

UNITED STATES COMPETITION POLICY IN CRISIS: 1890-1955

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Introduction: Historical Explanation and the Marginalist Revolution

The history of legal policy toward the economy in the United States has emphasized interest group clashes that led to regulatory legislation.¹ This is also true of the history of competition policy.² Many historians see regulatory history as little more than a political process in which well organized, dominant interest groups obtain political advantage and protect their particular industry from competition, typically at the expense of consumers.³

But clearly there must be more to this story. Interest group politics cannot explain all aspects of our regulatory past. For example, historically in every state electricity and natural gas have been delivered to retail customers by monopoly franchises at regulated prices. By contrast, in every state groceries, shoes and lumber were

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1. See, e.g., CLAUDIA GOLDIN & GARY D. LIBECAP, EDs., *THE REGULATED ECONOMY: A HISTORICAL APPROACH TO POLITICAL ECONOMY* (1994); WILLIAM J. NOVAK, *THE PEOPLE'S WELFARE: LAW AND REGULATION IN NINETEENTH-CENTURY AMERICA* (1996); Herbert Hovenkamp, *Regulation History as Politics or Markets*, 12 YALE J.REG. 549 (1995).

2. See, e.g., *THE CAUSES AND CONSEQUENCES OF ANTITRUST: THE PUBLIC-CHOICE PERSPECTIVE* (Fred S. McChesney & William F. Shughart II, eds., 1995); Thomas W. Hazlett, *The Legislative History of the Sherman Act Re-Examined*, 30 ECON. INQUIRY 263, 267 (1992); George J. Stigler, *The Origin of the Sherman Act*, 14 J. LEGAL STUD. 1 (1985); Thomas J. DiLorenzo, *The Origins of Antitrust: An Interest-Group Perspective*, 5 INT'L. REV. L. & ECON. 73 (1985); HERBERT HOVENKAMP, *THE ANTITRUST ENTERPRISE: PRINCIPLE AND EXECUTION*, ch. 2 (2005).

3. E.g., GABRIEL KOLKO, *RAILROADS AND REGULATION, 1877-1916* (1965). On the theory, see Sam Peltzman, *Toward a More General Theory of Regulation*, 19 J.L. & ECON. 211 (1976); Richard A. Posner, *The Social Cost of Monopoly and Regulation*, 83 J.POL.ECON. 807 (1975).

sold in competitive markets with no regulation of price, output or service territory, except for a few brief periods of extremist flirtation. It would be silly to conclude that these results obtained uniformly in so many markets simply because the interest groups backing the electricity and natural gas industries were better organized than were the purveyors of groceries, shoes or lumber. In fact, policy making in these situations was heavily driven by theory. At the same time, interest group pressures in a complex democracy cannot be ignored, particularly in a political regime such as the late nineteenth and early twentieth centuries, when fundamental changes in technology and corporate structure were causing many displacements. The period witnessed the dramatic rise of the large, multistate business firm, followed by significant but volatile economic growth, and culminated with the Great Depression and the rise of the welfare state.

My thesis is relatively straightforward: when robust economic theory dictates that a particular regulatory or competitive regime is best for a particular industry, that theory weighs heavily in policy making. Indeed, broadly accepted theory is often decisive in the formulation of the core features of a regulatory regime, although less so at the margins. Often robust economic theories are reflected by popular views about the benefits or costs of government policy. In such cases theory and politics converge. By contrast, when the theory is controversial or many features of a market are not well understood, then interest group pressures acquire greater sway and tend to drive policy making. This view of regulation takes ideas about the economic merits of regulation more seriously than does a great deal of writing in both history and political or public choice theory.

This model applies today as much as in our past. For example, in the law of intellectual property we lack a robust consensus on such fundamental questions as what the duration or scope of an intellectual property right should be, or what is the relationship between patent and copyright protection and the incentives to innovate. The result is that the patent and copyright acts are a *mélange* of special interest provisions that give an observer little confidence that the incentive to innovate is what they are all about.⁴ By contrast, the economic models

4. On patents, see Robert P. Merges, *One Hundred Years of Solicitude: Intellectual Property Law, 1900-2000*, 88 CAL. L. REV. 2187 (2000); on copyright, see Christina Bohannon, *Reclaiming Copyright*, 23 CARDOZO ARTS & ENT. L.J. 567, 568 (2006).

for competition have produced broad although hardly unanimous consensus among neoclassical economists. This is reflected in a set of antitrust provisions that are relatively simple and interest group neutral at their core.⁵

This thesis can help to explain the unprecedented level of fumbling, experimentation, and interest group activity that characterized United States competition policy during the marginalist revolution in economics, which began in the late nineteenth century and lasted for decades. Marginalism substituted the forward looking concepts of marginal utility, marginal revenue and marginal cost in the place of the historical averages used by the classical political economists to explain economic behavior. Marginalism revolutionized industrial economics in the late nineteenth and early twentieth centuries.⁶ Marginalism interrupted a period of relatively stable and largely benign thinking about competition. While the classicists were somewhat preoccupied with monopoly in land, in manufacturing they tended to see either competition or monopoly, and monopoly was regarded as exceptional. The marginalist model threatened that vision by developing mathematical models that divided markets into degrees of competitiveness. This further led to a search for the specifications of a perfectly competitive market and the developing intuition that such markets were in fact quite rare.

Further, marginalism led to a number of puzzles that had to be worked out before the classical theory of competitive equilibrium could be re-formulated to accommodate marginalist assumptions. An economic equilibrium is a steady state such that no market participant has an incentive to change unless some effect from outside occurs. Unless constrained, an economy that is not in equilibrium tends to move toward one, while an economy in equilibrium tends to stay there. The classical political economists generally gave little thought to the conditions necessary for an equilibrium. The notable exception was

⁵ On this point, see Phillip E. Areeda & Herbert Hovenkamp, *Antitrust law* ¶¶100-101 (3d ed. 2006).

⁶ See MARK BLAUG, *ECONOMIC THEORY IN RETROSPECT*, chs. 8-11, 15 (Cambridge: Cambridge Univ. Press 1996); HERBERT HOVENKAMP, *THE MARGINALIST REVOLUTION IN CORPORATE FINANCE, 1880-1965* (SSRN posting, June 6, 2008, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1141291).

David Ricardo, who believed that the economy always headed toward a steady state in which labor and marginal land earned minimum sustainable incomes, while superior land permanently captured higher profits, or rents.⁷ Even the great Cambridge University economist Alfred Marshall, whose *Principles of Economics* was both marginalist and much more entrepreneurial than Ricardo's work, focused on the manufacturing economy's two simplest equilibria, perfect competition and monopoly, and gave very little thought to anything between.⁸

But the post-Marshall development of neoclassical economics, with its mathematics of incentives at the margin, permitted an infinite array of alternatives. In particular, the development of imperfect competition and oligopoly theory led to the realization that in many markets at least one equilibrium existed in which prices were significantly above the competitive level, plants had too much unused capacity and product differentiation was significant. The developing concept of entry barriers, or prices that might not be disciplined by new competition, made the policy implications of these conclusions even more ominous. Further, in the earlier models, particularly those of Marshall and his student Joan Robinson, profits tended to flow toward capital at the expense of labor -- a point that is made repeatedly in Progressive Era and New Deal policy literature. In sum, for quite some time marginalism brought to an end the notion that pure competition or something close was the norm, with monopoly as an occasional exception. Market imperfections seemed to exist elsewhere.

As Joseph Schumpeter observed in the 1930s, the purpose of equilibrium analysis in economics is so that policy makers can analyze the causes of "chronic disequilibria."⁹ But if this is so, Schumpeter concluded, the geometry of marginalism, with its curves that shifted

7. See MICHIO MORISHIMA, *RICARDO'S ECONOMICS: A GENERAL EQUILIBRIUM THEORY OF DISTRIBUTION AND GROWTH* (1989); Haim Barkai, *Ricardo's Static Equilibrium*, 32 *ECONOMICA*, N.S. 15 (1965); and David Ricardo, *An Essay on the Influence of a Low Price of Corn on the Profits of Stock* (1815), in 4 *THE WORKS AND CORRESPONDENCE OF DAVID RICARDO* (Piero Sraffa ed., 1951-1952), pp. 22 et seq.

8. ALFRED MARSHALL, *PRINCIPLES OF ECONOMICS* (1890).

9. Joseph A. Schumpeter, *Robinson's Economics of Imperfect Competition*, 42 *J.POL.ECON.* 249, 256 (1934).

depending on one's assumptions, cannot remain an academic curiosity. "Certain kinds of shifts are amenable to rule or law." Problematically, however, in the vast range between perfect competition and absolute monopoly lies much unknown territory:

...as soon as we realize the implications of imperfect competition all presumption vanishes for some of those effects to emerge which we used to attribute to the normal working of an economic society which in common parlance would still be called "competitive." Our theorems about maximum satisfaction or maximum national dividend cease to hold true and the list of cases in which collective political action can increase both of them becomes so extended as to make these cases the rule rather than more or less curious exceptions.¹⁰

In her path breaking neoclassical study of price theory, the *Economics of Imperfect Competition* (1933), Joan Robinson noted that while traditionally economists had treated competition as the norm and monopoly as a special case, marginalist analysis showed that "it is more proper to set out the analysis of monopoly, treating perfect competition as a special case."¹¹

The new economics also focused more on the structure of business organizations. Perhaps by coincidence, the rise of marginalist economic theory occurred simultaneously with the rise of the large business enterprise. When Adam Smith surveyed the economic landscape he saw a world of farmers, blacksmiths, cobblers, and bakers, mainly small enterprises with low initial investment, significant mobility and little product differentiation other than a particular tradesman's reputation for quality. But writing in the late 1920s and early 1930s, Joan Robinson and Edward Chamberlin¹² saw an economic world dominated much more prominently by large firms with significant fixed cost investments in specialized equipment, differentiated products, and excess capacity.

10. *Id.* at 250-251.

