership restrictions, partially because we typically do not have information about ownership – some worry that gathering such information might invade individuals' rights to privacy. We do not know who owns hedge funds and private equity firms, and in fact, with many owners of corporations registered abroad, ascertaining who the ultimate beneficial owner is might not be that easy. But there is another reason we do not impose ownership restrictions: Though ownership may alert us to an increased risk of behavior contrary to societal interests, whenever there is scope for such behavior, it needs to be restricted, whatever the motivation.

e. Regulatory Takings

As we have noted, regulations (whether restrictions or mandates) can also sometimes be viewed as hidden tax/expenditure programs. The Endangered Species Act can be viewed as requiring private property owners to provide a public good – the protection of endangered species. At the time it was passed, it represented a change in property rights. Today, a repeal of the act, or providing compensation to those whose use of property is encumbered, would also represent a grant of an additional property right.

All regulations affect property values (as does anything else the government does, such as the construction of a road). Presumably, the fact that a regulation forces a firm to do something it would not otherwise have done means that (normally) it will reduce profits.³³ When property values are enhanced, no one offers to give back the increased value to the government, and those enjoying these capital gains often lobby strongly for lower tax rates. But when property values are decreased, many want compensation. Providing compensation for regulatory takings in a world with strong budgetary constraints greatly constrains regulation, and indeed, that is the intent of many in the regulatory takings movement. It is not just a matter of equity (say, fair compensation for the loss in value) or efficiency (say, ensuring that only regulations the value of which exceeds the costs are

adopted). Courts have consistently rejected the view that regulatory takings require compensation, and with few exceptions, so have legislatures. A possible important exception is Chapter 11 of NAFTA, whether it does so remains in dispute, but wording in subsequent investment agreements has changed in response to the fear that it might.³⁴

The debate over regulatory takings highlights the complexity of regulatory control. As in any area of public policy, there are efficiency and distributive consequences. Economists sometimes distinguish between the Endangered Species Act, which required private parties to provide a public good, and a zoning restriction, which prevents a factory from imposing a negative externality on neighboring houses. The nature of the distributive consequences (and who bears them) depends too on the extent to which the regulation was anticipated.³⁵

f. Laws and Regulations

Though we typically think of regulations in areas of environment, safety, banking, and utilities, many of the other laws affecting economic activity can be looked at through a regulatory lens. Bankruptcy laws restrict the set of contracts that parties can draw up with each other – no matter what the contract says about what happens in the event a debtor cannot meet his obligations, bankruptcy law will prevail if those provisions are in conflict. Similarly, corporate governance laws restrict how corporations may govern themselves.

i. Regulatory Processes

Much of the difference between regulation and these areas relates to the processes by which regulations get adopted. Typically, in the case of regulations, there is some delegation: The legislature delegates authority to a regulatory agency, which is assumed to have greater expertise in addressing complex technical issues. The delegation raises concerns about democratic accountability, particularly given the frequency with which regulatory agencies are

³² For a discussion of this episode, see J. E. Stiglitz, *Globalization and its Discontents*, New York: W.W. Norton, 2002.

³³ There are some important exceptions: Some regulations are designed to prevent managers of corporations from taking actions that benefit themselves at the expense of shareholders.

³⁴ For a more extensive discussion of some of the legal and economic issues, see J. E. Stiglitz, "Regulating Multinational Corporations: Towards Principles of Cross-border Legal Frameworks in a Globalized World Balancing Rights with Responsibilities," *American University International Law Review*, 23(3), 2008, pp. 451–558. Grotius Lecture presented at the 101st Annual Meeting of the American Society for International Law, Washington, D.C., March 28, 2007.

³⁵ Underlying this debate is a debate over the nature of property rights, implicit and explicit.

captured by special interests.³⁶ These concerns may not be fully obviated by legislative review processes. Regulations on how regulatory agencies design regulations (e.g., on the regulatory process) are designed to enhance democratic accountability (including transparency), but there is concern that these too have not been fully effective.

Related issues are raised by central banks, where recent doctrines have held that independent central banks lead to better performance. The evidence on that is less than compelling; what it shows is that independent central banks focusing on inflation do achieve lower rates of inflation – it would be really surprising if that were not the case – but do not succeed in achieving economically significant or even statistically significant better performance in more relevant metrics. Like growth, unemployment, or real wages. Central banks effectively control a critical price in the market, the interest rate, not so much by price regulation but by intervention. In many economies, they control a second critical price, the exchange rate. There are many doctrinal disputes over whether government should control the exchange rate, but ironically, almost none about whether government should control the interest rate (though there are many disputes about how it should control the interest rate).

