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DEREGULATION

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1. Introduction

Over the last thirty years the U.S. and many other countries have experienced a revolution in the extent and nature of the mechanisms used by government to regulate the structure, behavior and performance of many markets for goods and services (Winston 1993, 2006; Peltzman and Winston 2000; Joskow 2004). This era of reform is often referred to as the era of “deregulation.” However, the phrase “deregulation” is a simplistic characterization of a much more complex process that involved the relaxation of government controls over prices and entry, industry restructuring to facilitate competition in some industry segments and better regulation in others, stricter but more effective environmental regulation, and ongoing efforts to find ways to improve the performance of product quality and safety and workplace safety regulations to increase the net benefits to consumers. Many of these reforms have been beneficial to our economy and ongoing reforms have the promise of further enhancing economic performance.

The generally favorable assessments of regulatory reform over the last thirty years have been tainted by the ongoing financial market crisis and its adverse effects on the real economy. There is what seems to be an ever growing list of explanations for the causes of the ongoing financial market mess. There is an even longer list of proposed

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regulatory, institutional, and governance reform initiatives to mitigate the problems in the short run and keep them from reoccurring in the long run. The ongoing financial market crisis was clearly caused by a combination of public policy failures reinforced by behavioral failures by private sector financial institutions, intermediaries, rating agencies, creditors, and regulators. However, my own view is that we still do not yet fully understand these public policy and private sector failures and the interactions between them that caused the problems. We necessarily know even less about the appropriate long run public policy and private sector institutional reforms to keep these problems from emerging again. As with the Great Depression, scholars will be studying this period for many years. Similarly, if history is any guide, the rush to implement public and private sector policy reforms to respond to the immediate crisis without fully understanding its causes and then developing comprehensive reforms to fix the market failures is likely to lead to at least some “quick and dirty” regulatory initiatives that fail to solve the problems and may even make them worse. This is especially problematic in the case of financial product, financial institution, and financial market regulation because the relevant markets are global.

Ironically, one of the few important sectors of the economy that has not been subject to comprehensive regulatory reform during the last thirty years is the financial services sector and the associated financial products and financial markets where they are traded. Yet financial institutions, financial instruments, the markets where they are trade, and the geographical expanse of trading have all changed dramatically over the last thirty years. While it has become routine to place a large share of the blame for the current financial crisis on “deregulation,” the list of state and federal regulatory agencies with

jurisdiction over banks, insurance companies, brokerage firms, mutual funds, hedge funds and other financial institutions, the products and markets where they trade is as long as my left arm. The one thing that we can be sure of is that we have no shortage of regulatory agencies with overlapping responsibilities for investor protection, financial market behavior and performance, and systemic risk mitigation (prudential regulation) that collectively were supposed to work to keep this kind of financial market mess, as well as scams that were allegedly employed by Madoff and others, from occurring. These regulatory agencies have overlapping jurisdictions, opaque goals, arbitrarily limited authorities, and histories that can often be traced back to Great Depression era financial markets and economic conditions. These regulatory institutions have evolved over the last seventy-five years in a haphazard fashion that has not responded effectively to the evolution of financial institutions, products, and markets but more as a series of fingers in the dike to try to keep new leaks from damaging the integrity of the entire dam. Regulatory changes, such as the 1999 repeal of the provision of the Glass-Steagall Act of 1933 that prohibited bank holding companies from other types of financial services companies, the SEC's decision to end of the uptick rule for short sales, and decisions to allow "sophisticated investors" to fend for themselves, have been idiosyncratic. The reforms have been idiosyncratic (and initially cautious, such as the repeal of Regulation Q in 1980) and increasingly driven more by ideology as financial markets began to change quickly than by the kind of comprehensive framework for regulatory reform that has now become widely accepted by microeconomists in other industry contexts.

I think that history will show that there is plenty of blame to go around for the current financial mess, implicating diverse interest groups, legislators, regulators, and the

administrations which appointed them. In hindsight they will encompass ideological perspectives from the left to the right. Blaming these problems simplistically on “deregulation” of financial instruments, financial markets and financial institutions will not prove to be a useful framework for identifying good public policy reforms in this area. Accordingly, the policy problems that contributed to the current financial market crisis are more properly conceptualized as a failure to engage in comprehensive reform of the entire regulatory framework governing financial institutions, products and markets to better match the development of new financial instruments, trading platforms, market participants, and the globalization of financial markets rather than as “deregulation.” Some new regulations that were intended to control financial risk (e.g. bank capital requirements under Basel II) may have actually contributed to the financial crisis by creating incentives to create financial instruments (e.g. credit default swaps) that appeared to turn certain risky assets into safe Tier I capital. Poorly designed regulatory instruments can make a potentially bad situation worse.

But my talk today is not primarily about the financial market crisis and the short run and long run policies that are appropriate to stop the bleeding in the short run and to respond to the lessons that have and will be learned from it with appropriate public and private regulatory and institutional reforms. Rather, it reflects my concern that the ongoing efforts to understand and resolve the financial market crisis, and what appears to be a widely accepted view that it can be blamed generically on “deregulation” and a “free market” mentality, is gradually being used as a platform by opponents of market liberalization generally for launching a “reregulation” process in many other sectors of the economy that were “deregulated” over the last three decades. This au courant and

undifferentiated trashing of “deregulation” more generally in the media has in turn provided a convenient opportunity for those self-interested in “reregulating” other industries and sectors or slowing down ongoing regulatory policy reforms to blame “deregulation” for a long list of problems in order to feather their own nests..

Let me note as well that the modern deregulation, industry restructuring and regulatory reform era did not start with George Bush or Ronald Reagan. If one must date it, the market liberalization and regulatory reform era started with Jimmy Carter and has been pursued by centrist Democrats and Republicans since then. Many of the deregulation, market liberalization, and market-friendly regulatory reforms of the last thirty years in the U.S. and many other countries have yielded significant benefits for their citizens and their economies. While these reforms have certainly not been perfect, reversing most of them would be harmful to our economy in the aggregate, though they might feather the nests of some interest groups.

I fear that we may be at a cross-roads where we are moving from too much unprincipled relaxation of regulatory oversight in a few sectors to too much unprincipled and poorly designed regulation in many others. And I attribute part of the blame for this unfortunate situation to the increasingly mindless debates about the role of government in the economy based on ideology rather than on clear goals and careful theoretical and empirical analysis of both market imperfections and regulatory imperfections. This trend has been reinforced by the increasing ideological polarization of so-called “think tanks” and their increasing dependence on financial support from special interest groups. Of course, this Center has, from the beginning, stood for just the opposite --- objective analysis of important regulatory issues based on clearly articulated goals, careful

theoretical and empirical analysis, respect for principled differences of opinion, and willingness to change one's mind based on evidence. This is why I have been proud to have been associated with this Center from the beginning.

In this paper I will make and support several points:

1. I take as a given that even imperfectly competitive markets are extremely powerful institutions for allocating scarce resources efficiently both statically and dynamically. Few markets satisfy the structural, behavioral, or performance assumptions of textbook perfectly competitive market. Thus, markets are never perfect in this textbook sense, but they are typically better than the next best alternative.

2. There is a sound intellectual framework for evaluating when it makes sense to impose some form of government regulation on a particular market for goods and services, including regulation of financial institutions, financial products and financial markets. The framework requires a good theoretical and empirical understanding of market imperfections and regulatory imperfections and the costs of each. The issues here are not properly characterized as “regulation” vs. “deregulation,” but rather involve the application of a disciplined framework for identifying the whether, where and how government regulatory policies can, on balance, improve market performance taking both the costs of market imperfections, the benefits of regulatory constraints associated with reducing these costs, and the costs of regulatory imperfections into account. The “regulation” vs. “deregulation” mantra reflects an ideological debate not a serious framework for evaluating the performance of real markets and real regulatory institutions. The proper framework for considering these issues is familiar to

serious microeconomists who have studied regulation, deregulation, and regulatory reforms of various kinds.

3. These framework can and should be applied to financial institutions, products and the markets reflecting the specific types of market and institutional attributes of these market institutions and any associated market imperfections. Financial markets do have special attributes and their performance broad implications for the performance of the rest of the economy. Accordingly, reasoning by analogy to ordinary markets for goods and services (e.g. surface freight transportation) to develop and apply a good regulatory and institutional framework for financial institutions, financial instruments and financial markets can be very dangerous.