11. JOAN ROBINSON, *ECONOMICS OF IMPERFECT COMPETITION* 307 (1933, 2d ed. 1969).

¹² EDWARD CHAMBERLIN, *THE THEORY OF MONOPOLISTIC COMPETITION* (1933). See discussion *infra*, text at notes ___.

To be sure, the emergent theory of the firm contained two strands. First was the marginalist strand, which found numerous imperfections until the technical details of the neoclassical model of industrial organization were worked out.¹³ Second was a Darwinian "institutionalist" strand, which was much more empirical, but was equally prone to view the large business firm with suspicion. Although it was ignored for decades, Ronald Coase's famous article on the Nature of the Firm (1937) was eventually interpreted as merging these two strands by combining empirical study with a theory of relative costs of intrafirm vs. market procurement.¹⁴

In the marginalist's conception of a perfectly competitive economy, prices are driven to marginal cost and the industry as a whole produces at the most efficient rate possible. While these conclusions largely tracked the much less technical formulations of "pure" competition in classical political economy,¹⁵ there was one important difference. The classicists generally believed that competition was the norm except when government intervened. By contrast, the initial impact of marginalist analysis was the belief that competition was exceptional. Fixed costs and scale economies dictated that firms could not price at the competitive level. Under the economic theories of the late nineteenth and early twentieth centuries such firms would be driven to overproduction and "ruinous" competition, as prices were forced so low that they could not cover a firm's fixed cost investments. In the 1930s, however, new models that incorporated product differentiation largely solved the ruinous competition problem. Product differentiation served to limit firms' competition with one another even when they were in the same general market. But competition in product differentiated markets was hardly perfect either. Instead of overproduction firms in such markets tended to have excess capacity and to invest too much in product design and advertising. Oligopoly theory exacerbated the problem by

¹³ See Herbert Hovenkamp, *The Law of Vertical Integration and the Neoclassical Business Firm, 1880-1960* (working paper, Sep. 2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1268328.

¹⁴ Ronald H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* (n.s.) 386, 404 (1937).

¹⁵ Mainly Adam Smith, Thomas Malthus, David Ricardo, Naussau Senior and John Stuart Mill.

theorizing even poorer performance when the number of firms was small and entry barriers were high.

The policy consequences of these developments in theory were significant. For many economists during the early part of the century high fixed costs entailed that almost any amount of antitrust was excessive. They believed that dominant firms and cooperation were inherent features of the industrial landscape. Any attempt by government to suppress them would result in higher costs at best or complete loss of market stability at worst. This economic model was coming into vogue in 1890, when the Sherman Act was passed, and helps to explain why so many economists opposed antitrust legislation.¹⁶ At the opposite extreme, the product differentiation models of the thirties were seen as leading to underproduction and excess capacity, and too much being invested in product differentiation and advertising. High entry barriers and oligopoly concentration greatly exacerbated the problem. In such a regime antitrust readily found an important place.

In 1940 Columbia University economist John Maurice Clark, the most pragmatic theoretician of mid-century competition policy, would thrust a consensus forming paper into this mix -- his essay on "Workable Competition."¹⁷ Clark's paper, which was to have a powerful influence on antitrust policy, argued that the observed imperfections were real their impact had been exaggerated. In reality government policy makers could identify and enforce a degree of competition that was functionally adequate, particularly when compared against the available regulatory alternatives.

The "workable competition" model served to make the case for antitrust as the principal regulator of competition in the United States, and to preserve a relatively small domain for command-and-control regulation. Important details had to be worked out, however, and a

16. See HERBERT HOVENKAMP, *ENTERPRISE AND AMERICAN LAW, 1836-1937* at 308-322 (Cambridge, Ma.: Harvard Univ. Press, 1991).

17. John Maurice Clark, *Toward A Concept of Workable Competition*, 30 *AM. ECON. REV.* 243 (1940). On Clark, see LAURENCE SHUTE, *JOHN MAURICE CLARK: A SOCIAL ECONOMICS FOR THE TWENTY-FIRST CENTURY* (1997). Clark was at the University of Chicago from 1915 to 1926, and at Columbia from 1926 until his retirement in 1957.

significant debate ensued in the 1950s between Harvard "structuralism" and a more behaviorist alternative developed mainly at the University of Chicago.

Progressive Social Control and Competition Policy

Emergent social science in the late nineteenth and early twentieth century was heavily absorbed with "social control." The idea was that society, acting through both public and private orderings, tended to normalize and limit the excesses of individual behavior. The fundamental idea of social control, sociologist Edward Alsworth Ross wrote in his pathbreaking 1901 book with that title, was that individual and social interests were fundamentally in conflict.¹⁸ This observation itself was a sharp break with a classical past that had tended to see individual desires, even though hedonistic, as melding together to form the social interest. This accounted for the classical theory of markets, where the selfish desires of any person united for the common good via voluntary exchange.

For marginalists such as Ross, social control was not limited to absolute coercion but rather took the form of any set of social or government incentives that influenced individuals to do something that they might not do if unconstrained. Indeed, one of the most important policy contributions of marginalism outside of price theory was its notion that coercion is always a matter of degree, and that utility maximizing actors equate alternative sources of pain or pleasure just as they equate the utilities of desirable goods. This theme came to dominate social science through the Legal Realists, including the writings of such early Realists as Robert Hale, who studied the manifold ways that the legal system operated to coerce behavior and transfer wealth without the use of absolute force. Further, Hale argued, this had always been the case, even under professed systems of *laissez faire* that regarded the state as uninvolved with economic life.¹⁹

18. EDWARD A. ROSS, *SOCIAL CONTROL* (1901).

19. Robert L. Hale, *Coercion and Distribution in a Supposedly Non-Coercive State*, 38 *POL.SCI.Q.* 470 (1923). See BARBARA H. FRIED, *THE PROGRESSIVE ASSAULT ON LAISSEZ FAIRE: ROBERT HALE AND THE FIRST LAW AND ECONOMIC MOVEMENT* (1998).

The ideological origins of the social control idea and the reasons for its great popularity are somewhat ambiguous. Clearly, its proponents doubted the long held faith in American exceptionalism, with its belief that America was different and that God would always keep it and its citizens on the right course. Social control was about the need for society and not merely religion to control deviant social behavior. "Deviance" was typically defined from the perspective of the middle and upper middle class academics who became America's first social scientists. Control devices were seen as necessary to restrain the immorality and unproductive behavior of the poor, uneducated and minority races. Importantly, however, they were also needed to contain the profligacies of the super rich and rapacious.²⁰

In the mid-twenties John Maurice Clark wrote a lengthy book on social control of business behavior.²¹ That book set the stage for Clark's much more influential work on administratively workable competition.²² For Clark, the problem of government restraints on business behavior was simply a variation on the general social problem of controlling deviancy by reference to some articulated norm. He adopted the Ricardian notion popular with the Progressives that the common law is biased because it tends to bleed resources in the direction of those who have economic power to begin with.²³ While he began with a wholesale indictment of the traditional system of private property and contract rights, Clark also found significant inefficiencies to result from public ownership of the means of production.²⁴ He concluded that the best way to guarantee the public interest in a healthy economy and low prices was private ownership with a mixture of regulatory and competition-enhancing legal rules.

20. See the excellent discussion in DOROTHY ROSS, *THE ORIGINS OF SOCIAL SCIENCE* 219-256 (1991).

21. JOHN MAURICE CLARK, *SOCIAL CONTROL OF BUSINESS* (1926).

22. See John Maurice Clark, *Toward A Concept of Workable Competition*, 30 AM. ECON. REV. 243 (1940). See discussion *infra*, text at notes ____.

23. See Clark, *Social Control of Business*, note ___ at 10. The most forceful Progressive exposition was RICHARD T. ELY, *PROPERTY AND CONTRACT IN THEIR RELATION TO THE DISTRIBUTION OF WEALTH* (1914).

24. Clark, *Social Control*, 372-376.

Clark was fundamentally a skilled technician. For him the most troublesome attribute of the modern industrial economy was fixed costs. The development of a theory of costs was one of marginalism's most significant contributions to industrial economics, but early on the theory also created its most imposing problems. The classical political economists had only the vaguest notion about the relation between costs and different levels of output. Marginalism changed that by developing mathematical concepts of fixed, variable and marginal costs. In his *Principles of Economics* Alfred Marshall had already noted that certain costs were highly responsive to demand in a short time period, while other costs such as those for land or durable plants or equipment were not. As a result, in the "short run" price might be quite responsive to changes in demand, because new capacity could not quickly be brought into an industry. However, in the long run new plants would be built, and prices closer to the competitive level would prevail.²⁵ Whenever output responses lagged behind demand, in either direction, the market price had little to do with cost. As Alfred Marshall wrote, "there is no connection between cost of reproduction and price in the cases of food in a beleaguered city."²⁶

For the classicists and most early marginalists a "cost" was something that was incurred and paid off in a single production cycle, such as the farmer's seed or the baker's flour. Fixed costs were investments in land, plant, durable equipment, intellectual property, and other things whose life was either indefinite or else lasted much longer than a single season of production and sale. An important attribute of fixed costs was that per unit costs of production declined as output went up, for fixed costs could be allocated over a larger output. For example, if the mortgage payments on a plant are \$1000 per month, per unit costs for the plant are \$100 per unit if the plant produces ten units per month, but only \$1 per unit if the plant produces 1000 units per month. If "direct" (i.e., variable) costs are small by comparison -- say, 50 cents per unit -- then a firm could earn a profit at drastically lower prices if its output were sufficiently high.

25. ALFRED MARSHALL, *PRINCIPLES OF ECONOMICS* 349 (8th ed. 1920). See Ragnar Frisch, *Alfred Marshall's Theory of Value*, 64 Q.J.ECON. 495 (1950).