The controversy over central bank independence is part of a broader debate of democratic accountability.³⁷ One can have an independent central bank that is more broadly representative – some countries insist that there be representation of labor (which is likely to be more concerned with unemployment and less with inflation), others impose restrictions that limit participation of financial sector representatives, viewed as a special interest. In the United Kingdom, the government sets the inflation target; the Bank of England then has independence in how it fulfills that mandate. Independence does not necessarily mean that it has the right to operate in the nontransparent way that it traditionally has; the Bank of England has, for instance, led the way in greater transparency. The U.S. Federal Reserve has, in the recent financial crisis, undertaken actions that are almost identical to those the Treasury might have undertaken. It has lent massive amounts

³⁶ G. Stigler, 1971, "The Theory of Economic Regulation," *Bell Journal of Economics*, 2(1), Spring 1971, pp. 3–21; J.J. Laffont and J. Tirole, "The Politics of Government Decision Making: a Theory of Regulatory Capture," *Quarterly Journal of Economics*, 106(4) November 1991, pp. 1089–127; and M.E. Levine and J.L. Forrester, "Regulatory Capture, Public Interest, and the Public Agenda: Toward a Synthesis," *Journal of Law, Economics, and Organization*, 6, April 1990, pp. 167–98.

³⁷ See J.E. Stiglitz, "Central Banking in a Democratic Society," *De Economist* (Netherlands), 146(2), 1998, pp. 199–226. (Originally presented as 1997 Tinbergen Lecture, Amsterdam, October).

of money to the private sector and accepted as collateral very risky assets, putting the taxpayer at risk. In doing so, it has put into question constitutional presumptions that Congress should control spending.³⁸ In addition, the Fed has denied that basic democratic protections, reflected in the Freedom of Information Act, are applicable to it.³⁹

ii. Implementation of Regulations

In the current crisis, the concern is not just that regulations were inadequate but that the regulations that existed were inadequately implemented. We had regulators who did not believe in regulations, with predictable consequences. It is not just that the process of designing the regulation gets captured, but so too the process of implementation. And it is not just capture by vested interests; it is capture by ideologies.

That raises deep issues concerning regulatory design and transparency in regulatory implementation. In some cases, the benefits of duplication – of multiple regulators, making regulatory capture more difficult – far outweigh the costs. The savings from avoiding the current crisis would have been millions of times greater than the costs of regulatory duplication. Some systems of regulation may be easier to monitor. That is the case, for instance, for "speed limits," ownership restrictions, and restrictions on incentive structures.

g. Government Failures

We noted the compelling case for regulation based on the fact that markets often fail and that *in principle* there are government interventions that would be welfare enhancing; we noted too that *in principle* more than just price interventions are required. There is a need for *regulation*.

But we also noted that many of those who object argue that such an analysis underestimates the scope for government failure. It is all well and good to argue that government could in principle improve welfare. But what happens in practice?

Anyone who has watched the U.S. government in the last seven years is well aware not only of the possibility of government failure but also of its

³⁸ I am not addressing here the technical legality of their actions. That is a matter for legal experts. I am questioning the congruence between their actions and basic democratic principles.

³⁹ *Bloomberg LP v. Federal Reserve*, U.S. District Court, Southern District of New York (Manhattan), Case number 1:2008cv09595.

reality. In some cases it is a matter of incompetence, in others of corruption, in still others it is a result of ideological commitments that preclude taking appropriate actions. In some cases it may be hard to distinguish the relative role played by each. Government programs can be subverted.

The analytic questions are, first, are these problems *inevitable*? Secondly, when they occur, are there corrective processes? Thirdly, are there some regulatory measures (and some regulatory processes) that are less likely to be subverted? Just as much of recent economic research has been directed at the question of how we mitigate the consequences of economic failure, we can ask, what can we do to mitigate the likelihood and consequences of government failure?

Government failure — at least on the scale that we have seen it in recent years — is not inevitable. Indeed, the Reinventing Government initiative undertaken by Vice President Gore showed that concerted efforts to improve the efficiency and responsiveness of government could succeed. Beyond that, some of the same reforms that work in the private sector are relevant in the public sector: Increasing competitiveness and transparency and improving incentive structures, where outputs can be reasonably well defined and attributed to particular individuals.

As long as there is sufficient transparency and competition, there are corrective processes. Governments that fail will be replaced; they lose their credibility and legitimacy. To be sure, those in the political process try to reduce competitiveness (e.g., by gerrymandering) and to hide failures (through a lack of transparency), just as do those in markets.

Finally, some regulatory processes are more subject to public failure than others, and part of the art of the design of regulatory regimes is to identify those that are less likely to be captured or abused. One of the arguments for disclosure requirements is that they are less subject to abuse, and one of the arguments against barter arrangements (zoning variances in return for providing certain public goods) is that they are never perfectly transparent and are therefore subject to abuse.