4. Deregulation, privatization and regulatory reform initiatives, or the European term that I prefer, “market liberalization” initiatives, that have affected the markets for good and services in many sectors of the U.S. economy and those of other countries over the last three decades have generally been beneficial for the economy and for consumers. These benefits include lower costs, enhanced rates of product and process innovation, better matches between consumer preferences and product quality and safety, and more efficient price structures (not always lower prices as some of the worst regulatory programs kept prices too low and caused shortages). These market liberalization and regulatory reform initiatives have not always been successful (e.g. the privatization, restructuring and regulatory reform policies applied to the British railroad system), in the sense that they created more problems than they solved, and there is as much to learn from failed market liberalization efforts as from successful efforts.

Future regulatory reforms should be based on objective analysis of the costs of market imperfections, the benefits of alternative regulatory constraints aimed at mitigating these imperfections and the costs (direct, but more importantly, indirect) of alternative regulatory mechanisms, recognizing that both the costs and benefits are uncertain. Broad brush ideological calls for reregulation or deregulation are dangerous. The fundamental question that we should be seeking to answer is “what is the best that we can do in an imperfect world?”

5. Whatever conclusions one comes to about the need for and nature of regulation or deregulation or regulatory reform policies, these conclusion should be specific to particular industry, product, firm, and consumer decision making attributes specific and subject to periodic reevaluation as these attributes change and new information emerges about the performance of prevailing public and private institutions..

2. What is government regulation?

If we are going to think about deregulation I suppose that we should start by defining what “regulation” means. No markets in modern developed economies are completed “unregulated” by government-created institutions in any meaningful sense. Markets in all modern developed market economies operate within a basic set of governance institutions or what Williamson has called the basic institutions of capitalism (Williamson 1985). These include in the U.S., common law institutions like property rights, liability rules, contracts, and the institutions for enforcing them. There are also basic firm and market institutions created by statute, such as those created by corporate law, including the framework for creating limited liability corporations, antitrust laws,

bankruptcy laws, employment laws, environmental laws, etc. We can discuss the pros and cons of the details of alternative structures for these basic institutions of capitalism and how they are implemented and enforced, but there are no 21st century developed market economies without them, so spending a lot of time talking about doing away with them completely is not too constructive.

So, when we talk about regulation, deregulation, regulatory reform or market liberalization we are talking about it within a basic set of legal institutions that are general accepted as providing a “minimal” framework for markets to work well. What is it then that we are “regulation,” “deregulating” or “liberalizing?”

Scholarly analysis of government regulation focused for many years on government regulation of price levels, price structures, and entry into markets for particular goods and services (Kahn (1970), Joskow (2007)). These government regulatory actions are not included in the list of basic institutions of capitalism. Going back to the late 19th century, we can construct a long list of goods and services that have been subject to price and or entry regulation: oil, natural gas production, oil and natural gas pipeline transportation, telecommunications services, surface freight transportation, electricity supplies, interest rates, bus and street car services, water and sewer services, taxi prices, milk prices, residential rents, etc. While some of these price and entry regulations were justified as being necessary responses to the “natural monopoly problem,” (Joskow 2007) one does not have to be too much of a free market advocate to find the natural monopoly argument for many of these goods and services to be implausible. Clearly there was something else going on there than protecting consumers from monopoly prices and inefficient duplication of network facilities. And what is

typically going on here is the consequence of powerful interest groups using the power of government to benefit them at the expense of others (Stigler 1971) and to hide the associated “taxation by regulation” in a complex and non-transparent regulatory process (Posner 1971).

Another dimension of government regulation has focused on product and service quality and safety and workplace safety. These regulations include information disclosure rules, licensing and certification procedures, quality standards, etc. At the federal level these regulations are implemented by a long list of regulatory agencies like the Federal Trade Commission (FTC), the Occupational Safety and Health Administration (OSHA), the National Highway Transportation Safety Commission (NHTSA), the Consumer Products Safety Commission (CPSC), the Food and Drug Administration (FDA), etc. The regulations that these agencies issue are typically also subject to a “gatekeeper” at the Office of Management and Budget (OMB) called the Office of Information and Regulatory Policy (OIRA) which is supposed to review the benefits and costs of regulations proposed by Executive branch agencies. Indeed, much of the criticism one hears about “deregulation” is more criticisms of how regulatory responsibilities are enforced and costs and benefits calculated and balanced. The economists’ rationale for regulation in these areas turns on market imperfections associated with the provision and effective utilization of information necessary to make wise decisions; information costs, information processing costs, bounded rationality and transactions costs generally. As noted, in most of these cases the scholarly discussion turns less on whether there should be some type of regulation and more on identifying regulatory mechanisms that can help consumers and businesses to balance costs and

benefits of alternative levels of product quality and safety in risky environments characterized by imperfect and asymmetric information.

A third important area of government regulation is environmental regulation. And most of what we talk about in this area, at least at the federal level, has evolved over the last forty years. The federal government now regulates or can regulate, directly or indirectly, emissions of virtually everything into the air, water, and ground. Here again, the primary questions of interest have not been so much whether some type of regulation makes sense, but what is the most effective regulatory mechanism and how stringent should the regulations be? Answering the latter question in turn requires evaluations of regulatory costs and benefits and these are both uncertain and controversial.

A fourth (or fourth and fifth) area of regulation of contemporary relevance involves regulatory requirements of various kinds placed on corporations, financial intermediaries, financial products and the financial markets where they are traded. It is useful to divide these regulations into regulations (arguably) motivated by “investor protection” goals and those motivated by “prudential” regulation goals, though the two cannot be separated completely. The Securities and Exchange Commission (SEC), the Commodities Futures Trading Commission (CFTC), and the Financial Industry Regulatory Authority (FINRA, formed in July 2007) fall in the “investor protection” category and the Federal Reserve Board (Fed) and the Federal Deposit Insurance Corporation (FDIC) fall in the prudential regulation category.

The responsibilities of the “investor protection” agencies, or at least the impacts of their efforts to fulfill their responsibilities, overlap as they affect the structure, behavior, and performance of financial products, financial intermediaries, the markets in

which they trade these products, and the information available to investors about both the products and the counterparties they deal with. Many of the regulatory agencies and regulations can be traced back to the Great Depression and reflect rationales similar to product quality and safety and workplace safety regulations. These regulations include financial disclosure rules, accounting rules, corporate governance rules, securities registration requirements, and the certification of securities ratings agencies.

The rationale here is the view that absent good information about the financial attributes of firms that issue securities to the public, associated accounting standards, appropriate financial products, and rules governing the behavior of financial markets and who can participate in them, investors will be unable to make wise investment decisions. As these regulations have evolved, they have also reflected a view that the “little guys” need more help than the “big guys” who are better able to obtain and process the information necessary to make wise investment decisions. In reality, financial service firms have also had a lot of political power to exert influence over how these regulatory institutions have evolved either to protect themselves from competition or from regulations that they find objectionable.

“Prudential regulation” of banks and other financial institutions has been introduced to dampen macroeconomic shocks caused by whatever they are caused by, including systemic credit market dysfunctions. Prudential regulation flows from the view that unregulated markets for financial services will not adequately control bubbles, bank runs, systemic risks, financial market collapses, and the adverse effects of dysfunctional credit markets on the real economy. I must point out how the development, analysis and implementation of regulation in this area has been relegated to the field of

macroeconomics and, to a lesser extent, finance economists, including international finance economists. It is striking how little of the learning about economic regulation and quality and safety regulation that has emerged over the last 40 years based on research by microeconomists has crossed the bridge into macro/finance land. The market imperfections vs. regulatory imperfections framework for examining the case for regulation and the choice of regulatory instruments that I will turn to presently has barely seeped into the area of prudential regulation.

Let me note here that while I have classified the SEC as, arguably, an investor protection regulatory agency, its actions can have implications for prudential regulatory issues as well in that its decisions may have implications for the kinds or magnitude of macroeconomic dislocations that are the motivation for prudential regulation because they affect the information available to investors and some aspects of the behavior of corporations, financial intermediaries and financial markets. However, it is not clear that the SEC, staffed heavily by lawyers and accountants, and focused historically on accounting standards, disclosure standards, and legal enforcement actions, had the capability to properly evaluate the wider impacts of some of its regulatory actions (e.g. the decision to end of the “uptick” rule for short-selling in July 2007, the focus on unsophisticated investors, and the predominance of an enforcement mentality rather than a monitoring and analytical perspective). This is simply one example of the failure of the U.S. to develop a comprehensive regulatory framework for the financial sector with clear goals, responsibilities and appropriate authorities.