26. Marshall, *id.* at 402.

In sum, fixed costs created production "economies of scale" whenever per unit costs were lower in plants that operated at high rates of output. This fact in turn entailed that a market would have room for fewer firms, and perhaps fewer than needed for effective competition. Economists around the turn of the twentieth century were fairly obsessed with the problem of scale economies and the implications for competition. Indeed, a principal reason so many economists opposed the passage of the Sherman Act is that they believed that monopoly was more-or-less inevitable in many industries, and that antitrust legislation would force firms to be inefficiently small.²⁷ For example, Yale economist and later president Arthur Twining Hadley opposed the Sherman Act on economic grounds, arguing that either monopoly or collusion was inevitable in industries with high fixed costs, lest they be driven into ruinous competition and bankruptcy.²⁸

The fixed cost controversy originated in disputes about railroad rates, where fixed costs were extremely high. But it quickly expanded into ordinary manufacturing. Problematically, once a large fixed cost asset such as a plant was built it had to be paid for, whether or not it was used. In an industry with high fixed costs and multiple producers, fixed costs were thought to lead to "ruinous" competition, which occurred when each firm kept its own output as high as possible in order to keep costs down. The result was prices that were high enough to cover operating costs but insufficient to pay off the fixed cost investment.

The ruinous competition theory assumed that the goods being overproduced were fungible, or indistinguishable from one seller to another. For example, Alfred Marshall's conception of the "representative firm" in an industry entailed that every firm in a market had cost and production functions that were to be counted as identical, and prices were driven to marginal cost.²⁹ As a result firms competed

27. See Henry R. Hatfield, *The Chicago Trust Conference*, 8 J. POL. ECON. 1 (1899). *And see* HERBERT HOVENKAMP, *ENTERPRISE AND AMERICAN LAW, 1836-1937* at Ch. 23 (1991).

28. ARTHUR T. HADLEY, *ECONOMICS* 158, 295 (1896).

29. See ALFRED MARSHALL, *PRINCIPLES OF ECONOMICS* 317 (8th ed. 1920). The theory was vigorously attacked as creating an inconsistency between the assumption of fixed costs and scale economies on one hand, and perfect competition on the other. See Piero Sraffa, *The Laws of Returns*

only on price and any sale above marginal cost was profitable in the short run.

The theory of fixed costs had an influence on Progressive era social policy that is rarely obvious to its political historians but is nevertheless difficult to exaggerate. The theory readily migrated from the economics of industrial organization to the welfare economics of social policy and wealth redistribution. Fixed costs explained why firms became large -- because they could produce more cheaply. It also explained overproduction -- once a plant was built maximum output resulted in lower costs and enabled managers to bid lower prices. Importantly, however, fixed costs also appeared to explain why wealth tended to move toward capital rather than toward labor. First, large fixed cost investments such as plants had to be carried in both times of high output and low. Labor, by contrast, was a variable cost to the capitalist and could be dropped on a moment's notice in times of low demand. The capitalist responding to recession could not avoid the mortgage payments on the plant but he could readily lay workers off. Second, while labor is a variable cost to the employer, it is in many senses a "fixed" cost to the laborer himself. He must eat, clothe and shelter self and family whether or not he is working, just as the plant must be paid for when it lies idle.

One of Clark's most controversial proposals in his *Studies of overhead costs* was that for social purposes the laborer be treated as a fixed rather than a variable cost -- that is, as an investment whose support must be paid for whether or not the laborer is currently employed.³⁰ That proposal naturally had social consequences that went far beyond the economics of industrial organization, reaching to such things as guaranteed employment or unemployment

under Competitive Conditions, 36 ECON. J. 335 (1926); Lionel Robbins, *The Representative Firm*, 38 ECON.J. 387 (1928). On the birth and death of the concept, see J.N. Wolfe, *The Representative Firm*, 64 ECON.J. 337 (1954); James A. Maxwell, *Some Marshallian Concepts, Especially the Representative Firm*, 68 ECON.J. 691 (1958).

30. JOHN MAURICE CLARK, *STUDIES IN THE ECONOMICS OF OVERHEAD COSTS* 395-402 (1923). On the enthusiastic reception of Clark's suggestion at the 1922 meeting of the American Economics Association, see LAURENCE SHUTE, *JOHN MAURICE CLARK: A SOCIAL ECONOMICS FOR THE TWENTY-FIRST CENTURY*, ST. MARTIN'S PRESS (New York. 1997).

compensation. Clark himself believed that the worst evil of economic depression was the fact that wages could instantly be withdrawn, leaving masses of unemployed, even as the mortgage payments on plants continued to be paid. An additional consequence of making labor costs variable is that it enabled the employer to avoid the full social cost of labor, which included the costs of fatigue, injuries, and health care. Once again, the owner of a plant needed to keep it in repair in order to maintain productivity; but he could instantly drop a sick laborer and replace him with another at little or no cost to himself.³¹

By the end of the nineteenth century the problem of fixed costs was already well known in both the economics and the legal literature.³² Indeed, the notion that competition between two transportation utilities could be ruinous was already known in the 1830s, when litigants before the Supreme Court cited Chancellor Kent for that proposition in the *Charles River Bridge* case. Justice Story accepted it as a rationale for his dissent, which argued basically that competition was so destructive to the business of a toll bridge that no reasonable investor would have agreed to build without a monopoly guarantee.³³ The problem of high fixed costs was understood sufficiently well in the railroad industry that both railroad lawyers and the Interstate Commerce Commission used it to justify railroad "pools," or cartels, designed in part to keep rates high enough to cover fixed

31. See Clark, *Social Control of Business*, note ___ at 157.

32. See, e.g., Henry Carter Adams, *Relation of the State to Industrial Action*, 1 PUB., AM. ECON. ASSN. 7, 52, 59-64 (1887); Francis W. Taussig, *A Contribution to the Theory of Railway Rates*, 5 Q. J. ECON. 438 (1891); ARTHUR T. HADLEY, *ECONOMICS* 158, 295 (1896). On the fixed cost controversy in American competition policy, see HERBERT HOVENKAMP, *ENTERPRISE AND AMERICAN LAW, 1836-1937*, Ch. 23 (1991).

33. *Proprietors of Charles River Bridge v. Proprietors of Warren Bridge*, 36 U.S. 420, 436, 442, 448 (1837). See also *id.* at 650 (Story, J., dissenting). And see *Western Union Telegraph Co. v. Union Pac. Ry. Co.*, 3 F. 423, 425 (C.C.Kan. 1880) (noting possibility of ruinous competition from running of parallel telegraph lines by competing firms). Cf. *Morgan v. New Orleans, M. & T. R. Co.*, 17 F.Cas. 754 (C.C.La. 1876) (upholding contract between two companies operating railroads and steamships dividing the market between them in order to limit ruinous competition).

costs.³⁴ The Supreme Court heard these arguments in two major antitrust cases in the late 1890s, but rejected them, holding that the Sherman Act made no exception for industries prone to ruinous competition.³⁵

By the turn of the century many economists began to see the fixed cost problem as much more general, affecting ordinary manufacturing as well as railroads and public utilities. As a result many came to believe that either monopoly or collusion was virtually inevitable in many manufacturing markets unless the state intervened. Further, *antitrust* intervention was not what they had in mind, for it did no more than condemn practices that were thought to be unavoidable, given the structure of American industry. During the first two decades of the twentieth century American economists debated widely whether high fixed costs would drive business either to ruinous competition or else to collusion.³⁶

By the 1920s, however, a consensus began to emerge that very high scale economies producing truly "ruinous" competition probably existed in only a few industries. The literature began to develop important distinctions between long run and short run decision making, largely in an effort to explain the great merger movement that occurred at the turn of the twentieth century.³⁷ The problem with the existing

34. *E.g.*, *Central Trust Co. v. Ohio Cent. Rwy.*, 23 F. 306 (C.C.N.D. Ohio 1885) (upholding pooling agreement), *rev'd on other grounds*, 133 U.S. 83 (1890); *Nashua & L.R.R.*, 19 F. 804 (C.C. Mass. 1884) (same), *rev'd on other grounds*, 136 U.S. 356 (1890); *Chicago, M. & St. P. Ry. v. Wabash, St. L. & Pac. Rwy.*, 61 F. 993 (8th Cir. 1894) (pooling permissible if designed to prevent ruinous competition). See Herbert Hovenkamp, *Regulatory Conflict in the Gilded Age: Federalism and the Railroad Problem*, 97 YALE L.J. 1017 (1988).

35. *United States v. Trans-Missouri Freight Assn.*, 166 U.S. 290, 329-330 (1897); *United States v. Joint-Traffic Assn.*, 171 U.S. 505, 519-523, 547-48, 569 (1898) (reporter's summary of James Coolidge Carter's brief for the Joint Traffic Association and E. J. Phelps' argument for the New York Central Railroad Co).

36. See Hovenkamp, *Enterprise*, note ___, ch. 23.

37. See, *e.g.*, Elliot Jones, *Is Competition in Industry Ruinous?*, 34 Q. J. ECON. 473, 491-497 (1920); JONES, *THE TRUST PROBLEM IN THE UNITED STATES* 197 (1921); MYRON WATKINS, *INDUSTRIAL COMBINATIONS AND PUBLIC*

models of competition, wrote Clark, was that they treated fixed costs as a given and saw competition as driving firms to ruin, earning enough to cover variable costs but not fixed costs. However, in the long run a firm is free to make the same choices about land, plant and durable equipment that it makes about inventory. To be sure, pricing and output decisions in markets with high fixed costs are more complicated, because the entrepreneur must live with investment decisions over a longer period of time. This explains such things as the great amount of price discrimination in such markets, as firms struggle to keep their output up.³⁸ While the consolidations were intended to diminish ruinous competition they also made clear that long run pricing concerns would be a relatively permanent feature of American manufacturing across a wide variety of markets.³⁹ Most importantly, as developed below, the rise of competition models incorporating differentiated products largely put the controversy to rest.⁴⁰

Unlike the social control theorists in other social sciences, Clark was not a behavioralist.⁴¹ His principles of decision making were rooted in neoclassical price theory, which means that he assumed firms and their managers behaved so as to maximize profits. Working

POLICY, ch. 3 (1927). See also Frank Knight, *Cost of Production and Price Over Long & Short Periods*, 29 J. POL. ECON. 304 (1921); 2 F. W. TAUSSIG, PRINCIPLES OF ECONOMICS 53-54 (3d ed. 1922); Spurgeon Bell, *Fixed Costs and Market Price*, 32 Q. J. ECON. 507 (1918). On the merger movement, see NAOMI R. LAMOREAUX, THE GREAT MERGER MOVEMENT IN AMERICAN BUSINESS, 1895-1904 (New York: Cambridge Univ. Press, 1988); George Bittlingmayer, *Did Antitrust Policy Cause the Great Merger Wave?*, 28 J. L. & ECON. 77 (1985); George Bittlingmayer, *Decreasing Average Cost: a New Look at the Addyston Pipe Case*, 25 J. L. & ECON. 201 (1982).