One reason for having multiple oversight (e.g., of banks or securities markets) is that it reduces the scope for capture. It means that even if there is a failure in one part of the regulatory system, there will not be in others. The SEC failed to take appropriate action in the case of many of the abuses earlier in the decade, but fortunately New York state did (using the flexibility provided by the Martin Act). In some ways, our antitrust framework provides a model for combating government failure (and it was designed with an awareness of the political pressures put on government not to take action): There are both civil and criminal actions; there is oversight

by more than one federal agency and at both the federal and state levels. The larger the consequences of government failure and the larger the probability of government failure, the greater the value of multiple oversight.⁴⁰

This argument for multiple oversight seems to run contrary to the conventional wisdom of unifying regulatory structures. There is a simple reason for the difference. The conventional wisdom is based on a simplistic model that does not recognize the risk of regulatory capture and the limitations in information of the regulatory structure and consequent risk of regulatory failure. In such a world, of course, duplication represents a waste of resources (both on the side of government and on the part of the regulated party, in terms of compliance costs). There are further problems: There is a risk of lack of congruence of the regulations. But this lack of congruence makes the point that if all regulators had exactly the same objective and the same information, they would presumably impose the same regulations. It is differences in objectives and information that lead to differences in regulations and different emphases in enforcement. As we noted, the current crisis makes clear that the costs of duplication pale in comparison to the costs of regulatory failure.

III. Applications

In this section, we apply these general principles to three areas of regulations that are the subject of extensive current discussion. They are chosen both because of the importance of these issues in current public policy debate and because they nicely illustrate the principles and issues raised previously in this chapter.

a. Sovereign Wealth Funds: Does Ownership Matter?

Sovereign Wealth Funds are the funds of government assets being invested abroad. Oil exporters have accumulated hundreds of billions of dollars. They have been advised not to spend their money — to manage their wealth to take account of the variability of international prices and to mitigate Dutch

⁴⁰ The general theory is set forth in a series of papers with R. Sah: "Human Fallibility and Economic Organization," *American Economic Review*, 75(2), May 1985, pp. 292–6; "The Architecture of Economic Systems: Hierarchies and Polyarchies," *American Economic Review*, 76(4), September 1986, pp. 716–27; "Committees, Hierarchies and Polyarchies," *The Economic Journal*, 98(391), June 1988, pp. 451–70; and "Qualitative Properties of Profit-Maximizing K-out-of-N Systems Subject to Two Kinds of Failure," *IEEE Transactions on Reliability*, 37(5), December 1988, pp. 515–20.

disease problems. With oil prices soaring to \$100 a barrel, the magnitude of these funds has soared too.

The other group of countries with large sovereign funds is developing countries that have had high savings rates, that have bought dollars to avoid currency appreciation, and that have built up large reserves to buffer them against shocks posed by global volatility. China has more than \$1.9 trillion in reserves and a national savings rate of 5 percent. The amount in the reserves of various other Asian countries is now in the trillions. Singapore's Provident Fund has been built up with workers contributing 42 percent of their salaries.

It was only a matter of time before these countries figured out that holding dollar T-bills was a bad store of value — especially with the declining dollar.

These funds grabbed public attention when they bailed out Citibank and Merrill Lynch.⁴¹ They had billions in liquid assets and could act quickly. According to some Wall Street rumors, had they not bailed out these financial institutions, they would have gone under — or required a government bailout. But not only did existing shareholders have to give up a significant fraction of their ownership share, collectively the sovereign funds' ownership shares may have given them effective control. Some began to fret: Should the American government (or more generally, "host governments") regulate these funds?

The G-8 and the International Monetary Fund (IMF) called for more transparency. They wanted to be sure that these funds had strictly commercial objectives. Norway's highly transparent funds were evidently unobjectionable — even though as a shareholder, Norway had often expressed its views about corporate governance, human rights, and the environment (views that went beyond strictly commercial concerns).

There was a certain naiveté — and hypocrisy — in these stances. Evidently, nontransparent hedge funds were permissible. No one knows who owns these hedge funds. They could even be owned by a secret Cayman Islands corporation whose owners were the sovereign fund. Were the IMF and the G-8 simply asking the sovereign funds to act more obscurely indirectly through hedge funds? With the close connections of some in Western financial markets to these hedge funds, one could understand the rationale: Increased fees for the hedge funds. But this was hardly a compelling basis of

⁴¹ Since then, of course, Merrill Lynch has been acquired by Bank of America, and Citibank has had two massive bailouts from the federal government. The sovereign wealth funds have suffered large losses.

public policy.⁴² Defenders of hedge funds say they know that hedge funds are commercially oriented. We don't know what motivates sovereign funds. They might have political objectives — that would be contrary to America's best interests. But if that worries one, one should be equally worried about the hedge funds. We don't know who owns them, and so we don't know what motivates them.

Most of the debate is motivated by fear. It is not that the sovereign funds have taken actions that are objectionable, which are motivated by anything other than profit maximization. It is only that they *might* do so, and we need to take preventive action. Of course, no one wants to stop the funds. If the funds had not bailed out Citibank and Merrill, America's economic problems might have been even worse. Today's buzzword is transparency. What is demanded is more transparency.