3. Market Imperfections vs. Regulatory Imperfections

How do we make an intellectually respectable case for implementing various types of government regulation, for removing them, or for changing the way we regulate? Competitive markets are powerful mechanism for allocating resources efficiently. In a sense, competitive markets combined with the basic legal institutions of modern developed market economies represent the null hypothesis against which the case for additional regulation must be tested. The case for government regulatory interventions must start, but not stop, with the identification and quantification of one or more market imperfections (Winston 2006). It is impossible to regulate intelligently, even under the best of circumstances, if one cannot clearly articulate what the nature of the market imperfections are whose costs you are trying to ameliorate.

However, most markets are characterized by some type of market imperfection in this sense. Few if any markets are perfect in the sense that they satisfy the assumptions underlying textbook models of perfect competition or the performance associated with the textbook models of perfect competition. But the social costs of these market imperfections vary widely from the trivial to the very large --- compared to the performance of hypothetical textbook perfectly competitive markets, and ignoring for now the direct and indirect costs of trying to mitigate these market imperfections. The fact that one can identify one or more market imperfections does not make a case for imposing government regulations on the relevant market unless one believes in the existence of the benevolent perfectly informed regulator that we all know well from economic theory. If the benevolent perfectly informed government regulator existed in reality we would regulate every market. She does not exist.

Thus, we must look at the other side of the equation. What are the imperfections and costs of government regulatory mechanisms and institutions? On balance, when the benefits of reducing the costs of market imperfections are compared to the costs of regulation, are we on balance better off? Regulation carries with it its own costs --- direct implementation costs, but more importantly, indirect costs that can make market performance even worse than it was when we simply lived with imperfect markets without trying to improve performance by regulating them in some way. One of the worst mistakes made by policymakers is to assume that government regulatory institutions pursue some well-defined public interest, are well informed, can easily and costlessly mitigate the market imperfections identified and are not influenced by interest group politics.

The decision to regulate and the decision to change regulatory policies, whether it is to eliminate a set of regulatory constraints or to change the form of those constraints, must turn on a careful balancing of the likely costs of market imperfections and the likely costs of alternative forms of regulation designed to mitigate them (imperfectly). This assessment should be dynamic, recognizing that technological change will affect consumer, firm, product, process and industry attributes and, in turn, that regulation can affect the rate and direction of the changes in these attributes, often negatively, but sometimes positively.

The right approach to thinking about regulation and deregulation was articulated very clearly by my undergraduate advisor Alfred Kahn: What is the best that we can do in an imperfect world (Kahn 1979)?

There is a fairly standard list of market imperfections that may lead to a case for some form of enhanced government regulatory intervention.

a. Market power, with so-called natural monopoly being an extreme case (Joskow 2007). The political case for regulation here is probably stronger than the “welfare economics” case because voters are not indifferent to the apparent first-order distributional consequences of higher prices charged by monopolies. That is the “rectangles” related to the distribution impacts of monopoly pricing are much more important politically than are the Harberger “triangles” that measure dead-weight losses. Of course, the welfare analysis becomes more interesting when we recognize that a monopoly is likely to expend some of the monopoly rents on costly strategies to protect its monopoly position.

b. Externalities arising from the positive and negative impacts of agents’ behavior on others that are not fully reflected in their supply and consumption decisions. Environmental regulation is the standard case. Externality problems are ultimately “missing market” problems arising from the transactions costs of internalizing these positive and negative impacts through bilateral bargaining in the presence of basic common law institutions of property rights, torts and contracts (Coase 1960). I suspect as well that prudential regulation of banks and other financial intermediaries is motivated by externality issues related to the social costs of systemic collapses of financial markets, though it would be helpful to have a clear definition of systemic risk, what causes it, and what its costs are in, order to better inform the design of both investor protection and prudential regulation institutions.

c. Information costs, information asymmetries and consumer/investor decisionmaking imperfections, bounded rationality and transaction costs generally (Williamson 1975).

d. Incomplete contracts arising from bounded rationality and transactions costs (Williamson 1985, Joskow 1987).

e. Corporate governance imperfections arising from the separation of ownership and control associated with large modern public corporations.

The last three all lead to well studied moral hazard and asymmetric information problems that can be very costly (problems that may exist naturally in some markets or can be created by government regulatory imperfections in others).

And the list of market imperfections goes on

But the imperfections and associated costs of government regulatory policies designed to mitigate these market imperfections must be carefully articulated and measured as well. These direct and indirect costs of government regulation must be part of any sensible cost benefit analysis of regulation, deregulation, or regulatory reform. As I have already emphasized, the perfectly informed regulator that rigorously pursues a widely accepted articulation of the public interest does not exist in reality. Good and effective regulation that improves upon even imperfect market outcomes is difficult indeed. This is a consequence of the realities of regulation in practice:

a. Even if they have the right goals, regulators are necessarily imperfectly informed about the firm and consumer attributes, including attitudes toward risk, that are necessary, even in theory, to regulate well (Laffont and Tirole 1993, Joskow 2007). Indeed, regulators are typically less well informed than are the firms that they regulate,

and often less well informed about the attributes of the consumers they may be seeking to protect, leading to the potential for costly distortions in costs, product attributes, and the rate and direction of innovation (regulator induced moral hazard)

b. The regulatory process is characterized by bureaucratic costs, can take long periods of time to make decisions, and is inherently conservative in its treatment of new product and process technologies, risk, and new and better ways of regulating. Regulators also easily become self-protective of the traditional regulatory mechanisms that characterize the status quo of the importance of their places in the world. This becomes more and more of a problem as regulatory agencies age.

c. The regulatory process is subject to interest group capture, political influence, and tremendous pressure to engage in (hidden) taxation by regulation (Stigler 1971, Posner 1971, Noll 1989). The modern field of political economy based on rational actor models of political behavior did not start with studies of regulation by accident. This phenomenon goes well beyond simplistic models of capture by regulated firms and reflects the fact that regulatory agencies have things that they can do to help one interest group and harm others, naturally leading them to become targets of political competition. This phenomenon is exacerbated over time as young “expert” regulatory agencies become dominated by commissioners and senior staff who have come up through the political process and are sensitive to the same political considerations as are their sponsors in the executive and legislative branches. In my view, this has become a more serious problem over time as “independent” regulatory agencies once heavily populated by reasonably independent technocratic experts with clear goals have increasingly come

to be populated by commissioners and senior staff with narrower political goals ---- whether it is on the right or on the left.

A useful framework for evaluating proposals to regulate, to deregulate and the change the way be regulate can be captured by asking and answering a set of simple questions, though providing precise answers to these questions may often be quite difficult. I will articulate the questions from the perspective of proposed new regulations but a similar set of questions can be applied to deregulation and adoption of new regulatory mechanisms.

- Precisely what are the market imperfections that the proposed regulations are trying to fix and what are the causes of these market imperfections?
- What are the social costs of these market imperfections and who bears them?
- Exactly what would be regulated and how?
- What alternative regulatory arrangements may be available to mitigate the market imperfections and why is one likely to be better than the other?
- What information and authority would a regulator need to implement the proposed regulations effectively?
- How much will the costs of market imperfections be reduced if the proposed regulations are implemented successfully?
- What are the likely direct costs of implementing the regulatory framework?
- What potential indirect costs may be incurred by implementing the proposed regulations given imperfect and asymmetric information on the part of regulators with good intentions?

- On balance what will be the likely net benefits or the likely net costs of the proposed regulations be in practice?

4. What is the record?

With all of the recent hysteria about the evils of “deregulation,” one would think that the market liberalization and regulatory reforms of the last decade have imposed enormous costs on the economy. To the contrary, with a few exceptions just the opposite has been the reality and some of the most significant costs have resulted from too little deregulation, privatization, and regulatory reform (Peltzman and Winston 2000, Winston 1993, Joskow and Rose 1989, Joskow 2004).

a. Price and Entry Regulation

Let me start with so-called “economic regulation.” By “economic regulation” I refer to the various forms of price and entry regulation typically implemented by state and/or federal regulatory agencies and sometimes by municipalities. It is useful to think back to 1978 to recall how much price regulation and often companion restrictions on competitive entry existed in the U.S. at that time: crude oil and petroleum products; natural gas production, transportation and distribution; surface freight transportation by trucks, trains, and barges; commercial passenger and freight airline service; telecommunications services; electricity generation, transmission and distribution; cable television services; residential rents; milk prices (as well as broader agricultural support policies to keep prices from falling); interest rates on bank accounts, etc..

Almost every one of these industries, services or products has been subject to dramatic changes in the regulatory framework that existed only 30 years ago:

deregulation of prices and entry, better regulation of remaining regulated segments, and supporting industry restructuring programs. Overall, the results have been very good from a broad economic welfare perspective (Winston 1993, Peltzman and Winston 2000, Joskow 2004). While there are things that might have been done better, and potential for further reform still exists in some sectors, and there were some unanticipated consequences, both good and bad, I find it hard to imagine that any right thinking person would want to reverse these changes and return to the heavily regulated era of 1978.