38. See F.Y. Edgeworth's Review of Clark's *Overhead Costs*. 35 ECON.J. 245 (1925).

39. See, e.g., Frank Knight, *Cost of Production and Price Over Long & Short Periods*, 29 J. POL. ECON. 304 (1921).

40. See discussion infra, text at notes ___.

41. See Dorothy Ross, note ___ at 413 (quoting unpublished 1927 letter from Clark to Wesley Clair Mitchell).

from that assumption the problems of high fixed costs were manifold.⁴² *First*, they made marginal cost pricing -- and thus perfect competition -- impossible because a marginal cost price would not give a firm enough return to cover its fixed cost investment. *Second*, industries with high fixed costs would feel constrained to keep their output very high in order to keep per unit costs low. Indeed, any price above average variable cost was profitable in the sense that it made some contribution to fixed costs. The result was "ruinous" competition in which marketwide prices would be driven to marginal cost without enough left over to cover fixed costs.⁴³ This in turn led to a very high risk of collusion in such markets, as firms tried to avoid ruinous competition. *Third*, high fixed costs explained and justified many instances of price discrimination. The firm continuously tried to sell all it could to any customer willing to pay enough to cover the variable costs.⁴⁴ As a result, price discrimination was not a monopoly problem as such, but was ubiquitous in industries with high fixed costs and not necessarily evil.⁴⁵ *Fourth*, extreme cases of overhead costs can lead to natural monopoly. As Clark observed:

...[W]here the economies of increased size remain decisive, up to the point of absorbing the entire market, the business becomes a "natural monopoly." Competition is impossible or intolerably wasteful, and the public must secure to itself as much as it can of the advantages of large-scale efficiency (which should properly be no one's permanent private property) by regulation of prices and service.⁴⁶

42. JOHN MAURICE CLARK, *STUDIES IN THE ECONOMICS OF OVERHEAD COSTS* (1923).

43. See John Maurice Clark, *Monopolistic Tendencies, Their Character and Consequences*, 18 *PROCEEDINGS ACAD. POL. SCI.* 2, 8 (1939), which observed that certain industries were structurally conducive to ruinous competition ("...result depends, not simply on the form of competitive practices, but also on the underlying conditions of the industry itself.")

44. On this problem in the nineteenth century railroad industry, see Hovenkamp, *Regulatory Conflict*, note ___.

45. JOHN MAURICE CLARK, *STUDIES IN THE ECONOMICS OF OVERHEAD COSTS*, 421, 433 (1923). See also F.Y. Edgeworth's *Review*, 35 *ECON. J.* 245, 246 (1925).

46. See Clark, *Social Control* at 270-271.

The Legacy of Classicism and Cournot

Classical political economy had the distinct advantage of not being technical. Expectations for mathematical precision were not particularly high. If they were writing today the classical political economists would be regarded as public intellectuals writing about policy. "Competition" most typically referred to the rivalry that existed among two or more business persons.⁴⁷ For example, Adam Smith distinguished between competition and collusion and realized that rivals must be sufficiently numerous so as to make collusion unlikely. He knew that competition required actors who were knowledgeable about market conditions and had the freedom to act upon this knowledge, and that resources must be mobile. But Smith and the other classicists had at best a vaguely formulated concept about the relationship between competitive prices and cost. Further, the English classicists had very little conception of "degrees" of competition. Markets were either competitive or else they were monopolized.⁴⁸ Augustin' Cournot, writing in French in the 1830s and largely ignored for a half century, attempted to quantify the relationship between marginal production and costs, and related the number of firms in a market to the market price.⁴⁹ But only with the rise of marginalism did Cournot's work come into vogue in England and later in the United States.

With the exception of Cournot, the classicists rarely used mathematics. Both Jevons and Walras began to use some math in the 1870s, and Jevons acknowledged Cournot's influence.⁵⁰ Alfred

47. See George J. Stigler, *Perfect Competition, Historically Contemplated*, 65 J.POL.ECON. 1 (1957), referring to ADAM SMITH, THE WEALTH OF NATIONS 56-57 (1776).

48. Stigler, *Perfect Competition*, *id* at 1-5.

49. AUGUSTIN COURNOT, RECHERCHES SUR LES PRINCIPES MATHÉMATIQUES DE LA THÉORIE DES RICHESSES (RESEARCHES INTO THE MATHEMATICAL PRINCIPLES OF THE THEORY OF WEALTH), (1838; English trans., Nathaniel T. Bacon 1897). See "COURNOT," IN THE NEW PALGRAVE: A DICTIONARY OF ECONOMICS (1987).

50. See W. STANLEY JEVONS, THE THEORY OF POLITICAL ECONOMY

Marshall also acknowledged Cournot in his 1890 *Principles*.⁵¹ While Cournot did not use the term "marginal cost," his mathematical formulations for competition used a term defined as the rate of increase in per unit costs, which is the same thing. Cournot also showed that the intersection of a declining demand curve and an increasing marginal cost curve determined how much a competitive firm would produce and, indirectly, the price it would charge.⁵² He then theorized that if each firm in a market with relatively few sellers computed this profit-maximizing rate of output on the assumption that rivals would hold their output constant the market would reach a noncompetitive equilibrium in which output was lower than the competitive level, but not so low as the single firm monopoly level. This highly elegant mathematical model -- the first theory of oligopoly -- was responsible for much of the marginalist theorizing about competition early in the twentieth century.

Cournot's own model was widely regarded as excessively simplistic, for a number of reasons. First the theory that each firm would set its own output on the assumption that other firms would hold their output constant was counterintuitive.⁵³ In addition, Cournot assumed a perfectly fungible product -- that is, that the output of different producers was so nearly identical that consumers were indifferent to everything except the price. He also assumed that firms were indifferent to the potential for market entry by other firms, and he paid almost no attention to the presence of fixed as opposed to variable costs. In sum, while Cournot's theory supplied the core of marginalist competition analysis, many details had to be worked out.

(1871); LEON WALRAS, *ELEMENTS OF PURE ECONOMICS* (1874; trans. by William Jane, 1954).

51. See Irving Fisher, *Cournot Forty Years Ago*, 6 *ECONOMETRICA* 198 (1938).

52. See Irving Fisher, *Cournot and Mathematical Economics*, 12 *Q.J.ECON.* 119, 127 (1898).

53. The most influential, and very hostile, critique was Joseph Bertrand, *Theorie Mathematique de la Richesse Sociale*, 67 *JOURNAL DES SAVANTS* 499-508 (1883), who illustrated that if one adopted price instead of output as the relative variable the firms in Cournot's model would set the competitive price for any number of firms greater than one. For a good historical discussion see Jean Magnan de Bornier, *The "Cournot-Bertrand Debate": A Historical Perspective*, 24 *HIST. POL. ECON.* 623-54 (1992).

Nevertheless, Cournot's overly simplistic assumptions actually account for his theory's durability, as well as the centrality of his model to the marginalists' debate over competition policy. Much of that debate concerned what happens when you relax one or more of Cournot's simple assumptions, by considering such things as high fixed costs, product differentiation, or entry barriers.

Imperfect Resolution of the Fixed Cost Controversy in the 1930s: Robinson and Chamberlin

Marginalism became the basis for a major onslaught against laissez faire, mainly for two reasons. The first was the early marginalists' theory about the effects of forced wealth redistribution, while the other was its theory of competition.

While the second reason is most important to our present concerns, the first deserves brief mention. One immediate impact of the incorporation of marginal utility theory into economics was a heightened interest in involuntary redistributions of wealth. The marginalists following Jevons knew that utility maximization requires the individual actor to equate utilities at the margin, and they automatically assumed that this formulation held good for the distribution of wealth or other entitlements among different persons. Among the Cambridge economists Alfred Marshall, Arthur Pigou and Joan Robinson all believed that money transfers from wealthier to less wealthy individuals increased total welfare, for poorer individuals placed a higher value on a marginal dollar than did wealthier ones. As a result, Pigou and Robinson both toyed with socialism to one degree or another, although Marshall was more ambivalent.⁵⁴ They believed that the marginal utility of an additional dollar to someone who already had thousands must be much less than it would be to someone who had nothing. For empirical verification they observed that the impoverished would be likely to spend that dollar on food, clothing or shelter, which were high utility goods, while the wealthier will already have satisfied those needs.

54. See Prue Kerr, *Joan Robinson and Socialist Planning in the Years of High Theory*, 31 *CAMBRIDGE J. ECON.* 489 (2007). On Marshall and Pigou, see Roger Backhouse and Steven G. Medema, *Public Choice and the Cambridge School: A New View* (SSRN Working Paper, 2006, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=949203).

These views were subsequently criticized by John Hicks and Lionel Robbins, leading to a "Paretian" revolution in neoclassical welfare economics, after which the welfare consequences of pure wealth transfers no longer had unambiguous answers. The basis of the revolution was the idea, now a matter of fundamental neoclassical doctrine, that although a single individual can rank his or her own preferences, the strength of preferences cannot be compared from one person to another. Neoclassical economics once again became more-or-less agnostic on the question of the welfare effects of involuntary wealth distributions.⁵⁵

During the interval from roughly 1890 until roughly 1935, however, marginalist economists in England generally believed that the "social net product," as Pigou called it, could be increased through forced wealth redistribution. This appeared to justify the state's hand in the economy in a big way. The impetus to involve the state was increased by neoclassical studies such as John Maurice Clark's *Economics of Overhead Costs*, which concluded that industrial production tends naturally to transfer wealth away from labor and toward capitalists.⁵⁶ That is, the natural consequence of the redistributions brought about by capitalism were regressive.