What kind of transparency would make a difference? Should we take comfort that they *say* they are pursuing just commercial objectives? How can we be sure that they do what they say? If a bank says that it will not lend to a country because such lending is too risky, how do we know whether those economic judgments have been tainted by political perspectives? What information would a disclosure of balance sheets make? We normally don't require such disclosures. Why here?⁴³

Moreover, the pursuit of commercial objectives has never been a requirement for ownership in the past. Many a newspaper and TV station have been bought not for commercial reasons but as a basis to advance a political perspective.

What is clear is that the brouhaha over the sovereign funds is partly a fairly transparent form of new American protectionism and partly an attempt to shift attention from the failures of America. If America had saved more, and if its financial institutions had behaved better, it wouldn't have had to turn to these sovereign funds.

Nonetheless, the debate has served a salutary purpose: It has opened up the question, does ownership matter? For years, the IMF and the U.S. Treasury have been telling developing countries to privatize their assets

⁴² One ex-Secretary of Treasury who has been among the most vociferous in calling for greater transparency of sovereign funds had resisted calls for greater transparency for hedge funds. In making his arguments, he has not usually disclosed that he has himself been working for a hedge fund.

⁴³ Market advocates would argue further that disclosure of the portfolio would make public the fruits of their research, undermining incentives to gather information, thereby decreasing the informational efficiency of the market. (These are the arguments put forward in defense of hedge fund secrecy.)

and to remove restrictions on foreign ownership. Many within the country were anxious about selling national assets. They were told: Don't worry. *The nationality of the owner doesn't matter.* No objection was made even when a firm owned by a foreign government bought an enterprise.

But of course there can be a conflict of interest between the interests of the nation as a whole and the interests of the owner as we have already noted, but they can arise whether the owner is domestic or foreign. For instance, private firms managing a country's natural resource seek to minimize payments made to the government, though it is in the nation's interest to have these payments maximized.

Underlying the objections to sovereign funds is a simple fallacy. It is based on the hypothesis that (a) rational owners will desire firms to maximize the value of their firms, and (b) value maximization leads to social welfare maximization. Each of these hypotheses has been the subject of extensive research and has been shown to be true only under certain limiting conditions (e.g., a complete set of risk markets; no information asymmetries; perfectly competitive markets).⁴⁴ Some have argued that competitive markets *force* firms to maximize value: if they do not, they will be taken over. But this too has been shown not to be true in general.⁴⁵ Interestingly, many takeovers do not result in an increase in the value of the firm(s); they seem motivated by the hubris of the CEO of the taking over firm, who is willing to sacrifice the value of his firm for personal gratification.⁴⁶

There are certain circumstances when there are systematic conflicts between, say, what firms might do (whether a result of value maximization or not) and societal welfare that we impose regulations to constrain the behavior of firms. We restrict, for instance, their pollution.

Ownership matters, as we noted earlier, because it affects incentives for behaviors that are not in the social interest *and* because we cannot adequately control behavior. But this is true whether the owner is a private American or a foreign government. In the one case, it is profit motives; in the other because there *may* be political motives. If there is scope for behavior that is adverse

⁴⁴ See, for instance, Sanford Grossman and J. E. Stiglitz, "On Value Maximization and Alternative Objectives of the Firm," *Journal of Finance*, 32(2), May 1977, pp. 389–402, and "Stockholder Unanimity in the Making of Production and Financial Decisions," *Quarterly Journal of Economics*, 94(3), May 1980, pp. 543–66.

⁴⁵ See, for instance, Sanford Grossman and Oliver Hart, and O. Hart, 1980, "Takeover Bids, the Free-rider Problem and the Theory of the Corporation," *Bell Journal of Economics* 11(1), pp. 42–64; and "The Allocational Role of Takeover Bids in Situations of Asymmetric Information," *Journal of Finance*, 36(2), 1981, pp. 253–70.

⁴⁶ This reinforces the conclusion: Noneconomic motives often play an important role in market economies.

to public interest, even well-motivated people may take adverse actions: Those engaged in subprime mortgage activities had ordinary motives of profit maximizing; some were not explicitly engaged in predatory lending but simply had very bad judgment — they didn't understand the nature of risk. There may, nonetheless, be severe consequences for our economy. Such behavior should be proscribed.

