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Economic Theories of Regulation in Telecommunications

General Theories

In most countries of the world, telecommunications systems are owned and operated by a monopolistic government agency. In North America (and increasingly elsewhere), networks are being provided by private companies operating subject to close government regulation. Indeed, few industries are supervised as closely by government as telecommunications, raising questions as to why such control is being exercised.

There are two broad categories of explanations for a governmental regulation of markets. The first, known as *public-interest theory*, argues that regulation is required to protect the public from various forms of harm: monopolies that overcharge, unsafe products, unqualified professionals, chemicals that are pollutants, securities that are capable of being manipulated, unsound banks, and so forth. This view of regulation reconciles a market economy—private economic entities freely engaging in economic activities—with governmental control and intervention. A number of causes for “market failures” are offered, among them natural monopoly (i.e., the inability of any competing provider to survive), collusion among rival firms, such negative neighborhood effects as pollution, or informational asymmetries. Public-interest theorists believe that the function of regulation is to restore or protect the market. For example, in the financial securities field, the provision of accurate information is to be assured by regulation-imposed disclosure requirements. Regulation’s function, in that view, is largely to ensure results that match Pareto efficiency, a condition in which no one could be made better off without someone being made worse off.

Proponents of the public-interest view of regulation were typically political centrists or liberals. In the intellectual field, they included the empiricist Mitchell (1), the reformer Commons (who introduced public utility regulation, the nation’s first, to Wisconsin’s governor La Follette) (2), and the theorist of social overhead costs, J. M. Clark (3). In the political sphere, their ideas translated into the creation of regulatory structures and institutions. Where problems persisted despite regulation, it was viewed as a challenge to devise and administer regulatory policies more effectively. Regulation became an area of specialization, particularly in the field of public utilities (4,5), with a body of increasingly sophisticated economic analyses such as Kahn’s (6).

Advocates of public-interest theory recognized the existence of political expediency in the actual exercise of regulation. As a consequence, they usually advocated independent expert regulatory agencies with judicial, legislative, and executive powers. The classic institutional model was the Interstate Commerce Commission, established in 1887 on the federal level to regulate railroads. Similar commissions were created to regulate such vital infrastructure services as transportation and public utilities, including telecommunications, under the

dual impetus of prairie populism and business efforts to avoid European-style nationalizations. In the United States, an intermediate path—privately-owned but regulated utilities—was followed. But even such moderate policy came under severe political challenge as an interference in property rights, and was sanctioned by the courts with reluctance in such landmark cases as *Munn v. Illinois* (regulatory powers over private businesses “affected with the public interest”) (7) and *Nebbia v. New York* (“the state may regulate a business in any of its aspects”) (8).

Key elements of utility regulation included the limitation of monopolistic pricing behavior by the imposition of price restrictions or the control of its profitability through rate-of-return regulation. This inevitably also led to regulation of service quality, investments, expenditures, and rate structure, since all of these are interrelated. Perhaps most importantly, utility regulation led to restriction of entry by the requirement of licenses and franchises, which tended to establish and protect monopolies and divide markets.

In time, the expectation that regulatory mechanisms would restore efficiency and protect the public proved disappointing to many; some agencies were inefficient, others misguided, and still others biased. Their independence often was illusory (9). From this, public-interest theorists drew the conclusion that better and more scientific regulation was necessary. Others attacked this view from various directions. The left, viewing government as a tool of business interests, saw regulation as part of the support structure of the capitalist order, for example, by stabilizing markets otherwise subject to ruinous competition, by deflecting popular discontent through the illusion of control, or by protecting monopolies and oligopolies from competitive entry (10,11). In that view, even in those rare cases in which regulation might have been initiated with the intention of protecting the public, it was destined to be captured soon by the powerful subjects of the regulation.

Free-market advocates mounted an intellectual and political challenge, arguing that regulation was costly in operation, distortive in terms of resource allocations, and usually captured by various industry and political-interest groups that used the process to obtain protection and redistribution in their favor. They took up the criticism of the progressive Horace Gray that monopoly was the creation of public policy (12), and charged that the public-interest approach naively assumed the political-regulatory process to be a black box into which good intentions were put and the public interest emerged.

