Understanding Regulatory Environments and their Impact on Economic Change

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Abstract: We propose a framework for evaluating the effectiveness of regulatory activity based on the distinctions among boundary, conduct, and attribute regulation. The standard we use to evaluate the efficiency and effectiveness of regulations creating boundaries, regulating conduct, and defining attributes is whether the regulations are market-enhancing or market-debilitating. We argue that this framework provides a consistent means by which economists and policy observers can evaluate the impact and effectiveness of a wide variety of regulatory initiatives, including antitrust actions, as well as economic and social regulations. To illustrate the utility of our framework, we evaluate recent deregulatory efforts in the telecommunications industry.

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I. Introduction

The public policy debates surrounding the recent deregulation of the telecommunications and financial services industries, proposed OSHA ergonomic standards, and court rulings in the Microsoft antitrust case, highlight the continuing unresolved interrelationship between private business conduct and regulatory regimes. The reason is that, despite numerous in-depth economic examinations of specific regulations and decades of research on regulatory change, there is little consensus on the impact of regulatory environments on economic and industrial performance. Our general understanding is that institutions that channel private behavior into socially productive conduct or positive sum outcomes are critical to economic performance and private innovation. Nevertheless, no unified, general framework exists to properly evaluate *all* regulatory structures and initiatives from an economic perspective or to connect our understanding of institutions to specific regulatory regimes.

The absence of a unifying framework for evaluating regulatory activity has led to intractable debates regarding the economic consistency of public policies as well as the economic significance of such regulatory structures. The lack of a unifying paradigm is evident in all three areas where business conduct is regulated:[1] social regulation,[2] traditional economic regulation,[3] and antitrust laws.[4] For

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[1] In *Economics of Regulation and Antitrust*, Viscusi, Vernon, and Harrington (1995) divide their text into three sections on antitrust; economic regulation; and health, safety, and environmental (social) regulation.

[2] Important "social" regulations included the Federal Food and Drugs Act of 1906, regulating the safety of food and drugs (later cosmetics in 1938 and drug effectiveness in 1962); the Traffic Safety Act of 1966, specifying safety standards for motor vehicles; the Fair Packaging and Labeling Act of 1966, setting standards for product labeling; the Consumer Credit Protection Act of 1968 (Truth-in-Lending), requiring the full disclosure of finance and credit terms and charges; the Occupational Safety and Health Act of 1970, regulating workplace health and safety; the Consumer Product Safety Act of 1972, setting safety standards for consumer products; and a number of acts regulating air and water pollution (including the National Environmental Policy Act of 1969; the Clean Air Act of 1970, amended in 1977 and 1990; the Federal Water Pollution Control Act of 1972, amended by the Clean Water Act of 1977 and 1987; and the Safe Drinking Water Act of 1974, amended in 1986).

[3] Some examples of economic regulation include the Interstate Commerce Act of 1887 governing railroads (later trucks in 1935, water carriers in 1940, interstate telephone between 1910 and 1934, and interstate oil pipelines between 1906 and 1977); the Federal Reserve Act of 1913 and the Banking Acts of 1933 (Glass-Steagall) and 1935

example, some economists and professional policy watchers have highlighted the inefficiencies or anti-consumer effects of many federal regulatory efforts, while others have argued that certain regulatory structures are necessary to rebalance concentrated economic or market power or to correct social ills. More recently, researchers have identified selected efficiencies that can arise from these regulatory programs. For example, Porter and van der Linde (1995) argue that some environmental regulations produce "innovation offsets" which actually stimulate productivity improvements and other competitive benefits for firms subject to the regulations. Similarly, Comanor and Scherer (1995) argue that the breakup of Standard Oil in 1911 "... had few deleterious short-run consequences and, by shaping a more competitive environment, it had a decidedly positive long-run effect" (p. 263). Yet, because of the absence of a unifying, general framework for analyzing regulatory initiatives, it is difficult to assess the economic implications of regulatory change. Thus, the Financial Services Modernization Act of 1999, which radically altered the banking landscape, and the Telecommunications Act of 1996, which sought to open the local and long distance telephony markets, could be interpreted as indications that those critical of governmental regulation are winning the day, or it could imply that regulators are successfully adapting their control over industries to technological advancements and market conditions. Without a consistent means of evaluating different regulatory efforts, the approaches adopted typically reflect one of the dominant theories of regulation, such as those based on traditional cost-plus or rate of return regulation, the "new" incentive regulatory mechanisms,[5] competition policy, variants of the Stiglerian-Peltzman "capture" theory, or one of the numerous *ad hoc* public interest theories.[6]

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regulating banking; the Securities Act of 1933 and Exchange Act of 1934 regulating financial services; the Communications Act of 1934 regulating interstate telephone and broadcasting (later cable television in 1968); the Public Utility Act of 1935 regulating electric power; and the Civil Aeronautics Act of 1938 regulating interstate airlines.