Of course there have been unanticipated consequences associated with some of these reforms; some good and some bad. Where there have been problems they can generally be associated with the poor regulation of key network segments that competitive markets depend upon to operate efficiently and regulations that inefficiently restrict the development of competition in the deregulated segments. To oversimplify, there was probably too little deregulation of prices and entry, too little supporting regulatory reform and too little supporting industry restructuring in the sectors that have experienced transition problems.

Has everyone been made better off? Of course not. The business traveler whose airfare was paid by his employer has not benefited from airline deregulation. The wheat shipper close to a main line who could get rail transportation service at below-cost regulated prices from a bankrupt railroad is not better off. The local television stations that once had to compete for viewers and advertisers only with a very small number of other local channels for viewers and advertising and now face competition from distant signals and new channels delivered over cable systems are not better off. High sulfur

eastern coal mines are worse off because they now face more intense competition from low-sulfur western coal, at least partly as a consequence of railroad deregulation.

Making everyone better off from regulatory reforms is not the right standard. If it were, we would never change anything. It just tells us why some groups favor regulation and oppose deregulation and vice versa. But when you add up the long term benefits to consumers, to producers, including the effects of product and process innovations, the economy overall is generally much better off as a consequence of deregulation of prices and entry and associated regulatory and institutional reforms in most of these sectors.

In the area of economic regulation it is convenient to consider two groups of industries: (a) those which were or potentially were structurally competitive in all horizontal segments, where “competitors” are properly defined, and (b) those which had both competitive horizontal segments and, at least initially, one or more horizontal network segments that had natural monopoly characteristics and would require some type of continuing regulation to allow competition to flourish in other horizontal segments.

In the first group we have oil and natural gas production, trucks, trains, and barges shipping freight, airlines transporting passengers and freight, etc. These are the cleanest cases of simple deregulation. The results have generally been as anticipated: improvements in productivity, faster technological innovation, more efficient prices (not necessarily lower prices), better quality service, increased investment to expand supply, etc. (Peltzman and Winston 2000, Rose 1987, Debande 1999, Belman and Monaco 2001, Hubbard 2003).

In this regard, people do and will raise questions about airline deregulation. This has not worked out exactly as had been anticipated. People seem to have fond memories

of the quality of service provided under the old regulatory regime, but forget how costly it was. Since 1978, airline productivity is higher, costs per seat mile are lower, airfares are lower, load factors are much higher, and the quality of service is lower, though many fail to recall that one of the arguments for deregulation was that load factors, service quality, and the associated costs were too high under regulation (Morrison and Winston 2000). I don't think that it was expected in 1978 that the extensive price discrimination (non-pejorative) that has been observed would emerge or that a competitive equilibrium for airlines would be characterized by a smaller number of large national airlines rather than a much larger number of small airlines.

We understand much better today the attributes of imperfectly competitive markets with scale and network economies and diverse consumer preferences for quality than we did in 1978. I don't think that this better understanding would have affected the normative case for deregulating prices and entry for airline service. However, it might have changed other policies that would have provided better infrastructure and institutional support for a competitive airline industry. The most costly disappointments of price and entry deregulation in airlines can be traced to some other institutional factors. Air traffic has expanded dramatically over the last 30 years. Passenger enplanements have increased by about 180%. Departures (and presumably landings) have increased by about 125%. Yet airport capacity has hardly expanded at all, inevitably leading to more crowded airports and delays. Only one new major hub airport has been built since 1978 (Denver). It takes 10-15 years to build a new runway at a major airport. Three new runways were completed in 2008, after roughly 12 years of planning, regulatory reviews, and construction. The government has been reluctant to

implement sensible policies to ration scarce airport capacity so we get queues and long delays. We have an antiquated air traffic control system owned and controlled by an agency of the federal government that undermines the efficient use of scarce airspace and further contributes to delays, especially when weather is poor. Other countries have commercialized their air traffic control systems with superior results (McDougall and Roberts 2009). We have a global commercial air transport industry but the U.S. and most other countries place major barriers in the way of creating global air carriers that can compete across the globe with one another. In short, we have not created the supporting government controlled and regulated network infrastructure that would be most desirable to support a competitive commercial air traffic market and have not fully opened up entry to potential competitors from other countries.

Finally, policymakers have not been aggressive enough in imposing and implementing regulations that require the airlines to be more transparent about what their responsibilities are when they enter into a contract with a customer --- called a confirmed airplane ticket. When I buy seat M16 at Symphony Hall in Boston for a Saturday night performance I expect that my seat will be there when I arrive and not a “sorry we are overbooked” sign. At least some of the trials and tribulations of air travel would be more tolerable if the terms and conditions of carriage were transparent and applied consistently. And the focus of “reregulation” has properly been on something like a flier’s bill of rights, though general transparency requirements might be all that is needed.

The bottom line is that I don’t think that a good case can be made for reregulating the commercial airline industry as it was in 1978. I do think that a good case can be made for doing a better job with the necessary infrastructure for supporting competition

and for requiring more articulation of consumers rights associated with the tickets that they purchase.

Another case about which questions are raised is deregulation of railroad rates, entry, exit and the extensive reorganization of the railroads that has occurred through merger and exit since 1980 (Grimm and Winston 2000). These mergers have generally lead to lower costs (Bitzan and Wilson 2007). Transport rates for important classes of shippers have declined (Vachal et. al. 2006). Some shippers argue that they are being overcharged by the railroads in the sense that the railroads are charging more than the “competitive level,” whatever that may be. Maybe they are in some cases where rates have risen. Intra-modal and inter-modal competition faced by railroads is certainly not perfect competition. Moreover, given the economic characteristics of railroad costs, there are necessarily varying degrees of market power observed, in the textbook sense that prices for some services are greater than their short-run marginal costs. However, a price structure involving second and third-degree price discrimination is a necessary attribute of an industry with these attributes both to satisfy a breakeven constraint and to do so efficiently.

Moreover, the earlier regulatory regime is not a model of good performance. It led virtually every U.S. railroad into bankruptcy, halted their incentive and ability adequately to invest in their networks, modern rolling stock, and stymied innovation, including more effective integration with truck transportation. These adverse consequences of regulation were enormously costly to our economy. Even after deregulation, railroads have not, overall, earned excessive rates of return. And so-called captive shippers still can make their case for lower rates if they choose to do so, and two

years ago, the Surface Freight Transportation Board adopted new rules to reduce the cost and time of litigation associated with these residual railroad rate cases. The railroad industry, perhaps more than others, also encountered integration problems associated with the extensive merger and restructuring wave that was expected as the industry rationalized. Perhaps the deregulation process could have anticipated this better, but I doubt it. Overall, railroad deregulation has been a big win for the U.S. economy and for the environment.

Let us turn now to the other group of industries subject to deregulation of prices and entry, restructuring requirements, and network regulatory reform. These are telecommunications, natural gas transportation and distribution, cable TV, and electric power. It would be wrong to characterize the reforms that have been introduced in these sectors over the last two or three decades as simply “deregulation.” This oversimplifies a much more complex process of industry structure and regulatory reform that took place over many years. Calling it deregulation seriously understates the nature of the reform challenge and what has been accomplished as a result of these reform programs.

I do not have space here to engage in a detailed discussion of all of these industry cases. They share some common themes, though Cable TV is probably a special case with its own peculiar history of being in Brownian motion between regulation, deregulation, and various combinations of both. Under the old regulatory regime each of these sectors was characterized by extensive vertical integration from the upstream production to the downstream delivery level either through common ownership or through very long-term regulated contractual arrangements. The entire chain or production was subject to price and entry regulation either by federal or state regulators

or sometimes by both. The argument for regulation was generally that there was a natural monopoly or oligopoly problem that called for regulation to mitigate real or imagined market power.

However, during the 1970s and 1980s, there was a growing recognition that while some vertical segments of these industries (e.g. natural gas transportation) might have natural monopoly characteristics that might indicate a need for continuing, perhaps better, price and entry regulation, other segments (e.g. natural gas production, processing, marketing, and storage) were or could be quite competitive. The basic reform model for regulated industries with these characteristics has been (a) to separate (structurally or functionally) the potentially competitive segments from the monopoly/oligopoly network segments that would be regulated, (b) to remove price and entry regulation from the competitive segments, (c) to unbundle the sale of regulated network service from competitive services, (d) to establish transparent prices for access to and use of the network, and (e) to allow end-users (local distribution companies or consumers in the case of gas and electricity, and end-use consumers in the case of telecommunications) to choose their suppliers of competitive services and have them arrange to have it “shipped” to them over an open access network with a regulated cap on the prices for providing transportation service.