Instead, free-market advocates offered, as a second major approach to the explanation of regulation, an analysis that factored in the motives of politicians and regulators and the multiple constituencies with which they must deal. This position was advanced by such members of the Chicago school as Simons (13), Friedman (14), Stigler (15), Peltzman (16), and Becker (17), with antecedents provided by the Austrian classic liberals. The essence of this approach is that regulators and politicians weigh the benefits and costs of various courses of action in a political framework in which the attainment of a voting majority determines success. In its broadest interpretation, this approach emphasizes a balancing of interest-group strengths at the margin, with the outcome determined by the stake that the various groups have in the outcome and the effi-

ciency with which they can influence the regulatory process. Other interpretations were offered by McCraw (18), Olson (19), Owen and Braeutigam (20), Noll (21), and Wilson (22).

An illustration for this analysis is the Coase theorem (23). It postulates that free transactions between individuals will result in the economically most efficient type of activity, regardless of the regulatory rule. An example is a railroad that emits sparks that burn grazing land adjoining the tracks, and where the sparks can be prevented by appropriate guard technology, though at a cost. What should be the regulatory rule? A simplistic public-interest view of regulation would argue that the railroad, as a business, should be prevented from harming farmers, the people. A more sophisticated public-interest approach would take into account the relative cost of the protective technology and its impact on transportation costs, and weigh them against the probability and severity of fires and their harmful effects on things such as food production.

The determination of this question, involving issues of fact, probability, and technology, would be lodged in a regulatory body, which in time would come up with appropriate rules and enforcement mechanisms. But, according to Coase, that regulatory effort would be immaterial to the actual outcome (protective guards or the periodic burning of the grazing land). Where the railroad is liable for damages, if it is cheaper for it to keep causing fires and pay off the farmers' damages rather than install the guard technology, it will do so. Conversely, even if the railroad is under no legal obligation to install the guard, it would do so anyway if the harm to the farmers is such that they would pay the railroad for the installation. Thus, underlying economies prevail over whatever the regulatory rule is, provided the parties can transact among themselves.

This is not to say that regulatory rules have no impact. However, the impact is not on the outcome (e.g., spark guards) but on the distribution of wealth. In one case, the railroad either is free to emit sparks or is being paid not to do so. In the other, the farmers either can graze or are being paid not to do so. This simple analysis provided one of the foundations for the view that the function of regulation is not so much to affect outcomes but to distribute wealth. This theme was developed further by Posner in related literature on law and economics (24), and by Tullock with his analysis of interest-group monopoly "rent seeking" (25). Coase discussed how the regulatory rule should be set. He concluded that it should be imposed on the lowest-cost avoider because this would reduce subsequent transaction costs. In that, he is close to another strand of literature, that of Williamson's transaction costs and organizations (26). But for all of Coase's intellectual elegance, for which he received a Nobel Prize, essentially his theory is applicable only to situations in which the various parties can organize and transact easily, and there is no free riding. As soon as these conditions are not met, such as in the case of air pollution, group representation shifts to the political process and thus to government regulation. Here, an inherent practical as well as theoretical problem with regulation is that government must pursue numerous objectives with only a limited number of policy variables available, thus leading to various compromises and contradictions—a problem formalized by Kenneth Arrow's impossibility theorem, for which he, too, received a Nobel Prize (27).

Application to Telecommunications

Regulatory developments followed the ascendancy of various schools of economic thought, from the progressives to the institutionalists to the free-market liberals of the Chicago school. In the American telecommunications industry, the trust-busting public-interest sentiment of the Progressive Era led to the 1913 Kingsbury Commitment, a deal between AT&T and the government to contain AT&T's expansion (28). Institutional economist and lawyers provided the basis for state utility regulation, as well as for the Communications Act of 1934. As part of the public-interest orientation of regulation, cross-subsidies were built into the system to help achieve universal service and political acceptance (29,30). But at the same time, AT&T's monopoly was being protected from competitors.