[4] The major antitrust legislations are the Sherman Antitrust Act of 1890, and the Clayton Act and Federal Trade Commission Act of 1914. Major revisions of the Clayton Act occurred with the Robinson-Patman Act of 1936 and the Celler-Kefauver Act of 1950.

[5] See, for instance, Schmalensee (1989) and Gasmi, Ivaldi, and Laffont (1994).

[6] Stigler (1971) and Peltzman (1976) argue that private interest group theories (well-organized groups acquire political rents at the expense of dispersed groups), rather than public interest models (government intervention

Regulatory initiatives may also reflect static models, such as the structure-performance-conduct (SCP) model, with the structure or concentration of an industry deemed probative of actual or anticipated anti-competitive conduct. The SCP model has lost momentum over the years, and it has been criticized by many because it *presumes* too much, is not an appropriate lens to evaluate a substantial swath of business conduct, and often implies policy results at odds with common sense, particularly in dynamic economic environments. Nevertheless, the SCP model continues to be the beginning point (and sometimes the ending point) for public policy analyses regarding changing industrial organizations. Thus, it provides the backbone for the Justice Department's antitrust action against Microsoft, for instance, and it is the benchmark for required regulatory approvals by the Federal Communications Commission and the Federal Trade Commission.[7] Significantly, however, despite their criticism of the SCP model, antitrust laws generally, and other regulatory paradigms, critics offer little insight in how we *ought* to evaluate or reinterpret regulations and antitrust legislation in a manner that is consistent with dynamic market behavior.

In short, we clearly need to reexamine the manner and standards by which we evaluate regulatory structures. In this article we propose a simple but robust paradigm for evaluating all regulatory permutations. The basis of this proposal is that the standard of any regulatory policy, from an economic perspective, should not be whether the policy is consistent with its stated principal objectives or generates benefits in excess of compliance costs, but whether the particular regulation is *market-enhancing or market-debilitating over time*. A determination through which we make this evaluation is predicated on the three distinct ways in which economic regulations affect firms and markets: They create and define boundaries; they prescribe or prohibit conduct; and they establish and enforce attributes or standards. By

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corrects market imperfections), best explain the enactment of regulation, while Kroszner and Strahan (1998) find evidence in the banking industry that private interest group factors, more than the public interest or political-institutional theories, best explain the timing of deregulation.

focusing on the extent to which a regulatory structure creates boundaries (Boundary Regulation), prescribes permissible behavior (Conduct Regulation), or articulates standards or attributes (Attribute Regulation), we are better able to understand and determine the market enhancing or debilitating effects of regulatory regimes.

The purpose of this paper is twofold. First, we set out our framework for analyzing regulatory activity based on boundaries, conduct, and attributes. This provides the touchstone for an explanation of the failures and successes of antitrust, economic, and social regulation to date. We argue that, contrary to what many economists may initially assert, in a relatively static environment, boundary, conduct, and attribute regulations can be market-enhancing. Nevertheless, in a dynamic environment, Boundary Regulation is fundamentally market-debilitating, Attribute Regulation is generally market-enhancing, while Conduct Regulation is sometimes market-enhancing and sometimes market debilitating, depending on the flexibility afforded firms as a result of these regulations in both the short and long runs. While many economists may not be surprised by our contention that regulations that are flexible may have market-enhancing effects, we claim that the advantage of the Boundary, Conduct and Attribute (BCA) framework for regulatory analysis is that it gives not only economists but also policy makers a means of *consistently* evaluating current and proposed regulatory initiatives. To make this point clear, we contrast the BCA framework with the structure-conduct-performance (SCP) paradigm typically used as a basis for economic and antitrust policies, and we explain how, in the context of the BCA framework, the SCP perspective as a basis for policy implementation in dynamic economic environments typically results in market-debilitating effects.

Second, we show how distinctions based on boundaries, conduct, and attributes can be used to evaluate the market-enhancing or market-debilitating effects of regulatory agendas, using the

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[7] Although the FCC does not have power to enforce antitrust laws as such, it is permitted to take antitrust policies into account in making licensing decisions pursuant to the "public interest" standard of the Federal Communications Act of 1934 governing broadcasters (see FCC v National Citizens Committee for Broadcasting, 436 US 775, 1978).

telecommunications industry as an illustration. The reason we examine telecommunications is because the industry has been affected by dramatic regulatory changes and technological advances in recent years, including structural transformations as firms merge and move into complementary sectors of the communications industry (long distance, cable, Internet access, cellular, et cetera). The technological changes in the telecommunications industry, and the future economic consequences they are expected to create, have likewise had a reiterative impact on the governing regulatory structures. Both the evolving technologies and regulatory structures provide an ideal environment within which we can examine the utility of our proposed framework for evaluating regulatory activity.