In short, the debate about sovereign wealth funds highlights the limitations of our regulatory systems. If a sovereign wealth fund were to buy a pencil company, and, motivated by politics, decided to give away pencils as an act of friendship, no one would be concerned. If the firm is mismanaged and goes bankrupt, no one would be much concerned — antitrust laws would have ensured that the firm is small, and if the economy is functioning well, those who lose their jobs would quickly find others. If a sovereign fund bought a bank and decided not to lend to a particular country (whether it thought it a bad risk or a rogue state), it would have little economic consequence (though we might socially disapprove of this discrimination and pass antidiscrimination laws), as long as there was a competitive banking system. Even if it shut down a plant and moved it overseas to create jobs in its own country, there would be little concern: New jobs would quickly be created here at home. But if our competition laws or other regulatory systems are not working well, a firm owned by a sovereign fund — or a private firm — might take actions adverse to the public interest. Ownership conveys information; it may tell us about the likelihood of such actions being undertaken. In some circumstances, it may provide an additional rationale for regulatory scrutiny. But in only limited circumstances, such as those described earlier — where regulatory oversight is so impaired that appropriate actions cannot be taken *in a timely way* and where consequences of the adverse actions cannot be easily repaired — is there a compelling case for ownership restrictions. When ownership restrictions are warranted, though, they should be nondiscriminatory. Sovereign funds might be restricted, but if so, hedge fund ownership should be as well unless there is full transparency of the true owners of the hedge fund.

b. Financial Sector Regulation

During the Clinton Administration, I led a review of the federal government's regulation of the financial sector as part of Vice President Gore's "Reinventing Government" initiative. Our objective was to identify the objectives of regulation and to assess whether current regulations achieved those objectives in the most effective way. As a result of the review, we

eliminated some regulations – such as those requiring notification of every installed ATM – but supported the continuation of others.

We identified five interrelated reasons for government intervention: (a) ensuring competition, (b) protecting consumers, (c) ensuring the safety and soundness of financial institutions and the financial system, (d) ensuring access, and (e) promoting macroeconomic stability and growth. The list included concerns both about efficiency – market failures – and equity (without government regulation, certain groups may not have access to finance and may be exploited).

Competition is largely the responsibility of the Department of Justice, but there are distinctive characteristics of this market that require special attention or more specialized knowledge.⁴⁷ The market is complex; though there may be a large number of banks, the number providing particular financial services – say, loans to small businesses in the state of Washington – may be very limited. There may also be complicated questions balancing out competition with other objectives (such as safety and soundness).⁴⁸

i. Consumer Protection

One of the concerns about the subprime mortgage crisis is that it would have been less severe had legislation or regulations to restrict predatory lending been adopted. At the time, some argued that loose lending standards would enable more individuals to become homeowners. But it should have been clear that giving a loan to someone beyond their capacity to pay is not doing a favor. The main beneficiaries were those making the loans – there was even opposition to regulations requiring that lenders demonstrate that refinancing be in the interests of the borrower. But the debate surrounding these restrictions highlights the complexities of regulation: Under the hypothesis that house prices would continue to go up, denying the poor the right to participate in this economic giveaway would have been unfair. Though the Ponzi scheme was working, some did benefit. Like any pyramid scheme, those who get in and out earlier can win. But government has the responsibility to see through the hype – it is arithmetically impossible for house prices to continue to rise while the incomes of most Americans are falling, unless the cost of capital continues to fall.

⁴⁷ This is one of those instances, noted earlier, where there is especial value to multiple oversights.

⁴⁸ Enhanced competition reduces profitability, making banks more vulnerable.

Consumer protection begins with disclosure – individuals should, for instance, know what interest rate they are paying on loans. It is clear that there are strong market forces moving in the opposite direction. Ensuring the safety and soundness of financial systems – so individuals know that when they put money into a bank they will be able to get it out – and ensuring competition can also be thought of as part of consumer protection. Even with regulation, of course, banks may go under, which is why deposit insurance is required. As I noted earlier, the argument that deposit insurance leads to moral hazard is largely (but not totally) misguided. Individuals do not have the capacity to inspect the books of the banks in which they are depositing, and it would be inefficient for each of them to do so. But the existence of deposit insurance necessitates stronger bank regulation: The S & L debacle arose in part because banks offered high interest rates. Depositors may have known that those high interest rates could only have been paid on the basis of risky loans, but because of deposit insurance they did not have to worry.

Restrictions on high interest rates have been opposed by advocates of liberalization; they point out that such interventions in the market deny access to loans by risky borrowers who would not otherwise have access to credit. But high interest rates can also arise as a result of exploitation of borrowers, especially ill-informed poor borrowers in noncompetitive markets, and the higher risk associated with higher interest rates has a cost to the public, with either implicit or explicit deposit insurance. (High interest rates lead to riskier behavior and have adverse selection effects.) There is a balance of concerns in which by and large I think such interest rate restrictions are desirable.

ii. Safety and Soundness

Regulations directed at ensuring the safety and soundness of the banking system illustrate many of the instruments discussed earlier in this chapter. There are ownership restrictions – industrial firms cannot, in general, own banks (though in many other countries they can), nor can certain individuals of ill repute. There are capital adequacy requirements – in effect ensuring that the bank has sufficient capital *at risk* that it would not undertake excessive risk, and so the probability of bankruptcy is sufficiently low. But governments often forget these objectives when the economy faces a downturn and losses mount, and there is a need for an equity injection. With no other sources available, governments often provide the requisite

equity. Unless they take over control of the bank, the *incentive* effects are nil or may even be perverse. The original owners only worry about the loss of their own capital, not the capital provided by the bank. All the government is doing is providing up front some of the money it would have provided in the event of a crisis.