The second reason for marginalism's doubt about laissez faire lay more centrally in price theory and industrial economics. The mathematics of marginalism enabled the neoclassicists to make distinctions that the classicists could not even comprehend. The assumptions that economic actors equate their utilities at the margin and that firms maximize profits; that when a firm is maximizing profits marginal cost equals marginal revenue; that both product differentiation and declining costs are ubiquitous and inconsistent with perfect competition; that economic equilibria can be defined for markets that are neither monopolized nor perfectly competitive -- these were all problems that the classicists simply did not recognize or

55. For further exploration see Herbert Hovenkamp, *The First Great Law & Economics Movement*, 42 STAN. L. REV. 993 (1990); Robert Cooter and Peter Rappoport, *Were the Ordinalists Wrong about Welfare Economics*, 22 J.ECON.LIT. 507 (1984).

56. JOHN MAURICE CLARK, *STUDIES IN THE ECONOMICS OF OVERHEAD COSTS* (1923). See discussion *supra*, text at notes ___.

else acknowledged only in a much less technical fashion.

One of the unforeseen consequences of marginalism is that the stubbornness of these problems often led to policy conclusions that seem overly broad and somewhat hastily developed when considered in retrospect. Both cost theory and subsequently monopolistic competition theory are good examples. Their impact served to undermine confidence in competition in a great many markets, not merely structural monopolies. They were to have severe implications for both antitrust policy and regulatory policy through the first half of the twentieth century.

Imperfect Competition

In 1933 Cambridge University's Joan Robinson published her *Economics of Imperfect Competition*, the first systematic application of marginalist analysis to product differentiated markets.⁵⁷ In such markets firms have a somewhat downward sloping demand curve, which means that they have a certain amount of discretion over price. Robinson developed the concept of a continuous "marginal revenue" curve and showed how it affected the choice of output and price by firms that have some discretion over what output to produce and what price to charge. For such a firm charging a little higher price does not entail losing all of one's sales, as it does for the perfect competitor. Rather, the firm in imperfect competition typically sells a little less as it charges a little higher price, or a little more as it cuts price.⁵⁸

Robinson's work analyzed why product differentiated markets tended to work more poorly than markets for fungible products. Mainly, in differentiated markets prices tended to be above marginal cost, price discrimination was relatively common, and firms had the incentive to differentiate their products further in order to avoid the consequences of head-to-head competition. Robinson generally assumed that there were no barriers to entry by new firms. As a result, firms continuously differentiated their products in order to escape from close rivals.

57. JOAN ROBINSON, *THE ECONOMICS OF IMPERFECT COMPETITION* (1933).

58. See Joseph A. Schumpeter, *Robinson's Economics of Imperfect Competition*, 42 J.POL.ECON. 249, 249-250 (1934).

The principal distinction between Marshall's *Principles* and Robinson's *Imperfect Competition* is in the nature of the paradigm "firm" that the two authors imagined. While Marshall took on some of the mathematics of marginalism, the firm for him remained the classical enterprise producing a fungible good in intense competition with other firms, or else a monopolist not facing any competitors. In sharp contrast, Robinson's *Imperfect Competition* imagined a manufacturing world much more like the one we actually have, in which products are somewhat differentiated from one another but yet compete. Thus the real jolt of *Economics of Imperfect Competition* lay in its theorizing that real world markets in fact perform much less robustly than economists had imagined in the past. While the classicists were correct that true monopoly was the exception rather than the rule, they were way too sanguine about everything else. She observed that "economists, misled by the logical priority of perfect competition in their scheme, were somehow trapped into thinking that it must be of equal importance in the real world." But in fact "the real world did not fulfil the assumptions of perfect competition."⁵⁹ Or as Joseph Schumpeter observed in a review of Robinson's book, the "common practice" of political economy through Marshall had been to look "at the whole stretch of ground between the two limiting cases [monopoly and perfect competition] as rather unsafe and incapable of yielding determinate results." However, "[a]s the majority of practical cases lie on that stretch" the result was "highly unsatisfactory":

Things look still worse as soon as we realize that the case of free competition cannot be looked upon as an approximation, and that it becomes a distortion of what it is meant to describe if its assumptions are not fulfilled exactly. To complete our discomfiture, analysis of these assumptions and the resulting correct formulation of them reveal the fact that they are much farther removed from reality and much less likely to be fulfilled than even Marshall probably thought."⁶⁰

Notwithstanding all of this talk about the "real world," the *lack* of empirical information in Robinson's book is stunning. Fundamentally, *Imperfect Competition* is a geometry text that draws certain curves and

59. Robinson, *Economics of Imperfect Competition*, Introduction, p. 4.

60. Joseph A. Schumpeter, *Robinson's Economics of Imperfect Competition*, 42 J.POL.ECON. 249, 249-250 (1934).

lines based on assumptions about how rational actors, including business firms, behave. In Robinson's case, the assumptions were utility maximization for biological persons or profit maximization for business firms. She stated her most fundamental assumption as that "each individual acts in a sensible manner in the circumstances in which he finds himself from the point of view of his own economic interests."⁶¹ "Sensible" meant profit maximization.

Robinson's ideological subtext was relatively clear, however. "We see on every side a drift towards monopolisation...."⁶² Further, Robinson believed that capitalist entrepreneurs were systematically transferring wealth toward themselves and away from the one set of participants in the economy who were unable to differentiate their output effectively -- namely, labor. Soon after *Imperfect Competition* was published Robinson became a Keynesian and an active socialist in the British Labour Party.⁶³

The Monopolistic Competition Revolution

In a market of identical, or fungible, products consumers are indifferent to everything but price. But if products are differentiated the calculus of choice becomes much more complex. Some customers may still buy strictly on price, but others will be drawn to features present in one version of the product but not others. The greater the "space" between a product and its most adjacent competitor the larger these preference differences are likely to be. Further, they are exacerbated by market factors that limit product mobility. The more difficult it is to redesign a product to look like a successful rival's, the more robust that rival's success will be. This accounts for the very

61. *Imperfect Competition*, p. 15.

62. Robinson, *Imperfect Competition* 307 [1933] (2d ed 1969).

63. On Joan Robinson's later career and flirtation with socialism, see Prue Kerr, *Joan Robinson and Socialist Planning in the Years of High Theory*, 31 *CAMBRIDGE J. ECON.* 489 (2007); and Bertram Schefold, *Are Economic Theories Historically Specific?* 312, in *THE ECONOMICS OF JOAN ROBINSON* (Maria C. Marcuzzo, Luigi L. Pasinetti, Alessandro Roncaglia, eds., 1996). On the socialist implications of marginalism in this period, see Ian Steedman, *SOCIALISM AND MARGINALISM IN ECONOMICS: 1870-1930* (1995) (focusing mainly on Continental Europe and the relationship in non-English speaking countries).

large power of intellectual property rights in product differentiated markets. Such rights only rarely create "monopolies" in the economic sense, but they do tend to create or preserve product differentiation by making it more difficult for one firm to copy another firm's product precisely.

Product differentiation undermined most of the arguments that related high fixed costs to "ruinous" competition prior to the 1930s, largely ending the fixed cost controversy.⁶⁴ Under the prevailing Marshallian model in vogue in the late nineteenth and early twentieth centuries, competitive equilibrium was seen as inconsistent with fixed costs, and the attempts to solve this puzzle within an industry producing the identical product were all technical failures.⁶⁵ However, firms making differentiated products did not simply manufacture more and more as long as price was above marginal cost; rather they invested in distinguishing their products in order to avoid head-to-head competition. As University of Texas economist Spurgeon Bell had observed already in 1918:

If fixed costs are large there must be a style or brand competition on the one hand or, on the other hand, consolidation of producers similar to that which took place in the steel industry, in the railroads, and in various large plant industries producing goods of a comparatively staple character.⁶⁶

While the product differentiation models of the early 1930s largely solved the ruinous competition problem, they substituted

64. See the discussion *supra*, text at notes ____.

65. See Jan Keppler, *MONOPOLISTIC COMPETITION THEORY: ORIGINS, RESULTS, AND IMPLICATIONS* (Baltimore: Johns Hopkins Univ. Press, 1994). On Marshall's own struggles with the problem, see INTRODUCTION, *THE MONOPOLISTIC COMPETITION REVOLUTION IN RETROSPECT* (Steven Brakman and Ben J. Heijdra, eds. Cambridge: Cambridge Univ. Press, 2004).

66. Spurgeon Bell, *Fixed Costs and Market Price*, 32 Q. J. ECON. 507, 523 (1918). See also Elliot Jones, *Is Competition in Industry Ruinous?*, 34 Q. J. ECON. 473, 491-497 (1920) (arguing that product differentiation would enable firms to find and maintain equilibrium output). Spurgeon Bell was a Professor at both Chicago and the University of Texas, but spent most of the time at the latter. Eliot Jones spent most of his career at Stanford.

another set of unsettling market imperfections. The result was a significant change in the focus of competition policy. With the exception of price fixing, which is quite common in markets for fungible products, antitrust policy since the 1940s has been preoccupied mainly with anticompetitive practices in product differentiated markets. This was particularly true of the law of vertical restraints, which is discussed in the next chapter.

During the middle part of the twentieth century Chamberlin's monopolistic competition became the ruling model of competition theory.⁶⁷ Incorporating product differentiation into competitive economic models produced important conclusions that most of the economists involved in the fixed cost controversy had not anticipated. The general problem of "ruinous" competition was much less imposing, because firms in a differentiated market could obtain higher prices by keeping their own output in check. Increasingly, ruinous competition came to be seen as unique to markets where goods or services could not readily be differentiated and thus firms were required to compete on price alone. At the same time, "perfect" competition was not in the cards either because prices were always above marginal cost -- indeed, it was the drive toward marginal cost pricing in industries with high fixed cost that led competitors to ruin.