II. The Boundary, Conduct and Attribute Regulatory Paradigm : A Proposed New Standard for Evaluating Regulation Policies

We assert that the only relevant *economic* standard of any regulatory policy should be whether the particular regulation or policy regime is market-enhancing or market-debilitating over time. The central economic inquiry must ultimately be whether the general regulatory environment is "dynamically efficient," such that it expands market opportunities for both consumers and businesses and creates incentives for firms to lower costs, increase quality, and innovate *continually*. Because expanding market activities are tied to properly structured property rights, reduced or truncated transaction and information costs, and the development, expansion, and exploitation of core competencies and economies of scale and scope, the touchstone of any regulatory analysis must focus on these very same factors.

Market-enhancing regulations, by definition, have efficiency qualities in both the short-run and long-run. Market-enhancing regulations promote both *flexibility* of firm processes, in that they give firms the incentive to adopt the lowest cost means of achieving the regulatory objectives, and *cross-substitutability* of firm products, in that they give firms incentives to develop new and enhanced products and processes. Flexibility is necessary for short run market enhancement as it provides opportunities for

market participants to capitalize on core competencies, lower costs, and improve quality.[8] Cross-substitutability is likewise critical for the long-run enhancement of markets because it gives firms the incentive to innovate continually, invent new products and technologies, develop new or expanded core competencies, and find new applications for existing products and technologies.[9]

The standard of market-enhancement, with the corollary flexibility and cross substitutability concepts, are important because they focus attention on core competencies, economies of scale and scope, and transaction and information costs, all of which are tied to dynamic and evolutionary economic growth and change. The standard of market enhancement and its corollaries, while critical at a conceptual level, however, provides little useful policy prescriptions absent a paradigm that identifies the specific economic characteristics and impacts of the regulatory structure on those identical factors that are critical to market development. The paradigm we propose is based on the boundaries, conduct, and attributes (BCA) that are created or enforced by the regulatory structure. We assert that virtually all economic, social, and antitrust policies have boundary, conduct, and/or attribute features. The understanding of how boundary regulation, conduct regulation, and attribute regulation relate to market efficiencies, and the evaluation of regulatory regimes based on the degree to which they reflect the boundaries, conduct, and attributes that are created or enforced, allows us to directly examine or anticipate the effects of such regulatory structures on core competency, economies of scale and scope, and transaction and information cost issues.

The BCA paradigm rests in part on the common distinction between processes and products (see Figure 1). Regulations can be either *process* or *product* oriented. Process regulations impact the means by which firms develop, produce, and sell their products; that is, they affect the *internal conduct* of business

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[8] One well-publicized example of flexibility in the traditional regulatory lexicon is tradable pollution permits, where businesses choose the technology to meet the pollution standards according to their ability and willingness to purchase pollution "rights."

[9] Examples of cross-substitutability include the use of microwave technology to provide long-distance telephone service (traditionally accomplished with wireline service) and Internet access through public telephone and private cable transmission lines (traditionally accessible through dedicated university and defense department networks).

firms. Product regulation impact the ends generated by the firm activity either by creating or defining market *boundaries* or by establishing and enforcing product *attributes* or standards.

Boundary Regulation. Boundary regulation is product-oriented and is designed to create artificial boundaries according to product, geographic, or market characteristics. Generally, boundary regulation limits the number of firms (entrants) producing a specific product in a specific geographic area. Boundary regulation may also limit what firms produce. There are countless examples of boundary regulation, including the original regulatory boundary protecting the AT&T monopoly in long-distance telephony;[10] the FCC requirement that previously permitted only two cellular service providers in a geographic market; and the original Banking Acts of 1933 (The Glass-Steagall Act) and 1935 that separated the activities of commercial and investment banks.[11]

Regulations prescribing market boundaries typically beg the obvious question of what is the relevant market. Defining the relevant market is difficult (White, 1999), but more important is the fact that regulations that create boundaries -- however well or poorly defined -- are almost always market-debilitating (see Table 1). In a dynamic sense, boundaries are market-debilitating because they are, by design, inflexible. With boundary regulation, firms have less incentive to alter the way in which they develop, produce, and sell *existing* products. They also have fewer opportunities and reduced incentives to lower costs by exploiting economies of scale or to improve quality, in part because they are insulated from competition from outside the boundary. More significantly, however, boundary regulation typically fails to support cross-substitutability of products and technology, thus restricting the possibility for long-

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Another example of cross-substitutability is the development and marketing of "dog litter" by companies that sell cat litter (see Eig, 2000).

[10] Because of the FCC sanctioned AT&T monopoly, Microwave Communications, Inc., (MCI) was required to first seek FCC approval (i.e., removal of the boundary) before it could begin long-distance service as a competitor to AT&T.

[11] The Banking Acts of 1933 and 1935 prohibited commercial banks from underwriting and dealing corporate securities and investment banks from accepting deposits and making business loans from those deposits. The

run improvements in markets and the development of *new* product applications for businesses through scope economies *both within and outside of the legislated, arbitrary boundary*.