Capital adequacy standards that are appropriately risk adjusted can help undo the distortions associated with government deposit insurance and provide incentives for banks to undertake less risk, thus reducing the likelihood of a bank failure. The problem in the past is that the risk adjustments actually distorted bank behavior and even contributed to the contraction of credit availability. A key error, for instance, made by the Fed in the 1980s was to treat long-term government bonds as if they were safe; there might not have been any credit risk (the risk of bankruptcy of the issuer of the bond), but there was still market risk (interest rates could change, resulting in a change in the market value of bonds). This encouraged banks to buy long-term government bonds and to make fewer loans. Accounting failures also contributed — the banks were not forced to set aside a reserve to reflect the risk of a fall in price. They could book the entire gap between the long-term interest rate and the short-term interest rate at which they borrowed as profit, even though the reason for this gap was market expectation of a fall in the bond price.

In many countries, restrictions on bank portfolios have played an important role. Speculative real estate lending has been the basis of many an economic downturn, and some regulatory authorities have accordingly restricted such lending (and insisted on high collateral standards). (In the case of Thailand, they were concerned both with development and stability; they hoped that by restricting speculative real estate lending, more funds would go into more productive investments, generating employment.) Ironically, the IMF (supported by the United States) was highly critical of such restrictions. If the market demanded the construction of empty office buildings rather than investments in productive factories generating employment, one should not interfere with the market. Under pressure, Thailand abandoned some of these prudential regulations, and this contributed to the crisis that the country faced a few years later.

One of the many problems with earlier standard bank regulations was that they focused on risk, asset by asset, but didn't take into account correlations.⁴⁹ That was why there was hope that a more sophisticated form

of regulation based on banks' own risk management systems and credit rating agencies, taking into account asset correlations, would be a major improvement. This new system, called Basel II, is in the process of being adopted in advanced industrial countries. After the current crisis, it is clear that Basel II is dead. The banks' risk management systems were badly flawed — evidently, the banks did not understand correlated risks, let alone fat-tailed distributions. The rating agencies (once again) were even worse, though this time there is evidence not only of ordinary incompetence but also of a serious problem with incentives.

An important part of any regulatory system is information disclosures and accounting standards: Regulations requiring banks to mark their assets to market are viewed as important for providing depositors (and others dealing with the bank) with better information about the bank's financial position. It can also avoid the perverse effects of not marking to market, which can encourage excessive risk taking. Banks can buy a set of risky assets, knowing that it can sell those that do well — reflecting the profits in its accounts — but hold on to the assets making a loss. Yet marking to market can also have other real and adverse effects. If markets exhibit irrational pessimism, marking to market may in a downturn force banks to acquire new equity injections — or force them to reduce outstanding loans. Poorly designed regulation can be procyclical, exacerbating economic fluctuations. As we noted above, the decision of the Fed under Greenspan to treat long-term government bonds as safe and not requiring them to set aside reserves played a large role in *creating* the recession of 1991.

There has been a natural tendency for those who would prefer to have no regulation to suggest that the optimal regulation is minimum regulation. Some have argued that disclosure is all that is required. Some have argued that all that is required is to eliminate deposit insurance. For the government to provide deposit insurance contributes to moral hazard, because depositors will not take due care in deciding where to put their money. But as noted earlier, all countries have, in effect, deposit insurance: When a crisis hits, depositors will be bailed out. Moreover, information is a public good. It makes no sense for all individuals to evaluate for themselves the creditworthiness of each bank — even if it were possible for them to do so; and as we explained, there are real problems in market-based certification. Still others have argued that all that is required is forceful implementation of capital adequacy standards. Each of these simplistic arguments is flawed. Effective regulation is more complex. Given the ability of those in the financial markets to engage in regulatory arbitrage, some discretionary regulation will inevitably be required to innovate around regulations.

⁴⁹ This earlier system of bank regulation, formulated by the Basel Committee on Bank Supervision of the Bank of International Settlements (BIS) in Basel was called Basel I.

iii. Ensuring Access

These include regulations against discrimination and redlining⁵⁰ and the Community Reinvestment Act, requiring banks to lend a certain fraction of their portfolio to underserved communities.⁵¹ Earlier laws restricting interstate banking had a similar motivation: There was a worry that New York banks would garner all the deposits but then divert the money back to East Coast money centers. (In many developing countries, similar concerns are raised today: Foreign banks are more likely to lend to multinationals and large domestic firms than to domestic small and medium-sized enterprises. Modern banking theory, which sees banks as processing information, assessing creditworthiness, and monitoring, provides an explanation for these lending patterns.) CRA lending requirements have been successful in extending access to credit.