Chamberlin's model generally assumed a sufficiently large number of firms in a market that Cournot-style coordination of output was not significant. Further, entry was easy. However, each firm also produced a variation of the product that was distinguishable in the eyes of buyers. As a result buyers preferred one firm's offering over others, but buyers' individual preferences varied from one firm to the next. As a result each firm faced a demand curve that sloped downward -- it could sell more by cutting its price. Firm continuously re-positioned themselves in such a market by seeking to differentiate their own offerings from those of rivals, but also by copying the offerings of rivals who appeared to be earning higher returns. The mathematics of monopolistic competition are complex; however, Chamberlin concluded that, while in the short run firms would earn some profits in the form of prices higher than marginal cost, in the long run these

67. EDWARD CHAMBERLIN, *THE THEORY OF MONOPOLISTIC COMPETITION* (1933). On Chamberlin's own development of the theory prior to its publication, see JOSEPH A. SCHUMPETER, *HISTORY OF ECONOMIC ANALYSIS* 1150-1151 (New York: Oxford Univ. Pres, 1954).

profits would be frittered away as other firms duplicate that firm's successes or the firm invests in further differentiation in order to protect its profits. Long run profits are zero, or just enough to pay off fixed cost investments at the competitive rate. Further, in equilibrium monopolistically competitive firms are always carrying excess capacity; that is, they could be producing more of the very product they are producing by simply cutting the price toward marginal cost.

Consensus and Workability in Competition Policy

The work of Robinson and Chamberlin was widely viewed as a severe limitation on the classical idea that competition is robust and that markets tend toward it.⁶⁸ This in turn was thought to explain at least part of the subsequent antitrust hostility toward such things as advertising and "excessive" product differentiation, which reached its high point in the 1970s.⁶⁹ Many members of the Chicago School rejected the theory of monopolistic competition for being too complex and excessively structuralist.⁷⁰ It is no wonder that in our post-

68. See e.g., ARTHUR R. BURNS, *THE DECLINE OF COMPETITION* 11-12 (1936) (advocating regulation in response to what he saw as inevitable monopoly). See also Frank Fetter, *Planning for Totalitarian Monopoly*, 45 *J.POL.ECON.* 95 (1937).

69. E.g., *POST-CHICAGO DEVELOPMENTS IN ANTITRUST LAW* 62 (Antonio Cucinotta, Roberto Pardolesi, & Roger van den Bergh, eds. Edward Elgar, 2002). For some of the debate concerning whether "excessive" product differentiation should be an antitrust violation, see Bradford C. Snell, *Annual Style Change in the Automobile Industry as an Unfair Method of Competition*, 80 *YALE L.J.* 567 (1971); H. Paul Root, *Should Product Differentiation Be Restricted?*, 36 *J. MARKETING*, 3 (Jul. 1972) (discussing mainly Federal Trade Commission actions). And see B. Curtis Eaton and Richard G. Lipsey, *Product Differentiation*, 723, 763, 1 *HANDBOOK OF INDUSTRIAL ORGANIZATION* (Richard Schmalensee and Robert Willig, eds. Amsterdam: Elsevier Science, North-Holland. 1989).

Of course, whether product differentiation is "excessive" depends on what values. See Eaton and Lipsey, 1989, p. 763 "[I]n a society that values diversity, there is a trade-off between economizing on resources, by reducing the costs of producing existing products, and satisfying the desire for diversity, by increasing the number of products."

70. See Louis A. Dow and Lewis M. Abernathy, *The Chicago School on*

structuralist age monopolistic competition is regarded as a kind of throwback to New Deal interventionism.⁷¹

In a critically important sense, however, the new theories of product differentiation did quite the opposite. They served to restore the notion of a competitive equilibrium in an era plagued by theory indicating that high fixed costs would lead to ruinous competition and either monopoly, collusion, or regulation in any industry with significant fixed costs. In this regard the corrective force of Chamberlin's work in particular is difficult to exaggerate. To be sure, monopolistic competition is not a perfectly competitive equilibrium, but it *is* a competitive equilibrium that admits of large numbers of firms, is consistent with easy entry, and that produces a large variety of products at costs that may be only a little higher than minimum efficient cost.⁷²

Chamberlin's model of monopolistic competition solved the ruinous competition puzzle by illustrating how firms in product differentiated markets would shift their efforts into repositioning their products rather than producing more. Stability in multifirm markets with economies of scale became possible. So how one looks at Chamberlin's solution depends on the starting point. If one begins with perfect competition as the "norm," then monopolistic competition creates the impression of a sick industry, producing less than it could be producing consistent with minimum costs, paying for chronic excess capacity, and consuming too many resources on excessive product differentiation and advertising. On the other hand, if one begins with a situation in which competition is thought to be inherently ruinous because it denies firms the ability to recover fixed costs investment, then monopolistic competition is actually a fairly happy alternative to

Economic Methodology and Monopolistic Competition, 22 AM.J. ECON. & SOC. 235 (1963). In particular, see GEORGE J. STIGLER, MONOPOLISTIC COMPETITION IN RETROSPECT, IN FIVE LECTURES ON ECONOMIC PROBLEMS 12 (London: Longmans, Green, 1949).

71. *But see* Avinash K. Dixit and Joseph E. Stiglitz, *Monopolistic Competition and Optimum Product Diversity*, 67 AM.ECON.REV. 297 (1977) (reviving monopolistic competition model as way of assessing social cost and value of product differentiation).

72. See MARK BLAUG, *ECONOMIC THEORY IN RETROSPECT* 375-376 (Cambridge: Cambridge Univ. Press. 5th ed. 1996).

the monopoly, price fixing or regulation that ruinous competition imagined.

The all important adjustments that competition policy had to make were, first, in learning to live with a certain amount of imperfection; and, second, identifying those markets in which socially acceptable amounts of competition could be sustained through relatively passive state policy making from those that would require more active intervention. The very statement of these adjustments indicates that controversy was hardly at an end. Nevertheless, in a very important way they defined the terms of future debate.

The "ruinous" competition debate gradually died away as economists developed theories of short run and long run costs, which seemed to solve most of the problems, at least in product differentiated markets. In the short run firms might be driven to ruinous competition because their fixed costs are so high. But in the long run excess plants will wear out and not be replaced and market equilibrium will be restored. John Maurice Clark's path breaking book on fixed costs set the stage for theory that permitted equilibria to emerge even in industries subject to high fixed costs.⁷³ As Morris Copeland observed, "Economic theory has from the start proceeded as if all the costs incurred in any given period of time were directly tradeable to the business transacted during that period."⁷⁴ Or as Schumpeter had said in his critique of John Robinson, "the element of time must be got hold of in a much more efficient manner, if for no other reason because what people try to maximize is certainly gain *over time*."⁷⁵

Clark 1940 essay on *Workable Competition* offered a way of merging multiple market imperfections, mainly those caused by fixed costs and product differentiation, into a single model for competition policy.⁷⁶ He observed that market imperfections have a way of

73. JOHN MAURICE CLARK, *STUDIES IN THE ECONOMICS OF OVERHEAD COSTS* 432-435 (1923).

74. Morris A. Copeland, *Book Review*, 40 *POL.SCI.Q.* 296 (1925).

75. Schumpeter, *Robinson's Economics of Imperfect Competition*, note ___ 42 *J.POL.ECON.* at 256.

76. John Maurice Clark, *Toward a Concept of Workable Competition*, 30 *AM.ECON. REV.* 241 (1940).

canceling each other out. "If there are, for example, five conditions, all of which are essential to perfect competition, and the first is lacking in a given case, then it no longer follows that we are necessarily better off for the presence of any one of the other four."⁷⁷ In the case of the purely fungible product prices would necessarily be driven to short run cost. At the other extreme -- wide differentiations in the product -- one ends up with virtual monopoly. But in the middle one sees an area where competitive stability can be achieved, even though it is not quite perfect.⁷⁸ Further, while perfect competition demands continuous production at capacity, in the real world plants are built for the long run, while market demand fluctuates over the short run. Necessarily, a plant designed for peak demand will be operating at partial capacity at least some of the time.⁷⁹ Clark gave the manufacturing of both automobiles and automobile tires as examples of markets that were workably competitive notwithstanding moderate product differentiation and a relatively large investment in durable plant and equipment.⁸⁰ Speaking of such markets he concluded that "In such cases, one may hope that government need not assume the burden of doing something about every departure from the model of perfect competition."⁸¹

77. *Id.* at 242.

78. *Id.* at 243-244. See also *id.* at 245, observing that the amount of competition "hinges largely on extent to which quality differences are open to free imitation." Clark made a similar point a year earlier. John Maurice Clark, *Monopolistic Tendencies, Their Character and Consequences*, 18 PROCEEDINGS ACAD. POL. SCI. 2, 8 (1939):

For example, it appears that the results of an open-price system may be to raise prices or to lower them, depending on the industry to which it is applied. Brands and differences of quality between competing producers are spoken of as elements of "partial monopoly," yet if producers are few and large, the quality product may show on the whole healthier competitive conditions than the standardized product, since in the latter case a reduction of price by one producer is sure to be promptly met by his rivals.

79. Clark, *Workable Competition*, note ___ at 250.

80. *Id.* at 256.