It is worth noting, however, that in very limited circumstances boundaries may have some economic benefits, such as where capital markets are not developed or require "too high" a risk premium. Because product, geographic, or market boundaries insulate firms from "outside" the boundary competition, the protected businesses are afforded opportunities to develop core competencies. If costs are a declining function of cumulative output (volume effect) or if the protected industry develops capabilities exploitable by scale or scope, then the boundary may ultimately result in lower cost structures over time. This is essentially the infant industry argument for trade protection with a twist: Learning or volume effects can only occur in comparatively static, less efficient environments when businesses are afforded meaningful time periods to expand output or develop core competencies. Since economic growth is precisely the development of better or new capabilities, countries are arguably justified in certain circumstances in their attempts to overcome the path dependency implicit in the comparative static, Ricardian comparative advantage model.

There is some historical and economic evidence to support such an argument in favor of boundary creation. For example, Harper (1942) and Sawers (1992) argue that the development of commercial, insurance, and mercantile competencies during (and after) Colonial America was tied to the English Navigation Acts, and David (1970) and others have contended that the development of the textile industry in England and America was likewise connected to various import prohibitions or tariffs. Nevertheless, besides the obvious problem of "picking the winner," *dynamic* benefits and core competencies *typically do not* develop as a result of boundaries because other institutional, domestic market, or cultural factors are required to support the development of the desired industry, especially if no credible timetable for the removal of the boundary protection is established and implemented. If these

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Financial Services Modernization Act of 1999 will strip away such prohibitions and reallocate regulatory authorities

latter conditions are not present, boundaries are clearly market-debilitating. And if appropriate institutional, domestic product and capital markets or cultural conditions already exist, even the limited case for boundaries is, at best, problematic.

Conduct Regulation. Conduct regulation is principally process-oriented. As such, it defines how businesses produce and sell. Price, rate of return, and other performance regulations are examples of conduct regulation, as are regulations stipulating the precise technologies firms should adopt to lower airborne pollution levels, and the procedures workers must follow when handling hazardous chemicals. Conduct regulation would also include antitrust laws governing conduct that is always, or *per se*, illegal, including predatory pricing, horizontal price-fixing, division of markets, tying arrangements, and exclusionary contracting.

In general, conduct regulation can be either market-enhancing or market-debilitating, depending on the specific nature of the regulation (see Table 1). Regulations that prohibit behavior (negative regulations) are generally more flexible and hence are relatively more efficient than regulations that prescribe behavior (positive regulations), however. For example, price floors and price ceilings are relatively more flexible than mandated prices, just as price-cap regulation is generally more efficient than traditional rate-of-return regulation.[12] Regulations governing firm conduct might create barriers to cross-substitutability, but these barriers may not necessarily be as prohibitive as they are in the case of boundary regulation, especially when the conduct regulation is negative rather than positive. Conduct regulation may also restrict the ability of firms to exploit core competencies or to lower costs by capitalizing on potential economies of scale and scope, particularly in the case of behavioral prescriptions.

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between the Treasury Department and Federal Reserve.

[12] In price-cap regulation, a price ceiling is established for products supplied by public utilities, with the utility being a "residual claimant" of any cost reductions. This generally gives the utility a greater incentive to reduce costs by allowing them to increase profit rates through lower costs. See, for instance, Gasmi, Laffont, and Sharkey (1999),

Attribute Regulation. Attribute regulation is generally product-oriented. Attribute regulation principally deals with the quality attributes of products or standards but not necessarily which or how many firms are able to produce and sell the product. Examples of attribute regulation include standards for weights and measures, pollution control standards, food and drug safety laws, product labeling requirements, and industry adoption of Internet Protocol (IP) standards. Compared to boundary regulation, attribute regulation can be relatively market-enhancing. Attribute regulation is most favorable to competition and least restrictive of flexibility and cross-substitutability compared to boundary and conduct regulation, in part because the regulations are applicable to all firms seeking to produce and sell the regulated product, rather than a subset of such firms (see Table 1). As long as firms maintain the specified standards, firms can enter markets and compete on any margin they find most profitable, particularly in the advancement of their core competencies and the exploitation of economies of scale and scope. Moreover, attribute regulation has the effect of lowering transaction costs by reducing the costs of searching for compatible products or reputable sellers and of lowering information costs by imposing national quality assurance standards. Examples are the plug-and-play technology for computers based on the Universal Serial Bus (USB) port and food and drug laws.[13] As such, attribute regulation is expected to be the most conducive to the long-term, dynamic efficiency of markets.

But, attribute regulation, when taken "too far," can approach boundary regulation (see Figure 1). For example, the system of inspections by guild officials in 16th and 17th century France consisted of 317 separate regulations governing the dyeing of cloth. These regulations were so comprehensive that they

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who provide evidence that in telecommunications the greater the flexibility allowed firm by the regulatory regime, the greater is social welfare.