Following the 1934 Communication Act, concerns were raised in a 1939 Federal Communications Commission (FCC) study over profit shifting between equipment and services in the regulation of AT&T's rates. After World War II, an antitrust suit based on classic public-interest principles was brought, ending in 1956 with a consent decree that kept AT&T intact and contained. But the seeds of instability were sowed at the same time by technology, entrepreneurship, and economic thinking. The *Above 890* decision allowed microwave competition from private-line services (31). This led to such new general microwave services as those of MCI (32) and eventual public switched voice offerings (33). At about the same time, the *Carterfone* case opened the door to equipment competition (34).

In the early 1970s, disenchantment with the performance of monopolies led to a convergence of schools of thought (35). The procompetitive Chicago approach (exemplified by antitrust chief Baxter) (36), joined with the antimonopoly approach of the public-interest advocates (exemplified by Judge Greene) (37) to provide the theory behind a government antitrust suit against AT&T (38). A competing body of economic theory was developed at its Bell Laboratories and at Princeton University to defend the legitimacy of its monopoly. It led to a general reappraisal of industrial organization analysis. One such theory, that of contestability, stated that the threat of entry by a new competitor in a monopolized market would create the same efficiencies as actual competition (39). It also analyzed the sustainability of multiproduct monopolists.

The emergence of competition did not spell an end to regulation, but formed a complex system of telecommunications (40). It became part competitive, part monopolistic, and more complex to administer than the simpler one-company system. Hence, the near future of telecommunications regulation appears to be a complicated web of partial regulations. This has led to efforts to provide theories for partially regulated firms. Whereas the old regulatory analyses emphasized the control of rates and profits, with theories to deal with these issues (41), the new policy agenda is likely to concentrate on the problems of interconnection in a network of networks and technical standards (42), content flows, quality of service, and privacy protection. New theories, such as Noam's (43), no doubt will surface to explain this new orientation of government regulation.

Regulatory Theories in Other Countries

Germany

In Germany, the dominant view on government control was rooted in a variant of the public-interest or social economy theory (*Gemeinwirtschaftlehre*), which sought to imbue private enterprises oriented toward the fulfillment of public tasks. Schmoller argued for embedding economic analysis in its social setting (44). Wagner took an ethical approach to social economy (45) that saw state intervention as morally superior to the market described by Smith (46), and postulated a law of inevitable growth in the social economic sector. Sax, in contrast, advocated private but regulated infrastructure enterprises that stressed marginal utility and presaged much current economic theory (47). Marx and Engels earlier had developed broad theories of the inevitability of socializing the means of production (48). In the political arena, their views were softened later by social democratic “revisionists,” but those, too, advocated publicly owned infrastructure monopolies.

On the other hand, classic liberals, especially those of the Austrian school such as Hayek and Mises, argued for competition as an autonomous, decentralized, and efficient discovery procedure. Another Austrian economist, Schumpeter, pointed out the “creative destruction” process of capitalist development, which led to monopolistic state enterprises (49).

Broad political and intellectual support was given to the state telecommunications monopoly, which remained stable for a century. Eventually, reform proposals began to surface in Germany from market-oriented authors (50–52). In time, these notions led to a restructuring of the state monopoly into a semi-autonomous operating company, publicly owned but regulated.

Great Britain

Adam Smith synthesized the beliefs of French physiocrats and English classicists to develop the science of economic inquiry, strongly based on free-market principles, though conceding the need for controls against collusion. The market analysis was taken further into the realm of political economy by Ricardo (53), Mill (54), and Malthus (55). They were followed by utopian socialist and reformist Fabian movements, including Wells (56), and the Webbs (57). They advocated the state ownership of infrastructure for natural monopolies, and influenced the thinking of the Labour Party for a long time.

British telegraph companies were nationalized in 1868, as were telephone companies by 1911. For most of the century, the British Post Office Department set telecommunications policy and goals according to the demands of the government in power. After a long period of stability, institutional stagnation, and cautious technological progress, in the early 1980s various voices argued for a market-oriented approach to telecommunications regulation (58,59). Soon, the conservative Thatcher government, pursuing a program of privatization, turned to telecommunications and privatized British Telecom. It also led to permitting

the entry of the rival long-distance carrier, Mercury, and the establishment of value-added services networks.