81. *Ibid.* See also John Maurice Clark, *Monopolistic Tendencies, Their Character and Consequences*, 18 PROCEEDINGS ACAD. POL. SCI. 2, 8 (1939):

Speaking of the relative value of competition policy against its alternatives, Clark wrote:

...It will mean something if we can find, after due examination, that some of these forms [of imperfect or monopolistic competition] do their jobs well enough to be an adequate working reliance -- more serviceable, on the whole, than those substitutes which involve abandoning reliance on competition. And it will be useful if we can learn something about the kinds and degrees of "imperfection" which are positively serviceable under particular conditions.⁸²

*Ruinous Competition vs. Monopolistic Competition –
Implications for Antitrust Policy*

In the late thirties the Roosevelt administration undertook an abrupt and radical change in antitrust policy.⁸³ The twenty year period

The kind of policy which is indicated seems to be, not a laissez-faire acquiescence in any and all forms of trade practices which industry may evolve, and not an indiscriminate condemnation of all forms of canalized or restricted or "imperfect" competition, regardless of whether the competition that is restricted is of the cutthroat variety of not. What seems to be called for is a realistic control of trade practices which should not simply prohibit unduly restrictive forms, but should assume constructive responsibility for working out for each industry, where unduly restrictive forms are found, the form which, in that industry, bids fair to give the nearest practicable approach to the results of "normal" competition.... It cannot be done by merely bombing at existing trade practices with negative "cease and desist" orders and letting the fragments fall where they may.

82. *Id.* at 242.

83. MICHAEL E. PARRISH, *ANXIOUS DECADES: AMERICA IN PROSPERITY AND DEPRESSION, 1920-1941*, at 297-299, 338-339 (New York: W.W. Norton, 1992); ELLIS W. HAWLEY, *THE NEW DEAL AND THE PROBLEM OF MONOPOLY: A STUDY IN ECONOMIC AMBIVALENCE* 372-378 (Princeton, N.J.: Princeton Univ. Press, 1966); WILLIAM E. LEUCHTENBURG, *FRANKLIN D. ROOSEVELT AND THE NEW DEAL, 1932-1940* at 148-163 (New York: Harper and Row, 1963); William E. Kovacic, *Failed Expectations: the Troubled Past and Uncertain Future of the Sherman Act as a Tool for Deconcentration*, 74 *IOWA L.REV.* 1105, 1134 (1989). On a contemporary's view of the changes, see HENRY C.

leading up to the New Deal has been described as an era of government authorized cartels, or "cooperative competition."⁸⁴ The early New Deal, carried this thinking to the extreme, substituting state planning and organized private ordering for competition. The Antitrust Division of the U.S. Department of Justice was relegated to bringing a few minor cases and staying out of the way of the cooperative planning that other federal agencies were promoting.

In sharp contrast, the set of antitrust policies ushered in as part of the Second New Deal were highly suspicious of any form of agreement among rivals and increasingly hostile toward both dominant firms and vertical integration. The *Madison Oil* case (*Socony-Vacuum*) is the best known exemplar of firms caught between the conflicting demands of two different government policies.⁸⁵ With at least the tacit encouragement of the National Recovery Administration the petroleum industry had undertaken a self-regulatory program to control excessive output and ruinous competition in petroleum through competitor coordination.⁸⁶ Then, in an abrupt switch, the government issued a criminal indictment against the companies for doing the very same things as had previously been encouraged.⁸⁷

SIMONS, ECONOMIC POLICY FOR A FREE SOCIETY (Chicago: Univ. of Chicago Press, 1948).

84. See Jason E. Taylor & Peter G. Klein, *An Anatomy of a Cartel: the National Industrial Recovery Act of 1933 and the Compliance Crisis of 1934*, Research in Economic History 26 (2008) (forthcoming) (currently available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1098373 (Feb. 26, 2008)). See also RUDOLPH J.R. PERITZ, COMPETITION POLICY IN AMERICA, 1888-1992: HISTORY, RHETORIC, LAW, ch. 2 (New York: Oxford Univ. Press, 1996).

85. *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150 (1940). Another result was expansiveness in collusion cases involving product differentiated markets -- e.g., *Interstate Circuit, Inc. v. United States*, 306 U.S. 208 (1939).

86. Hawley, note ___ at 374. The story is extremely well told by Daniel A. Crane, *The Story of United States v. Socony-Vacuum: Hot Oil and Antitrust in the Two New Deals* 90-119, in ANTITRUST STORIES (Eleanor M. Fox & Daniel A. Crane, eds. New York: Foundation Press, 2007).

87. See Hawley, *id.* Daniel Crane notes that the *Madison Oil* indictment stretched back to cover a time period when the defendants were acting under

Explanation for the switch is generally laid to the FDR administration's non-ideological bent, its penchant for experimentation, and the loss of enthusiasm for social planning that followed Supreme Court decisions striking down significant portions of the first New Deal's recovery agenda.⁸⁸ If something does not appear to produce results quickly, try something else.

One hesitates to ascribe too many policy implications to a highly academic set of ideas about industrial organization expressed mainly as geometric figures. But the facts are powerful. Both the ruinous competition theories of the early century through the twenties and the monopolistic competition theories of the mid-thirties and after saw severe problems in the traditional competitive model. But the implications for antitrust policy could not have been more different. The fixed cost controversy led naturally to the view that less antitrust is better -- that mergers should be tolerated even to the point of monopoly and that price fixing was otherwise inevitable. The message this sent to policy makers was that antitrust is a bad thing. Its main impact would be to prevent efficient mergers or limit socially beneficial coordination of price or output.

By contrast, monopolistic competition theory saw a world in which manufacturers competed mainly by differentiating their products. Rather than overproducing they tended to operate with excess capacity. In cases of concentrated markets and high entry barriers monopolistic competition turned into oligopoly, with its attendant low output and high prices. Product differentiation seemed "excessive," particularly since it was accompanied by heavy expenses for advertising and other forms of promotion. Further, these were all problems that appeared to beg for aggressive antitrust solutions.

Structuralism in Post-War Competition Theory

the orders of Harold Ickes, FDR's Secretary of the Interior, under the authority of § 3 of the National Industrial Recovery Act, which had not yet been declared unconstitutional. See Crane, *id.* at 103.

88. *E.g.*, Hawley, *id.* See *A.L.A. Schechter v. United States*, 295 U.S. 495 (1935) (invalidating §3 of the NIRA); and *Panama Refining Co. v. Amazon Petroleum Corp.*, 293 U.S. 388 (1935) (invalidating §9 of NIRA).

Clark's *Workable Competition* essay provided an important platform for working out a competition policy that took the many imperfections wrought by marginalist analysis into account. Several economists offered critiques and suggested improvements.⁸⁹ Clark salvaged the policy idea that markets were sufficiently robust that occasional government intervention via the antitrust laws was justified, rather than more aggressive forms of regulation or simple acquiescence in monopoly.

But this was hardly the end of the story. Classicists had generally assumed that competitive markets were more-or-less the same, with monopoly as the outstanding and relatively rare exception. But the fixed cost controversy, the theories of imperfect and monopolistic competition, and Cournot oligopoly theory all suggested that markets in fact differ from one another, perhaps a great deal. This suggested in turn that a thoroughly articulated antitrust policy would call for different rules for markets with different structural characteristics -- something that had previously attracted institutionalists, such as the Legal Realist Walton Hamilton.⁹⁰ After Chamberlin it was picked up by more mainstream competition economists, particularly at Harvard. One byproduct was many single industry studies illustrating the competitive conditions in particular markets.⁹¹

More ominously, product differentiation and fixed costs implied that firms had discretion over price and product configuration as well as output. As a result marginalist economic models had to

89. *E.g.*, CORWIN EDWARDS, MAINTAINING COMPETITION 9-10 (1949); CLAIR WILCOX, COMPETITION AND MONOPOLY IN AMERICAN INDUSTRY 9 (TNEC Monograph 21, 1940); George J. Stigler, *The Extent and Bases of Monopoly*, 32 AM.ECON.REV. 2-3 (Supp. June, 1942).

90. Walton H. Hamilton, *The Problem of Anti-Trust Reform*, 32 COL.L.REV. 173, 176-177 (1932).

91. *E.g.*, JESSE W. MARKHAM, COMPETITION IN THE RAYON INDUSTRY (Cambridge: Harv.Univ.Press, 1952); Carl Kaysen, *United States v. United Shoe Machinery Corporation: an Economic Analysis of an Anti-Trust Case* (1956); JAMES M. MCKIE, TIN CANS AND TIN PLATE: A STUDY IN TWO RELATED MARKETS (Cambridge: Harv.Univ.Press, 1959); SAMUEL M. LOESCHER, IMPERFECT COLLUSION IN THE CEMENT INDUSTRY (Cambridge: Harvard Univ.Press, 1959); MERTON J. PECK, COMPETITION IN THE ALUMINUM INDUSTRY, 1945-1958 (Cambridge: Harv.Univ.Press 1961).

accommodate the possibility of strategic behavior in ways that classicism could not even fathom. The principal variables that accounted for the differences among markets were (1) the number of firms and their size differences; (2) the extent of fixed costs, or economies of scale; (3) the degree of product differentiation and the amount of mobility among differentiations; (4) ease of entry. The two extreme cases provoked the least controversy. In highly competitive markets, with modest scale economies, easy entry, a fairly homogenous product and typically numerous firms, competition could be trusted to discipline even modest deviations from competitive behavior. The only alternatives open to firms were to produce all they could at the market price or else collude. At the other extreme, if scale economies were so significant that they dictated a single firm for a market, then monopoly plus price regulation might be in order.

The two intermediate classes, monopolistic competition and structural oligopoly, were much more troublesome. The less problematic of the two was monopolistic competition, characterized by product differentiation and easy entry, where prices would be above marginal cost but workable competition could be attained. More problematic was oligopoly, characterized by a small number of firms, high entry barriers, and varying degrees of product differentiation.

In the late 1930s and 1940s Chamberlin's monopolistic competition theory swept the field of competition economics.⁹² However, the policy emphasis switched away from Chamberlin's particular model, characterized by easy entry and a fairly large number of firms, to oligopoly. The troublesome cases were not restaurants, where product differentiation was abundant but entry was easy. Rather, it was manufacturing, which was often characterized by differentiated products, high entry barriers, and sufficient scale economies to dictate a small number of firms.