[13] For example, in 1999 the United States Department of Agriculture, which is responsible for the safety of meat products, allowed the irradiation of meat products. They also provided guidelines on the manner by which producers disclose the irradiation of meat, thus lowering information costs to consumers by providing uniform quality assurance and other benefits. (The Food and Drug Administration, which has authority over food additives, approved irradiation in 1997.)

required at least six inspections, effectively crippling the country's textile industry (North and Thomas, 1973).

Conducting BCA Analysis. The BCA framework provides a simple yet comprehensive way of examining regulatory activity. In particular, economic, social, and antitrust regulations can be analyzed to determine the degree to which they erect boundaries, prescribe or prohibit behavior, and/or establish standards or product attributes. As detailed in Table 1, the economic implications of various regulatory regimes occurring within dynamic, technologically advancing environments can be assessed based on the particular type of the regulation. To the extent that regulations create boundaries as solutions to short-run market imperfections, we can expect that they will be minimally flexible and not conducive to cross-substitutability. Therefore, they will almost always be market-debilitating. And, in fact, regulations that "fail" typically do so because they create and maintain artificial boundaries around products and markets that constrain the ability of firms to adapt to rapidly changing technological and economic forces. To the extent that regulations establish product and quality standards and attributes, on the other hand, we can expect that, other things being equal, they will be relatively more flexible in both the short and long runs compared to boundary regulation, and thus they can be market-enhancing. Conduct regulation is an intermediate case that requires a case by case analysis. At a minimum we can say that negative regulations proscribing specific conducts are less severe than positive regulations prescribing business conduct. Indeed, negative conduct regulations may be market-enhancing to the degree that firms are able, in the aggregate, to exploit core competencies and economies of scale and scope, subject to the regulatory constraint, and if the regulations do not substantially increase transaction and information costs. As we further explain below, however, boundary and conduct regulation can be market-enhancing *only* when economic environments are stable and predictable.

III. The Static SCP Regulatory Paradigm

The typical economic approach to regulatory analysis and business conduct is predicated on static models, which, by their very nature, do not fully recognize the market-enhancing or market-debilitating effects of many regulations over time. Instead of addressing the critical issue of whether regulations are market-enhancing, the framework commonly used by economists and non-economists alike is based on a static view of the economy where technology, macro product markets, and the cost-minimizing productivity choices of firms are stable and either will not change, or will change in predicted ways, as a result of regulatory initiatives. The principal static "paradigm" used today by policy markers, particularly in the antitrust arena, is one that is based on economic theories of market structure, conduct, and performance developed by economists at Harvard University during the 1930s and 1940s. Under the structure-conduct-performance (SCP) paradigm, a concentrated industry will either arise from, or result in, the anticompetitive behavior of firms within that industry, the ultimate effect of which is lower output, higher product prices, and the possibility of excessive profit rates for the industry's dominant firms.

The SCP paradigm is growing increasingly unpopular among academic economists. Nevertheless, whether intended or not, the paradigm continues to underlie many of the regulatory and antitrust policies pursued by government agencies today, as evidenced by the recent Federal Trade Commission's prohibition of the proposed BP Amoco and ARCO merger and the Department of Justice's antitrust action against Microsoft.[14] Moreover, it also forms the basis for how regulatory effectiveness is evaluated. The merger guidelines followed by the Justice Department in enforcing the Sherman and Clayton Antitrust Acts, for example, presume that market power, and thus the expected behavior of firms with significant

[14] In one survey of theoretical, applied, and policy scholars in industrial organization, conducted by Aiginger, Mueller, and Weiss (1998), the majority of respondents believed that the SCP paradigm would continue to decline in relevance in economics. Nevertheless, a majority of the experts also believed that "higher margins of large firms are a consequence of market power" (p. 807) rather than evidence of higher efficiency, that "market power is not a short run phenomenon" (p. 807), that international competition has not "made the regulation of monopolies an outdated policy" (p. 809), and that "antitrust laws [should] be used vigorously to reduce monopoly power" (p. 809), consistent with the logic of SCP-based policy.

concentrations of market power, can be approximated by concentration ratios and other measures of industry structure (see Mueller, 1996). As the basis for policy evaluation, the SCP framework, with its emphasis on concentration ratios, relevant markets, and other structural indicia, often leads to conflicting or even wrong conclusions regarding long run market behavior for two important reasons. First, there is no generally accepted method of defining the boundaries of a market (see White, 1999), a necessary factor in assessing the presence of market power and in evaluating the nature and extent of market failure. Second, even with a clear market definition, concentration ratios and other structural market measures reflected by the SCP paradigm are not necessarily meaningful in dynamic industries characterized by rapid organizational and technological changes (see Williamson, 1968).