Many developing countries face a more general problem: Banks prefer to lend to the government or to hold money abroad (speculating on a capital gain) rather than to lend money at home, especially to small and medium-sized enterprises. In short, banks are not performing the role they ought to perform. Several policies have been proposed for addressing the problem. One is to change incentives, for example, by taxing at a high rate capital gains on foreign exchange speculation. Governments typically have large deposits and can link where they hold deposits to bank performance, so that banks that lend to small and medium-sized enterprises at low margins will get more government deposits. A second policy is regulatory: Not allowing banks to hold government paper. If they wish to provide money to the government, they can do so, but they would get only a small service fee for providing depository services. (Government can, alternatively, provide direct competition to the private sector.) Generalized CRA requirements requiring banks to lend minimal fractions to small and medium-sized enterprises or to the rural sector may also help.

The argument for these lending mandates is that the private sector is more able to make risk judgments, untainted by political connections, than a development bank or government agency. Within the rural sector, they will be able to find good borrowers. Such mandates and restrictions may lower short run returns (though not necessarily long run returns, as banks learn how to lend in each of these markets). Obviously, if excessive, these

⁵⁰ A practice in which banks exclude from lending properties lying within particular areas.

⁵¹ Underlying these (and some of the other restrictions described earlier) is a simple notion: There is a discrepancy between private and social returns to lending.

mandates will lower profitability to the point that there will be an exit from the industry, but it appears in most cases that the value of a bank franchise (including the right to access the funds of the Central Bank) are sufficiently great that this has not occurred.

iv. Macrostability

Many of the regulations discussed so far have macroeconomic implications. Safety and soundness focuses on the ability of individual banks to repay amounts deposited. But when risks are correlated, if many banks have a problem, the economy risks slipping into a recession. Without access to credit, it is hard for an economy to function.

Policies that make sense if an individual bank faces a problem do not make sense if all banks face problems. If only one bank is in trouble, regulators can be tough and refuse forbearance; if many banks face difficulties, such an approach may force the economy into a deep downturn.

Similarly, regulatory rules have to be sensitive to cyclical implications. There is worry, for instance, that strict enforcement of high (and non-cyclically adjusted) capital adequacy requirements can act as an automatic *destabilizer*. That is why it may be important to develop cyclically adjusted capital adequacy requirements or provisioning requirements.

c. Greenhouse Gas Emissions

The third example concerns greenhouse gas emissions that contribute to global warming. The policy debate has centered on emission taxes versus cap and trade systems. When the caps (the targets) are auctioned, the two systems are almost equivalent. In one case, the government is setting a quantity and letting the price adjust; in the other it is setting a price and letting the quantity adjust. If the government had good information about the demand curve, the two would be perfectly equivalent. In practice, either price or quantity will adjust over time (as we have noted earlier) in response to success in achieving the objective of ultimate interest, overall concentration of atmospheric greenhouse gases (or even more directly, change in temperature). One widely discussed proposal is the safety valve, a mixture of a price and quantity system: A quantity constraint, provided the price does not exceed a particular level, after which it becomes a price intervention. This has the short run advantage of limiting risk — firms know the maximum price they will have to pay for emissions. It also provides the basis of a political agreement based on different perceptions: Many environmentalists

claim the cost of mitigation is low, and at the same time they want strict emission constraints. If they are correct, the safety valve will never have to be used.

Different systems have different distributive consequences. When the international community grants a particular cap to a country, it is as though it is granting a cash-equivalent endowment (assuming emission permits are tradable). This is one of the reasons the debate is so contentious. The Kyoto system gave more emission rights to those countries that were emitting more; those who had polluted more in the past were, in effect, given more cash, a peculiar policy, to say the least. The developing countries argue that, if anything, those who have polluted more in the past should have less pollution rights going forward. They have already used up their share of the global atmosphere.

The international distributive consequences of an agreement of a common tax rate, with the proceeds kept within each country, are likely to be small. There are small distortions associated with any tax. The replacement of, say, a labor tax with a pollution tax reduces one distortion and increases another. The net impact is simply the difference between the two distortions, and the difference in the net impacts is likely to be relatively small.⁵²

There are, of course, large distributive consequences for different sectors. The cap and trade system offsets these by providing emission rights to past polluters. But the same equity concerns raised earlier arise. Moreover, it sets the stage for high levels of corruption, as private actors seek more emission rights. In some countries, it will be outright; in more advanced industrial countries, it will be more subtle, with campaign contributions designed to affect the *rules* by which targets are set in ways that favor some (obviously, at the expense of others).⁵³

Though there is a consensus that, setting aside the distributive consequences, both cap and trade and a carbon tax, if universally applied, could lead to efficient outcomes, there remains strong support behind additional regulatory measures. The EU has imposed renewable energy mandates, the U.S. CAFE standards, and everywhere there is discussion of imposing other controls, such as on coal-fired generating plants. Why, one might ask, should we resort to these “distorting” regulations when we have at hand an efficient mechanism for reducing emissions? The regulatory interventions create, in

⁵² Technically, we say that the welfare loss is (roughly) just the difference between the difference in the two Harberger triangles (that associated with the emissions tax, and that associated with the taxes that it replaces).