This is the basic regulatory reform model applied to most of these industries, though the devil is in the details and the details vary from industry to industry. Moreover, as time passes, technology change may and has in many cases undermined the initial assumptions about where the “natural monopoly” segments begin and end. The prospect of product and process innovations requires, in theory, a regulatory framework

that encourages innovation and can adapt quickly to them. This kind of dynamic regulatory framework has been difficult to design and implement in practice and represents the greatest cost of continuing regulation of residual segments of these industries. Sunset provisions might provide just the kind of incentives regulators need to take these kinds of changes more seriously.

The regulatory and structural reforms that have been applied to the natural gas industry are not widely publicized, understood, or even studied these days (MacAvoy is an exception, e.g. MacAvoy 2000). This is unfortunate because the natural gas industry provides an excellent model for how regulatory and structural reforms can be implemented successfully in industries with these characteristics. Some history is required. Municipalities and some states began regulating local gas distribution companies during the mid-1800s. Most of these local gas companies manufactured low-heating value gas from coal for local distribution primarily for use in lighting and cooking. As large deposits of natural gas were discovered, typically in conjunction with the exploration for and production of oil, and long-distance high pressure pipeline technology advanced, interstate pipeline networks began to be built to transport what was often “waste gas” that was being flared in the field from production regions to consuming areas. The early development of the natural gas industry was largely unregulated from a price and entry perspective.

The federal government (the Federal Power Commission (FPC) which became the Federal Energy Regulatory Commission (FERC)) began to regulate the price of interstate pipelines service beginning in the late 1930s as part of the general expansion of federal regulation to public utilities and holding companies. Interstate activities were becoming

much more important in the electricity, natural gas, and telecommunications industries and technological change fostered expansions in the geographic expanse of trade beyond state boundaries. Federal regulation filled a perceived regulatory gap resulting from state regulation of these industries. At that time, interstate pipelines acquired gas through contract from independent or affiliated producers at unregulated market prices and resold it to local distributors and large customers under contract. Local distribution companies then resold the gas to end-use customers at state regulated prices, passing through the costs they paid for gas they purchased from pipelines.

The natural gas industry expanded rapidly after the Second World War and new pipelines brought growing volumes of gas to cities in the Midwest, Northeast and other areas that had previously relied primarily on coal and oil for heating and as a boiler fuel. Natural gas was cleaner, more efficient and more convenient to use than coal, oil or manufactured gas and where it was available it became the fuel of choice in many end-use applications and in the generation of electricity in areas that did not have access to cheap coal.

The increasing demand for natural gas led to higher gas prices as a commodity that was essentially a waste product associated with oil production gained significant value in its own right as the demand for it grew rapidly. Local gas distribution consumers and large end-use customers argued that federal regulation should be extended to the price of natural gas produced in the field in order to keep prices from rising and allowing gas producers to earn competitive market rents higher than they had ever dreamed. The Supreme Court agreed with the arguments for regulating the field price of natural gas in the *Phillips Case* in 1954 (347 U.S. 672). The FPC was then charged with

regulating the field price of natural gas as well as the prices for transporting it through the interstate pipeline system. It started to embark on this quest by trying to set cost-based regulated prices produced by thousands of producers located in many different production basins. The FPC did not get very far before concluding that producer by producer regulation was not feasible because there were too many producers and a lengthy cost-based regulatory process. The FPC then adopted what it thought would be a less burdensome and more sensible approach by setting cost-based prices for all of the gas produced in large production basins from reserves discovered in different time periods. That is, the FPC held “area rate proceedings” to establish regulated prices for gas discovered at different times in individual gas producing areas. These area rate proceedings also took many years. The price of gas delivered by pipelines would then involve the “rolling together” of the varying regulated prices determined through this process.

This regulatory scheme virtually assured that prices paid by pipeline for gas produced in the gas fields would be too low to clear supply and demand. And by the 1970s, serious natural gas shortages emerged both in the form of rationing of supplies to existing gas customers and denying hookups to new gas customers. The primary problem was that the regulation of the field prices of natural gas kept these prices from rising sufficiently to reflect supply and demand conditions. The shortage problems got even worse as oil prices rose in 1974 and again in 1979-81 as consumers sought to switch to low regulated priced gas whose supply was limited and could not match demand. It was cheap but lots of consumers couldn't get it at any price due to both price regulation and restrictions on resale of incumbent rights to regulated price natural gas.

The primary beneficiaries of natural gas price regulation at that time were Canadian producers who could sell into the U.S. market at high unregulated prices and customers with legacy gas contracts who paid prices well below market clearing levels. These contracts could not be resold and were slowly coming to an end.

The Natural Gas Policy Act of 1978 began the process of deregulating the field price of natural gas. This process was accelerated during the 1980s and by the early 1990s, natural gas field price regulation was completely gone. However, during a long transition period, the same molecules of natural gas were being sold in the field at many different prices depending upon when FERC-regulated gas supply contracts between producers and pipelines, between pipelines and distribution companies, and between pipelines and large industrial and electric utility customers were signed. These contracts were rolled together to give consumers a blended price that was initially lower than the then prevailing market price for deregulated “new” natural gas supplies available to clear the market. The shortages continued.

Then in the mid-1980s, the unregulated market price for “new” natural gas fell dramatically and stayed at much lower levels than those that prevailed during the early 1980s for many years. As unregulated natural gas prices fell dramatically, regulated contract prices were now often higher than unregulated market prices. Distribution companies and large direct pipeline service customers argued that FERC should reset the contract prices to reflect lower natural gas prices or, instead, pipeline customers should be permitted to reject these contracts, be permitted to buy gas directly from producers and arrange separately to have the gas shipped to them over the same pipelines using unbundled FERC regulated pipeline transportation charges. The producers with the high-

priced contracts and the pipelines with the obligations to take and pay for gas under these contracts were not impressed with the case for market-based pricing.

And so began a long process through which the FERC unwound the web of contracts linking producers, pipelines, and distribution contracts, unbundling transportation service from the production and marketing of natural gas, reforming the regulation of pipeline transport rates by setting generous price caps and encouraging negotiated transportation contracts. The states also began to require that local distribution companies use transparent competitive bidding programs to acquire gas supplies separately from pipeline services. Some states followed by unbundling local distribution service for smaller retail customers as well.

After a very long process of “deregulation,” regulatory reform and industry restructuring, we now have a reasonably well integrated North American market for natural gas supplies (Cuddington and Wang 2006), a pipeline system that has grown and adapted to changing supply and demand conditions, a more efficient end-use pricing system in which delivered gas prices are now more closely aligned with changes in supply and demand conditions for natural gas --- whose price has varied by a factor of three in the last year alone ---, growing competition in the pipeline sector as investors are free to seek to build new capacity to service new gas supply regions with few regulatory hurdles --- as they are doing as we speak to provide the transportation service for the growing supplies of natural gas in the Rockies and from gas shale deposits in Texas, the South and Appalachia which will reduce pipeline congestion and better integrate the far West market with the rest of Canada and the U.S. There has been innovation in gas exploration and production techniques, dramatically increasing North American gas

supplies above what was expected only a few years ago, as well as innovations in pipeline construction and operations, and natural gas storage. This mixture of deregulation, industry restructuring and light handed regulation of pipeline transportation and storage has been a great success.

I will turn very briefly to a few observations about the electric power sector. I have written a lot about deregulation, industry restructuring and network regulatory reform of electric power sectors so my views are well known (Joskow 2000, 2006, 2008). Accordingly, I will be brief. The electric power industry can be restructured and its regulation reformed by applying a model similar to the successful model that has been observed in the natural gas industry adapted to reflect the special attributes of electricity. This type of reform program was adopted in England and Wales in the 1990s and works very well. It began to be adopted in the U.S. in the late 1990s, but was slowed down considerably after the California electricity crisis in 2001. We now have some parts of the country with fully liberalized electricity systems --- New York, most of New England, Texas --- those with pretty much the traditional system of regulated vertically integrated monopoly, and those somewhere in between.

This bizarre mix of competition and regulation for suppliers using the same physical electric power network is inefficient and establishes a poor platform for new proposed energy and environmental policy initiatives targeted at the electric power sector. The problems here are not technical or economic. They are political, as incumbents resist restructuring, deregulation and regulatory reform, as states seek to protect their regulatory prerogatives, and as a consequence of eight years with an administration that has given little if any support for this kind of “deregulation” program

in the electric power sector, despite the fact that Texas has perhaps the most complete and successful electricity liberalization program in the country. President Bush brought an outstanding individual from Texas to lead FERC's deregulation program, that advanced significantly during the Clinton administration, but did not aggressively support his efforts. The one thing one can't accuse the Bush administration of is aggressive support for deregulation in the electric power sector.