In dynamic economic environments, the development and extension of product capabilities and the introduction of new and improving products and processes continually change the nature of industrial entry and exit boundaries and barriers, as evidenced by mergers or internal growth and adjustments of industry players. As a result, SCP and other static regulatory paradigms, when used as a basis for regulation, often have *market-debilitating* rather than *market-enhancing* effects. Because of the emphasis of such models on the structural characteristics of markets, policy proposals derived from SCP are inflexible and not conducive to cross-substitutability. Similarly, the regulation of business conduct through antitrust policies based on SCP, with their prohibition of behaviors that can, under some circumstances, be justified on efficiency grounds,[15] also fail to allow firms the flexibility to capitalize on advances in technology and exploit core competencies in new or expanding markets. Consequently, from a consideration of the BCA framework, such a static paradigm as a basis for policy analysis fails to inform fully on the dynamic characteristics of market activity.

[15] See Mueller (1996), who describes the shifts in enforcement policies of antitrust laws in the United States based on the economic justifications of specific business conducts.

IV. Boundary, Conduct, and Attribute Regulation Within the Telecommunications Industry

The telecommunications industry has been subject to extensive regulation from virtually the beginning of the telephone and broadcasting revolutions. Telecommunications are regulated primarily by the Federal Communications Commission (FCC) at the federal level, but also by Public Utility Commissions in every state. In addition, telecommunication companies are subject to federal and state antitrust statutes.[16] The principal reasons justifying telecommunications regulation have been externalities in the case of broadcasting (interference from broadcasters "roaming" the electromagnetic spectrum) and natural monopoly in the case of wireline telephony (high cost of constructing a local wireline exchange network).

Historically, the types of regulations governing telecommunications have been derived from conduct and boundary perspectives. Profit rates were carefully regulated, as were the prices for local calls and intra-network toll calls, and the types of services offered (call waiting, caller ID, voice mail, et cetera). Moreover, access to local exchange networks was regulated, with specific geographic territories allocated to one local exchange carrier per area. For example, when the Regional Bell Operating Companies (RBOCs), which controlled the majority of local exchange networks in the United States, were broken up following the antitrust investigation by the Department of Justice in the 1970s of AT&T, the divestiture created 161 local access and transport areas (LATAs), or local exchange networks, each in precisely-designated geographic areas. The seven RBOCs divested from AT&T were prohibited from carrying local and toll calls across designated LATAs. Calls across LATAs, however, were handed off to long-distance companies.[17] Each of these regulations were justified on the grounds that the provision of local telephone service is a natural monopoly and that the behavior and performance of natural

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[16] Neither the Telecommunications Act of 1934, nor its subsequent amendments, give antitrust immunity to telephone carriers with respect to alleged anticompetitive conduct (Macom Products Corp. v American Tel. & Tel. Co., 359 F Supp 973, 1973). Moreover, neither the FCC nor state regulatory policies provide a basis for exemption from federal antitrust laws (Essential Communications Systems, Inc. v American Tel. & Tel. Co., 610 F2d 1114, 1979).

monopolies must be regulated to ensure socially-desirable conditions, consistent with the static SCP perspective.

Similarly, until recently, FCC regulations permitted only two carriers in a geographically defined cellular market (800 MHz frequency band). Typically, one license went to the local exchange carrier and the other to the winner of a lottery.[18] Although the stated justification for allowing only two cellular carriers was to promote competition because of the market failure that is expected to occur in an unregulated environment involving competition in the electromagnetic spectrum, in actuality the evolution of the regulatory policy of the broadcast spectrum was based on the political cost of administering a regulatory program, with the emphasis on the structural characteristics of the market (see Hazlett, 1990).

The Telecommunications Act of 1996 was a response to the dynamic technological changes occurring within the industry. It's principal justification was "the premise that technological changes will permit a flourishing of telecommunications carriers, engaged in head-to-head competition, resulting in a multitude of communications carriers and programmers being made available to the American consumer" (Meyerson, 1997, p. 252). Indeed, the 1996 Act removed significant regulatory boundaries erected and maintained since the 1930s. Thus, many regulators and economists expected the telecommunications market to respond positively following the Act's implementation. While a landmark in its dismantling of many regulatory boundaries,[19] however, the 1996 Act has failed to promote entry and competition in the local exchange markets. One reason proposed for the apparent failure of the 1996 Telecomm Act is that there have been a number of legal challenges to the Act by incumbent local exchange service providers

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[17] See Harris and Kraft (1997) for an extensive discussion.
[18] Recently, however, the FCC has auctioned off additional licenses for wireless communications services (1850 to 1990 MHz frequency band).
[19] According to the FCC, "In the old regulatory regime, government encouraged monopolies. In the new regulatory regime, we and the states remove the outdated barriers that protected monopolies from competition and affirmatively promote efficient competition using tools forged by Congress" (Federal Communications Commission, 1996, p. 45,476; quoted in Meyerson, 1997, p. 253).

which have slowed the Act's implementation (Economides, 1998). We propose an alternative, though not contradictory explanation, based on an examination of the provisions of the 1996 Act that create boundaries, prescribe conduct, and establish attributes. Specifically, our hypothesis is that the failure of the 1996 Act to produce the anticipated benefits is due in large measure to the conduct restrictions the act created and perpetuated for potential entrants into the local telephone exchange markets, even though it removed substantial boundary regulations. Furthermore, the 1996 Act perpetuated important boundary regulations, which have contributed to the market-debilitating effects of the telecommunication regulation.