⁵³ This is an example of how the form of government intervention may affect the likelihood of government failure.

effect, a system that taxes emissions at different rates in different sectors. Part of the reason is concern about the distributive consequences of the large reductions required in emissions. To elicit the required behavioral changes, explicit or implicit taxes on emissions will be very high – beyond levels likely to be politically acceptable. This in part may be because market participants are myopic. They see upfront costs more clearly than they do costs down the line; their implicit discount rate seems “irrationally” high. A more fuel efficient car that, at reasonable discount rates, is less expensive will not be bought because its upfront price is higher. Many firms similarly respond to current patterns of consumption. In the 1990s, American automobile firms did not diversify their portfolio but rather concentrated their attention on the SUVs then in fashion. If one forces large behavioral changes through regulation in certain key sectors, the burden on the remaining sectors – changes that have to be accomplished through taxes – is reduced. The *seemingly* cost of mitigation,⁵⁴ and probably the actual cost as well, would appear to be lower. There is a more general point: Typically optimal tax systems (designed either to raise a fixed revenue or to achieve a given reduction in emissions) are differentiated and nonlinear.

IV. Elements of a Research Agenda

The case for regulation is compelling. There are important market failures and important arenas for addressing distributive concerns. Regulation often fails to achieve the ambitions we hold for it, but it is still the case that, at least in many instances, matters are better *with* regulation than *without* it.

At a theoretical level, and ignoring issues of political economy, regulation can be viewed, as we noted, as part of a system of indirect societal control. Even simple models suggest that optimal control systems are highly complex. Once the fallibility of control systems is taken into account, the complexity grows further, and in most social contexts, there are multiple objectives, contributing further to the complexity.

Yet complexity itself gives rise to problems. It is the complex financial products that have generated so many problems in financial markets – even more than transparency. We have no simple way of characterizing complexity.

Moreover, there are, as we have noted, complex trade-offs among objectives. Economic theory has focused on the design of optimal regulatory

⁵⁴ To critics of these regulatory approaches, the lack of transparency is itself one of the main criticisms.

schemes for simple, well-defined problems typically in contexts in which there are limited problems of information asymmetries.

More attention should be paid to designing principles of *robust regulation*, which works reasonably well under a variety of circumstances.

The world is always changing; and that means regulations need to change. And that means the regulatory system needs to be *flexible*.

A second major set of issues concerns capture – which entails not only capture by special interests but also by particular ideologies. How can we design regulatory structures that are resistant to capture? We have suggested duplicative regulation may be desirable, systems of checks and balances. But what are good systems of checks and balances? And are some systems more amenable to multiple oversight because they are simpler and more transparent, with failures to exercise oversight or compliance failures easier to detect?

A third related set of issues concerns democratic accountability. We delegate regulation in part because we believe designing good regulatory systems is too complex to be left to relatively uninformed legislators. But formal compliance with rule making and formal enforcement procedures do not suffice. In terms of emergencies, democratic protections may be further weakened. As I have noted, what the Federal Reserve didn't do prior to the crisis and what it has now done both strain democratic principles.

Some of the principles and objectives may come into conflict. It may be harder to change a regulatory system when there are multiple regulators.

We have a wealth of information about how regulatory processes have worked in particular contexts. We have some general theories of optimal incentive structures and institutional design in the presence of human fallibility. The research challenge going forward is to combine these bodies of knowledge to provide guidelines for the construction of robust regulatory frameworks.

CONCLUDING REMARKS

The Arrow-Debreu model set forth a set of conditions under which Adam Smith's invisible hand worked perfectly with no government intervention required. However, the conditions required – not just the absence of externalities, public goods, and perfect competition, but also perfect information, a complete set of markets, including markets for risk, and no (endogenous) innovation – have meant that the model has been most useful in providing a taxonomy for why government intervention is required. Many economists, still in love with the price system, leapt to the conclusion that the

government should only intervene through simple, linear taxes and subsidies. But, alas, for many of the same reasons that markets fail, so too simple price interventions are, in general, not optimal. More complicated *regulatory* interventions are, in general, required. In this chapter, I have tried to outline some of the critical issues in the design of regulatory systems. The question today is not *whether* to regulate, or even *whether we have overregulated* – the subprime mortgage crisis suggests a problem of underregulation – but rather, whether we have designed a regulatory system that is as efficient and equitable as it could be.