Let me turn briefly to telecommunications. This has been a long and tedious process of introducing competition into what was an end-to-end regulated monopoly (including a monopoly over customer premises equipment and network switching equipment) that goes back to the 1970s (Crandall 1991). The conventional wisdom at that time was that that the old system worked well and was quite innovative. I will not repeat the telecommunications restructuring, deregulation and regulatory reform story here since, unlike the natural gas story, it is well documented in the literature (Crandall 1991, Joskow and Noll 1999, Crandall and Hausman 2000). There are some lessons to be learned, however:

- a. The original reform model, and the model upon which the antitrust cases against AT&T and FCC policies to encourage competition were based, assumed that the local network was a natural monopoly and that promoting competition in other segments of the industry, required extensive regulation of the terms and conditions of access to the local network (Joskow and Noll 1999). Designing the terms and conditions of access to the local network was relatively straightforward when it was focused on giving consumers access to competing suppliers of intercity service, though it required unwinding a complicated web of cross-subsidies from intercity service to local service

and from urban consumers to rural consumers. In the end it was easier to do in theory than in practice, especially during the period when AT&T had both to compete with other suppliers of intercity service and provide them with access to their intercity network at regulated prices to facilitate their ability to compete. It was messy but that's what had to be done until competing intercity networks could expand.

The challenge of designing policies to promote competition at the local network level was more significant, more complicated, and plagued by more missteps (Crandall and Hausman 2000, Hausman 1999, Vogelsang 2003). At the very least we must admit that regulating the prices and terms and conditions of access to individual unbundled local network elements was both technically challenging and was implemented poorly. Indeed, the whole idea that there are likely to be social benefits from encouraging competitors to compete at the local network level largely by buying and reselling all of the elements of the incumbent's network is questionable, unless it were part of a rapid transition to facility-based competition. Getting the local network element prices right was almost impossible, and the disincentives to investment resulting from getting the prices wrong potentially very costly, discouraging innovation (Hausman 1997). At worst, the entire exercise was doomed to failure.

b. In fact, by and large, competition to provide local service came from real facility based innovations that were largely unanticipated when the original reform model was conceived, rather than through the implementation of unbundled network elements access pricing policies (Swan and Loomis 2005). The primary competition for local service now comes from cable companies and from wireless service. The unbundled network elements program led to little technological improvements in the local networks,

and may have retarded such innovation. In particular, it probably slowed down investments in local networks that would have enabled the local telephone companies to compete effectively with cable companies to provide high-speed broadband service and video services sooner than has been the case.

The lesson here is that any regulatory reform program must anticipate that there may be transforming innovations on the supply and demand sides and should be structured to adapt to them quickly. The difficulty of designing regulatory processes that have these attributes must be considered to be one of the potential dynamic costs of regulation. Regulatory mechanisms that restrict the development and diffusion of new and better products and services can be very costly. Facilitating technological innovations that reduce costs or bring new and better products to market convey “first order” efficiency benefits to the economy (“rectangles” in cost-benefit space), while static monopoly problems per se are “second order” efficiency losses (“triangles” in cost-benefit space).

I will conclude this section with a few observations about the regulation of Cable TV (Crawford 2000, FCC Fact Sheet 2000). This industry was started as an unregulated industry by entrepreneurs who sought to bring television service to rural areas where it was unavailable. For example, I am told that cable TV was brought to Ithaca, New York by the owner of a local appliance store who wanted to sell television sets to the people who lived there and could not get direct over-the-air TV reception. Because the cable companies had to cross public rights of way and use poles owned by the telephone or electric companies they needed a municipal franchise, though it did not have to be exclusive, and pole attachments rights from these other utilities, which were in turn

regulated by state public utility commissions. Initially, the interest in cable TV systems in large urban areas, where there were typically three or more local stations was quite limited because the cable companies had little to offer except to rebroadcast the signals of TV stations whose signals they could receive by putting a big antenna on a hill.

As local cable systems expanded in remote areas and the local populations bought television sets, concerns began to be raised about cable service prices. At the same time cable operators making substantial investments in new facilities were interested in having their franchises become exclusive. So, began to emerge a mutually beneficial local franchising process where municipalities gave cable operators exclusive franchises, sometimes through competitive bidding, in return for price guarantees, price adjustment procedures and other goodies for the municipalities (e.g. to wire government building for free and to offer a special municipal channel).

Technology marched on. Cable operators discovered that they could import more distant signals by using microwave technology, expand the quality of service, increase demand, and raise prices. The availability of television signals also expanded after the federal government opened up portions of the UHF spectrum to television. Cable operators also discovered that they could offer additional services --- movies --- for a separate fee. The innovation adopted by HBO to deliver its movie and sports service via satellite to cable systems that installed the necessary reception equipment greatly reduced the costs and expanded the diffusion of “premium” movie services. Ted Turner soon followed by putting his local independent broadcast station in Atlanta (WTBS) on the satellite as well, charging a fee to cable operators for retransmitting it. The additional programming made cable service of greater interest to viewers in cities which had

multiple free over-the-air broadcast service and new cable systems began to spread to more and more cities.

The use of microwave and satellite transmission and the rebroadcast of signals from broadcast stations got the federal government into the act. And eventually, the FCC (prodded by Congress) decided that a new technology was emerging that had both (real or imagined) natural monopoly characteristics and threatened the economic models of local “free” broadcast stations by creating more competition. While this competition was good for consumers it was not good for the local stations which were well-represented in Washington and used their political influence to thwart the rapid growth of competition from cable systems. So the FCC began to regulate the services that cable operators were permitted to offer and eventually was charged with regulating cable service prices.

In the mean time, new cable-only channels began to emerge as the technology for distributing many more channels on cable networks advanced and the number of subscribers to cable service increased as well. These new services were attractive to consumers, increased the demand for cable service, and further threatened the broadcast networks and local stations. Prices for cable service rose as the quality of services provided increased. Broadcast networks and local stations faced even more intense competition. The FCC first expanded regulation of cable television services and then began to relax these regulations. In 1984 Congress stepped into the act and passed the Cable Television Policy Act of 1984 which adopted a broad set of regulatory restrictions on subscriber prices, ownership arrangements, franchise provisions and renewals, channel usage, etc. with the goal of reducing the rate of increase in subscriber prices and promoting competition. However, subscriber prices continued to increase rapidly after

the 1984 Act was passed and the hoped for competition did not emerge. In 1992 Congress passed the Cable Television Consumer Protection and Competition Act with further tightened FCC regulation of cable TV prices (Crawford 2000). The expectation was that the new regulatory framework would lead to the average subscriber price falling by 10%. Instead the average cable bill rose. The FCC imposed a further reduction in per channel charges in 1994 with limited impact and then began to phase out the ineffective regulation. In 1996, the Telecommunications Policy Act phased on out subscriber rate regulation under the assumption that competition from telephone companies and wireless provided would emerge to constrain the market power of incumbent television companies. During this entire period of time cable system capacity grew rapidly along with the number of programs available to subscribers. The share of households subscribing to cable television continued to increase. Facility-based competition from local telephone companies and wireless technologies was slower to emerged than anticipated, but provisions in the 1996 Act that reduced barriers to entry ultimately helped to stimulate it.

There are a number of lessons here as well. First, regulating in the context of rapidly changing service quality availability is very difficult and often counterproductive. Second, incumbents will spend large amounts of money to retard competition. Third, imperfect competition is likely to yield superior results to price and entry regulation. Finally, the most important regulatory innovations were those that promoted competition rather than those that sought to control real or imagined market power problems.

b. Environmental Regulation

There are few economists who do not believe that environmental externality problems create a good case for government regulation of emissions into the air, water and land that harm the health and/or wellbeing of individuals or increase costs for businesses that must cope with emissions affecting the air, water, or land. I realize that some believe that it can all be left to common law enforcement of property rights and use of liability rules, but I think that is pretty much a fringe view.

The primary economic controversies regarding environmental regulations turn on questions of what emissions should be regulated (is the likely harm greater than the direct and indirect costs of regulation?), how stringently should emissions be controlled (what level of emissions balances the environmental harm and the costs of mitigation?), what mechanisms should be used to regulate (source specific standards, prices (emissions taxes), quantities (cap and trade), hybrid systems, etc.), and how should the rules be enforced? There are legitimate differences of opinion on these questions and this necessarily can lead to a lot of controversy. However, characterizing these controversies as “regulation” vs. “deregulation” rarely makes much sense (though there are certainly important cases such as greenhouse gasses and mercury where the “regulations” vs. “no regulation” bridge must be crossed first).