One of the principal purposes of the 1996 Telecommunications Act was to promote competition in the local exchange telephone markets by "allowing" the entry of rival local exchange carriers (LECs), long distance companies, and cable companies into the telephone market. Indeed, on the surface the 1996 Act appears to be designed to lower the boundaries around telecommunication markets and to promote cross-substitutability in part by requiring the interconnection of entrants at any "feasible" point within the local exchange network.[20] In this way the 1996 Act had the potential of being relatively more market-enhancing than previous regulatory efforts over telecommunications, particularly to the extent that interconnection requirements and standards are uniform and accessible to all potential LEC market entrants. For example, the 1996 Act mandates five obligations of all incumbent and potential exchange carriers: (1) LECs are prohibited from stipulating unreasonable conditions on the resale of telecommunications services, (2) LECs must provide "number portability," meaning that customers must be allowed to switch LECs without having to give up their existing telephone numbers, (3) LECs must ensure "dialing parity" in that all customers are able to dial the same number of digits when using any provider, (4) LECs must provide interconnection access to their competitors, and (5) LECs must establish "reciprocal compensation arrangements" in which the originating carrier compensates the call terminating

carrier for network access (see Meyerson, 1997). Because these requirements apply to all LECs -- both incumbents and potential competitors -- and because they standardized and clarified the services offered by the LECs, they have the potentially market-enhancing characteristics of attribute regulations.

In spite of these relatively positive attribute characteristics, however, the 1996 Act actually created a substantial barrier to entry by establishing a number of positive regulations of conduct for certain incumbent and potential telephony market participants, thus perpetuating much of the market-debilitating features of previous regulatory policies. In particular, the long-distance companies were concerned that the RBOCs broken-up from AT&T would be able to enter the long-distance market before the long distance companies could enter the local markets. This concern was based on the fact that building a local network connecting potentially millions of customers would be more expensive for the long-distance companies than the cost to the RBOCs of building a national long-distance network connecting only hundreds of local area telephone networks. Therefore, the long-distance companies successfully lobbied Congress to include in the 1996 Act "detailed requirements that the RBOCs needed to meet for opening up competition in their local telephone markets before RBOCs were permitted to enter long-distance markets, including requirements for extensive unbundling and resale of local services" (Harris and Kraft, 1997, p. 103).[21] The requirements included not only the five general provisions expected of all LECs, but also specific actions the RBOCs would have to complete before they would be allowed to enter long distance markets. These requirements included: local transmission, transport, and switching for calls originating outside of the network; non-discriminatory access by competing LECs to

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[20] Meyerson states that the "primary duty imposed on all telecommunications carriers is interconnection. In other words, all telecommunication carriers must connect directly or indirectly with other carriers" (1997, p. 255).

[21] Economides (1998) states that the 1996 TA "imposes conditions to ensure that *de facto* monopoly power in not exported to vertically-related (complementary) markets. Thus, the Act requires that competition be established in local markets *before* the incumbent local exchange carriers are allowed in long distance service" (p. 3; emphasis in original). Interestingly, the detailed requirements imposed on the RBOCs applied only to the companies broken-up from AT&T and not to independent local telephone companies, such as GTE and Southern New England Telephone (SNET), which were free to enter the long distance market. For example, SNET currently offers an "integrated" telecommunications package, including local and long-distance telephone service, paging, voice-mail, e-mail, and Internet access.

emergency, directory assistance, and operator call-completion services; non-discriminatory access to telephone numbers and databases; and white page directory listings for competitor's customers (see Meyerson, 1997). According to the BCA framework, these provisions of the 1996 Act prescribed specific actions the RBOCs must take and thus constitute positive conduct regulation. As a general rule, such behavioral regulations are market-debilitating. The reason is that they reduce flexibility and the cross-substitutability intended in the 1996 Act and provide less incentive for long-distance companies to offer competitive rates and services because of the difficulty the RBOCs would have meeting the requirements to enter the long distance market.