France

French thinking on the role of the state in guiding the economy always was torn between classically liberal and statist traditions, with the latter usually dominant. Classical liberals included, in the 18th century, Turgot (who opposed the earlier mercantilism of Cardinals Richelieu and Mazarin) (60), Say (61), Du Pont de Nemours (62) and Quesnay (63) (both physiocrats who emphasized natural law and property rights), Condillac (64) (who pioneered the applications of utility theory in France), Sismondi (65), and Cournot (66) (whose mathematical models for pricing under monopoly and duopoly conditions still are used today). The physiocrats discarded the mercantilist belief that wealth and its increase were due to exchange. By valuing accumulation instead, they laid the foundations for the modern French regulationists. In contrast, advocates of a strong state involvement in the 19th century were Navier (who presented early cost-benefit analyses of public goods), Minard, and Deputit (and later utopian socialists and Marxists), as well as economic nationalists, many of whom were graduates of the prestigious state engineering schools that long dominated the discipline of economics in France.

The strong tradition of state industrial policy and government ownership yielded a close involvement between operational and regulatory functions. This led to the development, beginning in the 1960s, of the French (or Paris) school of economic regulation (67), which sought to explain accumulation in terms of the role of the state in supporting industry. The regulationists saw a structure or network of capitalist institutions forming to respond to crises in national economies. Their theories were countered by the "new conservatives" such as Glucksmann, Henri-Lévy, and Raymond Aron. The technocratic position was taken by the statist Nora and Minc, who advocated a state-led computerization of French society under the banner of *telematique* (68).

With the advent of a socialist government in 1981, the French telecommunications equipment and computer industries were nationalized. In time, some segments of the market were privatized and opened to competition, but the monopoly remained fairly secure. However, it, like similar systems, was being challenged by the European Commission in Brussels, which represented another powerful trend, that of European integration, in which there was no long-term room for national monopolies.

Japan

After the 1860s, the Meiji oligarchy, and later the militarists, controlled economic development in Japan. Their economic interventionist views were shared by the National Socialists, a group of prewar bureaucrats led by Kishi. After the war, Marxist traditions were in vogue following Katayama (69). These soon faded in the debate between industrial policy advocated by Arima and the

Ricardian comparative advantage arguments of Ichimada. The former theory won out, leading to a stronger mandate for governmental economic development policies.

For a long time, these political, economic, and intellectual forces supported the monopoly system. But in the 1980s, under the leadership of the MITI economics ministry and segments of the private sector, and against the opposition of telecommunications traditionalists, Japanese telecommunications were moved from a rigid monopoly to an open, competitive market (70). This approach combined a free-market orientation with the industrial policy goal of strengthening Japan's international competitiveness.

Outlook

As similar evolutions began to take place in other industrialized countries, it was recognized that they were following broader economic and technological forces (71). The growth of technological and operational alternatives, in conjunction with the economics of network growth and the merging of technologies, undercut the economies of scale and scope once offered by the centralized network. As governments expanded networks toward universal service, technological developments created opportunities for large users to exit the telecommunications network to obtain specialized services. A phenomenal growth in user demand for services resulted, and many commercial groups began interlinking through telecommunications, a force that in turn was based on the shift toward a service-based economy. These forces led to a transformation of institutions that had been stable through most of the century. And while regulation sometimes took a leading role in advancing change, the opposite was more often the case. Typically, traditional regulatory institutions were protective of the traditional status quo. In many instances, the rhetoric of public-interest theory was used to rationalize actions more compatible with the less-idealistic free-market view of regulatory reality.

Yet, ironically, regulatory institutions emerged from the changes of deregulation to become more important than ever before. They now hold a more genuine role in refereeing among contesting forces, as opposed to the past, when they were merely an appendix to the giant operating monopolies. In consequence, one can expect the need for regulatory analysis and theory to be more important than ever, and in need of exploration as well as leading a sector in rapid transformation.

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