The first two questions are necessarily difficult to answer with precision because the measurement of environmental harm and mitigation costs are necessarily uncertain and subject to change over time. However, I think that it’s fair to say that most economists believe that we should at least try to perform the best cost benefit analysis that we can given the information available and to leave room for policy adaptation as

more information is obtained. We must recognize, however, that there is a lot of disagreement over how these cost-benefit analyses can best be done and the values that should be placed on key variables (e.g. value of a human life, morbidity costs, recreational values, non-use values, revealed preferences vs. contingent valuation methods, etc.). Or look at the controversies between distinguished economists about the proper discount rate and utility function parameters to use for evaluating the trajectory of constraints on GHG emissions (Nordhaus 2007, Weitzman 2007, Stern 2007). New scientific and epidemiological evidence may lead to higher or lower estimates of the damages than originally thought as time passes. We also know from experience that with the right incentives the costs of mitigation have often turned out to be lower than was originally thought as innovative control responses are identified and utilized.

The one area where there is substantial agreement among economists is with regard to the best mechanisms for controlling emissions given targets for how tight the constraints should be. The regulatory mechanisms that has historically been favored by environmental regulators has been source-specific emissions standards and/or source-specific technology standards. These regulatory approaches fail to recognize that there is often significant diversity among sources in their costs of reducing emissions, that new and better technologies may be induced to be developed and deployed with the right incentives, that meeting aggregate emissions reduction targets and/or mitigation costs using this approach depend heavily on assumptions about industry developments over time (e.g. the rate of growth in demand for the product, domestic production vs. imports), and that this approach has tended to be litigation intensive, delaying achievement of environmental goals.

Instead, economists have come to favor the use of “market-based mechanisms” to control emissions where the implementation costs are not excessive: emissions charges, cap and trade systems, hybrid systems combining cap and trade with a backstop price for more emissions permits. These mechanisms all involve creating a price for emissions and then allowing those covered by the program to adapt to these prices in the most economical fashion available to them. There is a well developed theoretical literature on the factors that favor price, quantity or hybrid approaches (Weitzman 1974, Roberts and Spence 1992). The choice turns on the nature of the uncertainty about the benefits and costs of mitigation and the shapes of the benefit and cost functions. Despite the teachings of this literature, the choices between market-based approaches have turned in practice primarily on political considerations (Joskow and Schmalensee 1998). The public does not like direct taxes and market based approaches appear to be easier to get adopted if they are formulated as cap and trade systems (perhaps with a backstop price).

We now have a lot of experience with cap and trade systems in the U.S. drawn from programs for eliminating lead in gasoline, controlling sulfur dioxide emissions and NO_x emissions from power plants (Ellerman et. al. 2000). We also are gaining experience with the application of a cap and trade system to control emissions of CO₂ in Europe (Joskow and Ellerman 2008). These systems work well in terms of reducing costs, encouraging diverse and innovative mitigation responses, and meeting environmental goals on schedule. They are also well-adapted to new information about the relevant costs and benefits since the government can buy allowances and retire them to tighten constraints or increase the supply of allowances to reduce the constraints.

The notion that there has been “deregulation” of emissions into the air, water, and land is nonsense. Nor is it the case that the quality of the environment has generally deteriorated in the last couple of decade. At least for the traditional air emissions covered by the Clean Air Act (i.e. excluding greenhouse gasses), the record is clear that emissions have declined and air quality has improved over the last 15 years, continuing a trend that goes back to 1970. And except for ozone (8-hour standard), micro-particulates and (now) mercury, virtually the entire population lives in areas that meet the national ambient air quality standards. Stratospheric ozone is recovering and concentrations of ozone depleting chemicals is declining. Reversing a long-term trend, wetland acreage increased in the last decade. Drinking water quality has improved. Hazardous waste generation has declined significantly. Forest cover has increased in the U.S. There are, no doubt, areas where environmental quality has deteriorated (e.g contamination of fish), though the EPA has been particularly bad at developing a wide range of useful environmental indicators and collecting the time series data to understand relevant trends, but, putting aside greenhouse gas emissions, the general trends are positive. Rather than arguing about “deregulation” the real issues are whether the constraints on emissions are too tight or too lenient and whether we are meeting environmental goal as efficiently as possible.

So, “deregulation” of emissions that harm human health and welfare must be a code word for something else. Perhaps it is the failure of the Bush administration to further tighten the national ambient air quality standards. Or its failure to embrace a more aggressive GHG mitigation program, though it’s hard to call this deregulation since GHG were never regulated. It also probably reflects a reaction to what is perceived to be “stealth deregulation” through “lax” monitoring and enforcement and tighter cost-benefit

standards applied by OMB. “Stealth deregulation” is wrong and properly criticized if it involves a failure to enforce the law. The government should enforce the law faithfully and efficiently whether it likes it or not and go through the administrative procedures, court reviews, and seek legislative if it seeks to change the way it implements the law. However, difference in views on the relevant benefits and costs should be expected.

Most regulatory statutes give the executive branch and independent regulatory agencies substantial discretion in how they regulate, what they regulate, and the resources they devote to particular regulatory activities. Both Congress and the courts have oversight over these decisions and constraint this discretion. Nevertheless, different administrations have different views on a wide range of regulatory policies, including environmental policies, and it should not be a surprise that the implementation of regulatory responsibilities will change over time with the broader policy and ideological views of different administrations. Characterizing the exercise of this discretion as “deregulation,” is not productive. Better to call it inadequate, excessive, or ineffective regulation as the case may be.

c. Quality and Safety Regulation

Perhaps the most controversial areas of federal regulation are the statutes and agencies that have responsibility for regulating the quality and safety of products and services and the regulation and enforcement of workplace safety criteria. The continuing interaction between administrative regulation and tort litigation further complicates the situation. These are areas also the agencies whose behavior and performance have been studied least over the last decade (Viscusi 2006 and Sunstein 2002 are exceptions) and

where agencies have the most discretion, are most susceptible to wide variations in implementation strategies, as well as to stealth deregulation. While the federal government has been engaged in quality and safety regulation for many years (e.g. the FDA was created in 1906), its responsibilities increased significantly during the 1930s and again 1970s. We now have a long list of federal and complementary state regulatory agencies responsible for product quality and product and workplace safety issues. They include the consumer protection bureau of the FTC, the CPSC, FDA, NHTSA, OSHA, NRC, etc. Few of these agencies have ever received high marks for their efficiency or effectiveness in actually improving product quality and product and workplace safety (Joskow and Noll 1981, Viscusi 2006). Their role has been further complicated in some cases by controversies over the respective roles of administrative regulation and tort litigation.

While the statement of the missions of these agencies is sometimes broad and bold, it is often unclear exactly what metrics should be applied to measure their success in achieving them. Exactly how do we measure the effects of these agencies efforts to regulate quality and safety? It is not clear. Have reduced budgets, staffing , and the issuance of new standards by these agencies led to significant declines in safety? This is far from obvious. While the readily available evidence is limited, most of the available indicators are positive. For example, we know that commercial aircraft fatality rates have continued to decline from very low levels over the last 8 years, traffic fatality rates have been roughly constant since 2000 and roughly half of what they were in 1980 (motorcycle rider death rates have increased), mine fatalities have declined and citations and fines for mine safety violations have increased. Railroad-related injuries and

fatalities have declined since 2000. OSHA inspections have been roughly constant while mine inspections have decreased. However, early criticisms of the safety agencies indicated that they focused too much on inspections and not enough on safety standards that would make a difference, so perhaps this is not a good metric. Occupational deaths have declined by 62% and occupational injuries by 42% since 1971 (when OSHA was created), and fatality rates continued to decline in the last decade, but how much of this is due to the activities of OSHA and companion state regulatory agencies and how much to other factors (e.g. changes in the structure of the U.S. economy, automobile and truck safety standards, etc.) is not known. Moreover, fatality rates for self-employed workers who general fall under OSHA's radar, are much higher than for other workers and transportation-related injuries accounted for over 40% of the total work-related injuries in 2007.