In addition to the conduct regulation the 1996 Act required, the Act also perpetuated regulatory boundaries affecting local telephone and cable transmission enterprises. For instance, while the 1996 Act eliminated the complete ban on cable and telephone cross-ownership in the same geographic location, the Act also contained prohibitions on the level of financial interest cable and LECs could have in the other company's services. The 1996 Act states that "a local telephone company cannot acquire more than a 10 percent financial interest in a cable operator providing service in the telephone company's service area; and a cable operator cannot acquire more than a 10 percent financial interest in a local telephone company providing service in the cable operator's franchise area. Not only are direct mergers prohibited, but joint ventures between cable operators and telephone companies in the same market are also proscribed" (Meyerson, 1997, p. 275).[22] This regulatory boundary is likely reduce the competitive advantages of cable and telephone companies seeking the benefits of economies of scope, in part because of the technological incompatibility of cable and telephone wiring.[23] Thus, it is not surprising that the 1996 Act has not

[22] Cable and telephone companies are permitted under the 1996 Act to enter into joint ventures for the purpose of providing programming, for instance.

[23] As an unswitched system, cable cannot send telephone conversations over the cable network, and, because of the low capacity of telephone wiring, telephone companies cannot send full-motion video signals through telephone networks (see Botein, 1996).

produced (at least in the short-run) "the acquisition by consumers of the benefits of technological advances" (Economides, 1998, p. 2) envisioned by the legislation's proponents.

V. Conclusions

Joskow (1975) observed that "the ultimate test of the utility of the various models is whether they prove useful to people in analyzing problems involving actual markets or groups of markets" (p. 273). We propose a useful framework for evaluating the effectiveness of regulation based on the distinctions among boundary, conduct, and attribute regulations. The standard we use to evaluate the efficiency and effectiveness of regulations creating boundaries, regulating conduct, and defining attributes is whether the regulations are market-enhancing or market-debilitating. The advantage of this framework is that it provides a consistent means by which economists and policy observers can evaluate the impact and effectiveness of a wide variety of regulatory initiatives, including antitrust actions, as well as economic and social regulations.

According to our framework, much of what constitutes economic, social, and antitrust regulation creates and defines boundaries and prescribes specific behaviors of the regulated firms. For these reasons they are generally market-debilitating over time. This judgment of regulatory policy is not an inverse capture theory, and neither is it related to ideological biases against regulation *per se*. Rather, regulatory failure relates to the static nature of boundary regulation and general inflexibility of such or similar regulatory structures that are unable to absorb or meld dynamic change, including technical change or shocks to the economy. Conduct regulation is an intermediate case, which should be judged on a case-by-case basis, although regulations prohibiting specific conducts (negative regulation) will be expected to be more efficient than regulating prescribing specific conducts (positive regulation). Attribute regulation, however, can adapt, provides proper incentives, and is generally market-enhancing.

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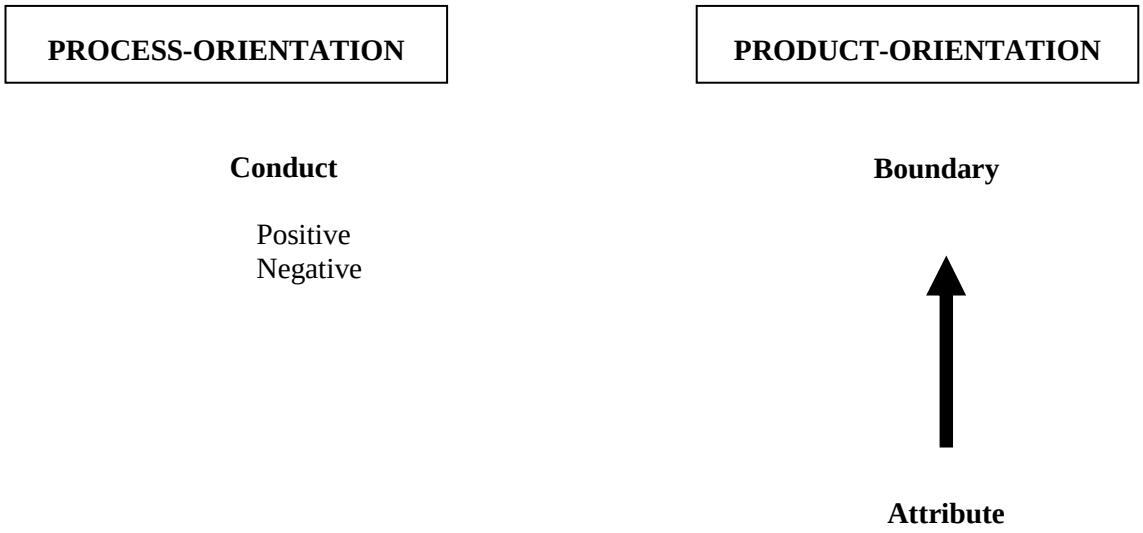
Figures

Figure 1. Proposed relationship between boundary, conduct, and attribute regulation.



Tables

Table 1. Predicted relationship between regulation characteristics and efficiency standards.

Regulation Characteristic	Flexibility	Cross-Substitutability
Boundary	–	–
Conduct		
- Positive	–	–
- Negative	+/–	+/–
Attribute	+	+