The fundamental problem here is that it is hard to regulate product quality and product and workplace safety well. There are over 15,000 product categories subject to CPSC jurisdiction and millions of workplaces and thousands of job categories are covered by OSHA regulations. Consumers and workers have diverse preferences regarding risk, product quality, tradeoffs between cost and quality, tradeoffs between wages and safety, etc.,. Consumers and workers may easily mis-estimate the risks that they face and be more risk averse than is "rational." (Sunstein 2002). Regulators must naturally focus their attention on what they perceive to be the areas where product quality and safety issues are very serious and where regulatory requirements will be effective. Riding a bicycle, skiing, climbing a ladder, riding a motor cycle, etc. will inevitably lead to accidents. A safety standards regulator can set bicycle helmet standards but cannot

force bicycle riders to wear helmets. Moreover, in making regulatory decisions, assumptions must be made about the information available to consumers, how they process it, and how it affects their behavior. There are lessons to be learned here from psychology and behavioral economics, but it is unclear that these agencies have ever made much of an effort to integrate these considerations into their regulatory procedures.

Regulation of product quality and safety can also be excessively costly to consumers, workers and producers. Delaying the availability of new products that meet safety and quality standards is costly to consumers. This criticism has been made in the past of the FDA and other safety regulatory agencies that must certify products before they are released. Regulatory costs and delays may also reduce incentives to develop new products. Another criticism of health and safety regulation is that regulators are too cautious in evaluating risk and impose costs on products and workplaces that well informed consumers and workers would not willingly bear (Viscusi 2006).

I do not think that the “regulation vs. deregulation” debate in the area of product quality and safety regulation and product and workplace safety regulation is particularly productive. Rather, I think that it’s time to go back to square one. That means clearly identifying the relevant market imperfections, estimating their societal costs, examining alternative mechanisms for regulating (e.g. standards, information provision, disclosure requirements), integrating new learning from psychology and behavioral economics into the process of designing information and disclosure plans that are more likely to help consumers and workers to make wiser decisions, effectively balancing the costs and benefits of alternative regulatory procedures and mechanisms, and deciding on whether

we will rely on regulatory actions or litigation to provide safety and quality incentives to producers and employers, but not both.

5. Some Thoughts on Financial Market Regulation

I began this talk by observing that the ongoing financial market crisis was clearly caused by a combination of public policy failures reinforced by behavioral failures by private sector financial institutions, intermediaries, rating agencies and creditors. However, my own view is that we still do not fully understand the public policy and private sector failures and the interactions between them that caused the problems. We necessarily know even less about the appropriate public policies and private sector institutional reforms to keep these problems from emerging again.

I believe that the basic market failures vs. regulatory failures framework can and should be applied to fundamental reforms of financial market regulatory institutions. I also believe that characterizing the public policy challenge as “regulation vs. deregulation” is not particularly constructive. Finally, the lessons learned from applying this framework empirically to other areas of government regulation by microeconomists can usefully inform the evaluation of alternative potential reforms of financial market regulation. While I must leave it to others with more expertise in the structure, behavior and performance of contemporary financial market institutions, I offer the following observations based on our experience with regulatory reform in other industry contexts.

We must start by fully understanding what attributes of modern financial markets led to the recent meltdown and to identify the market and institutional imperfections that led to the problem. The problems here are unlikely to be the new financial instruments

that have been introduced in the last several years per se but rather the private and public governance arrangements in which they are traded. Many of these financial product innovations can help to diversify risks and reduce the cost of capital if they are traded within a suitable public regulatory and private financial firm governance framework in place. Mortgage-backed securities and other types of “simple” asset backed securities have been around for a long time and, in principle, can help to reduce risk by aggregating mortgages from many different asset owners and locations facing risks that are not highly correlated. Collateralized debt obligations which allow such securities to be sliced into tranches with different levels of risk can, in principle, also help to diversify risk and reduce risk-bearing costs. This is exactly the way corporations with “tranches” of secured bonds, unsecured bonds, preferred stock, and common equity have been financed for a very long time. Nor is it a bad idea in principle to offer insurance to holders of both private and public debt instruments. In short, many of these products appear to have attractive efficiency enhancing properties.

So, what is the problem? Some of these products are also complex, increasingly non-transparent, are traded in a way that may undermine incentives to properly evaluate risks, and complicate the challenges of dealing with systemic risks that can lead to the collapse of financial markets, which in turn leads to large adverse consequences for real economies. So, it is not the products themselves, but rather market and institutional imperfections that were created or enhanced by the proliferation of these products that are likely to be the source of the problem. These effects are exacerbated by the globalization of financial markets and the absence of much of an international regulatory framework.

The focus should be on the incentive and systemic risk issues associated with the institutions that create and trade these products, not simply on the products themselves.

Constructive analysis of what happened, how to bring the crisis to an end and how to keep it from happening again requires starting with the right analytical perspective. I argued earlier that credit markets are different from markets for ordinary goods and services and that regulatory reform based on analogies to ordinary goods and services could be very misleading. So, what are the attributes of financial markets that require that need to be better understood to formulate good policies? First, financial markets are characterized by systemic risks of collapse that have potentially serious negative implications for the performance of the larger economy. These risks are enhanced by the increased costs of liquidity resulting from systematic fear about the credibility of financial commitments. The societal costs of these systemic risks are not naturally internalized into private decisions. Concerns about bank runs, bank solvency, credit market collapses, etc., have always been the rationale for prudential regulation. The failure to integrate non-bank financial institutions, including money market funds, hedge funds, and other intermediaries into this prudential regulatory system is likely to prove to have been an important contributor to the problems we must now confront. Why is credit insurance any different from other types of insurance? We require insurance companies to hold reserves for the latter but not for the former and require insurers to adhere to strict and transparent accounting and disclosure rules. Why not so for credit default swaps?.

Second, illiquidity costs are another externality. Illiquidity costs arise when everyone tries to get out the door at the same time and drive the price that can be fetched for securities to levels below their intrinsic value if they were held to maturity. It is easy

for many money market funds to buy and sell 1% of their book of business each day. It is not possible for all of them to sell 20% of their book of business in one day for a positive price, no matter how secure are the securities they hold.

Third, the new financial products created new opportunities to quickly lay off risks on third parties who had only opaque insights into the risk attributes and potential liquidity costs of the underlying securities, relying on rating agencies rather than individual due diligence. These risks were both standard and systemic and were exacerbated by the costs of illiquidity which were largely ignored by the rating agencies. This created serious moral hazard problems, facilitated by the failure of the credit rating agencies to adequately assess risks and their incentives to underestimate risks arising from the ways that they were paid. These moral hazard problems created new challenges both for regulators and for the risk management, compensation, and governance arrangements relied upon by financial firms that trade these securities.

Fourth, there were governance imperfections at large complex financial institutions arising from the nature of managerial compensation arrangements which rewarded short term profits rather than long term returns

Fifth, sophisticated investors were not as sophisticated as the regulators, especially the SEC, had assumed. This in turn led to a failure in what was assumed to be largely a self-regulating system where the sophisticated investors effectively policed the integrity of the system, protecting unsophisticated investors. A lot of sophisticated investors appear to have been burned by Mr. Madoff, so one must question the basic assumption that sophisticated investors facilitate a sort of reverse Gresham's Law.

Sixth, the creation of large private mortgage banks which could securitize and sell complex mortgage backed securities with implicit government guarantees created additional moral hazard problem. Privatize or don't privatize. Don't privatize with implicit open ended government safety nets. It is the worst of both worlds.

Finally, financial markets are global markets while regulatory institutions are primarily national or subnational (e.g. state regulation of insurance in the United States).

New regulatory interventions should be targeted at costly market imperfections and should use the most efficient tools available to deal with them. The current regulatory framework for both prudential regulation and investor protection regulation has evolved haphazardly over many years. It involves a complex mix of federal and state regulation of banks, insurance companies, and other financial intermediaries, as well as self-regulating institutions. It has not adapted to the globalization of financial markets. Every time a new problem has emerged we have created a new regulatory agency (or a new law like Sarbanes-Oxley) to deal with it rather than carefully reevaluating the entire regulatory framework. We need to start with a clean slate, carefully articulate market imperfections, regulatory goals to deal with them and identify regulatory mechanisms and institutions that can deal with the problems most effectively. We don't want to throw away efficiency enhancing financial products and institutions. Rather we want private and public governance arrangements that ensure that they are used properly and do not increase systematic risks of financial market collapse.

6. Conclusions

The regulatory and structural reforms that have been implemented over the last thirty years have, on balance, been beneficial for the economy. There are certainly exceptions and there is always room for improvement. The ongoing problems in financial markets and with financial market regulation should not be an excuse for throwing the baby out with the bathwater. Moreover, as we consider reforms to financial market regulation and financial institutions, there is much to learn from the experience with analyzing and implementing regulatory reforms in other sectors. The market failures vs. regulatory failures framework is robust. Characterizing the issues as “regulation” vs. “deregulation” is not constructive. Given the attributes of financial products, markets, public and private governance alternatives, what is the best that we can do in an imperfect world.

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