The economics of the day perceived one very important difference between monopolistic competition generally and monopolistic competition in oligopoly industries. In the former, ease of entry plus a large number of firms drove firms to innovate continuously in order to reposition their products. One might conclude that there was "too much" product differentiation, and too much of collateral

92. GEORGE W. STOCKING AND MYRON W. WATKINS, MONOPOLY AND FREE ENTERPRISE 87-89 (1951).

outputs such as advertising. But in the long run prices were driven to cost. None of this was likely in a market with a small number of firms and high entry barriers. As a result Joe Bain, who became the most prominent spokesperson for Harvard School structuralism, complained in 1950 that workable competition in oligopoly industries would be much more difficult to achieve than Clark had anticipated.⁹³

The Harvard structural school dominated economic thinking about competition policy from the 1940s through the 1970s and had a very considerable influence on antitrust policy. Its principals were Chamberlin, Edward S. Mason on the Harvard economics faculty, and Joe S. Bain, who received his Ph.D. under Mason but who spent most of his career in the economics department of the University of California at Berkeley.

Already in 1937 Harvard economist Edward S. Mason had observed that lawyers and economists used the term "monopoly" differently. For lawyers monopoly was identified by "restrictive or abusive practices" while economists identified monopoly as market control.⁹⁴ Writing a dozen years later and responding to John Maurice Clark's call for a workable competition policy, Mason concluded that lawyers had largely come around to the economists' view and increasingly were identifying monopoly as a structural rather than behavioral problem.⁹⁵

In extending Mason's work, Bain found plenty of structural signs indicating that competition was not workable in concentrated industries: profit rates that were above benchmark normal returns on investment; plants that were larger than justified by scale economies; chronic excess capacity and lags in adoption of cost-reducing technology. "A market could be considered a case of unworkable competition if it had an extremely bad rating in any direction or

93. Joe S. Bain, *Workable Competition in Oligopoly: Theoretical Considerations and Some Empirical Evidence*, 40 AM.ECON.REV. 35, 37-38 (papers and proceeding) (1950).

94. E.S. Mason, *Monopoly in Law and Economics*, 47 YALE L.J. 34 (1937).

95. Edward S. Mason, *The Current Status of the Monopoly Problem in the United States*, 62 HARV.L.REV. 1265 (1949).

moderately bad or suspicious ratings in several."⁹⁶ Further,

Whatever the degree of association within oligopolies between competitive behavior and results, it seems quite likely that such behavior may be in turn either influenced or determined by certain characteristics of the underlying market structure. If so, a demonstrated association between market structure and results would establish the more fundamental determinants of workability of competition (and, also, determinants more easily influenced by conventional public policy measures).⁹⁷

Bain was very critical of those who believed that the relationship between structure and performance was "indeterminate." He thought it possible to "arrive at hypotheses concerning the systematic association of oligopolistic market structure and results."⁹⁸ Bain then proposed a research agenda that would relate market structure to such things as the likelihood and success of collusion, price-cost margins, and innovation rates. Most importantly, he believed, the height of entry barriers into concentrated markets determined performance. In Bain's later work entry barriers emerged as the single most decisive determinant of price and output in concentrated industries. His own popular text on industrial organization economics furnished the theoretical basis for that research agenda.⁹⁹

The Structure-Conduct-Performance (S-C-P) Paradigm

The Mason/Bain paradigm for industrial competition constituted a formal attempt to relate an industry's structure to its "performance," with performance referring to degree of competitiveness. The powerful evaluation tool that resulted is known today as the "structure-conduct-

96. Joe S. Bain, *Workable Competition in Oligopoly*, note ___, 40 AM.ECON.REV. at 37-38.

97. *Id.* at 38-39.

98. *Id.* at 39.

99. JOE S. BAIN, *INDUSTRIAL ORGANIZATION* (New York: John Wiley, 1959). See also JOE S. BAIN, *BARRIERS TO NEW COMPETITION: THEIR CHARACTER AND CONSEQUENCES IN MANUFACTURING INDUSTRIES* (1956); JOE S. BAIN, *CONDITIONS OF ENTRY AND THE EMERGENCE OF MONOPOLY*, IN *MONOPOLY AND COMPETITION* (Edward Chamberlin, ed., 1954).

performance," or S-C-P, paradigm. During its heyday the S-C-P paradigm was subjected to more empirical testing than any economic model in history.

The theory behind the S-C-P paradigm was simple enough. Using Cournot-style analysis of profit-maximizing behavior in concentrated markets one could relate industry performance to structure, in particular, the number of firms and the height of entry barriers. More generally, under the paradigm industry structure was thought to determine conduct. For example, firms in concentrated industries with high fixed costs could not avoid comparing their prices with those of rivals and determining whether to match or undercut them, or they could not avoid deciding whether a new product configuration in a market was necessary to their own success or how others might meet it. This conduct was in turn thought to dictate performance. Given an expression in which structure entails conduct and conduct entails performance, conduct itself dropped out as a variable of interest. One could predict performance simply by knowing something about structure.

In the 1950s the S-C-P paradigm emerged as the most elegant and comprehensive model of industry competition in the marginalist era. Its reductionism contributed to its explanatory power. Conduct was thought to be difficult to assess, largely because for most of it numerous alternative explanations, both anti- and procompetitive, were possible. A large firm's actions intended to increase its own sales were presumptively competitive, while actions intended to deny sales to rivals might be thought presumptively anticompetitive. But how does one tell the difference in a concentrated market where most of a firm's output increases come at the expense of a rival? The S-C-P paradigm promised economists, and thus antitrust policy makers, a way of addressing these problems without troubling themselves about the manifold ambiguities inherent in the analysis of conduct.

Bolstering Bain's commitment to use of the S-C-P paradigm as a policy tool was his belief that industrial concentration in America was excessive. He concluded that firms were larger than necessary to attain available efficiencies. Bain argued that the long run average cost curve of most firms had a very large flat bottom. In order to be profitable a firm must recover its long run costs, and the bottom of the curve represents the place where unit costs were lowest -- that is, where the firm was producing most efficiently. A flat bottom entailed

that once a firm had attained minimum efficient scale it could continue to grow larger without acquiring any inefficiencies from larger size. As a result, while a market in which minimum efficient scale was, say, a 10% market share could accommodate ten efficient firms, such a market might in fact have only three or four.¹⁰⁰ In the presence of high entry barriers, which Bain tended to find readily, this theory had strong implications for antitrust policy. It suggested that there was a concentration "ratchet" in the sense that even after a firm attained all scale economies nothing kept it from growing larger still, but there was no reason to expect it to become smaller. As a result, industrial concentration would tend to increase.¹⁰¹ This would of course be exacerbated by a lax merger policy that permitted firms to grow by acquisition as well as internal expansion.

Significantly, as concentration increased and the number of firms in an industry declined productive efficiency would not diminish; however, anticompetitive behavior would, as the firms acquired greater incentives to behave oligopolistically or collude. Or to say it differently, once a firm grew large enough to attain all production economies it could not make further profits by reducing its costs. However, it could profit by increasing prices, which would occur as the market became more oligopolistic.¹⁰² The idea that firms were much larger than they needed to be to attain all available scale economies played an important role in the Congressional hearings that led up to the 1950 Celler-Kefauver amendments to §7.¹⁰³ Bain believed that overall

100. JOE S. BAIN, *INDUSTRIAL ORGANIZATION* 152-155 (1959).

101. *See id.* at 160:

If ... diseconomies of large scale are not important over a wide range, so that any firm can attain optimal efficiency either at a very small scale or up to a much larger scale, the number of firms is no longer forced to remain large, since firms may grow or combine without loss of efficiency until their sizes are large and their number few. Thereupon, the force of interfirm competition may be restricted to permit periodic elevation of price above minimal average cost, and existing firms may be permitted or induced to attain inefficiently large scales...."

102. *See* BAIN, *INDUSTRIAL ORGANIZATION* 170-171.

103. *See Hearings on Economic Concentration, Subcommittee on Antitrust and Monopoly, Committee on the Judiciary, U.S. Senate, 89th*

American industry exhibited a "trend" toward growing concentration¹⁰⁴ - a theme that was reflected in subsequent merger decisions in the Supreme Court, such as *Brown Shoe*. Indeed, in 1960s era merger policy a "trend toward concentration" became a shortcut that the Supreme Court used to condemn mergers without detailed inquiry into market structure or anticompetitive effects.¹⁰⁵

Further, Bain argued, vertical integration could exacerbate the tendency toward concentration by linking vertically related firms with differential scales. Bain gave the example of vertical integration of automobile production and automobile assembly. Suppose that production was subject to significant scale economies and required a

Congress, 1st Session, Part 3, Concentration, Invention, and Innovation; Part 4: Concentration and Efficiency (1950).

104. BAIN, INDUSTRIAL ORGANIZATION, ch 6.

105. *E.g.*, United States v. Philadelphia Nat. Bank, 374 U.S. 321, 363 (1963):

... intense congressional concern with the trend toward concentration warrants dispensing, in certain cases, with elaborate proof of market structure, market behavior, or probable anticompetitive effects. Specifically, we think that a merger which produces a firm controlling an undue percentage share of the relevant market, and results in a significant increase in the concentration of firms in that market is so inherently likely to lessen competition substantially that it must be enjoined in the absence of evidence clearly showing that the merger is not likely to have such anticompetitive effects.

See also *Brown Shoe Co. v. United States*, 370 U.S. 294 (1962), which relied on a trend toward concentration to justify condemning horizontal aspects of the merger (*id.* at 316, 322-323); and a trend toward vertical integration as a rationale for condemning vertical aspects (*id.* at 332). *And see* *United States v. Von's Grocery Co.*, 384 U.S. 270, 277 (1966):

The facts of this case present exactly the threatening trend toward concentration which Congress wanted to halt. The number of small grocery companies in the Los Angeles retail grocery market had been declining rapidly before the merger and continued to decline rapidly afterwards. This rapid decline in the number of grocery store owners moved hand in hand with a large number of significant absorptions of the small companies by the larger ones.

15% market share for maximum efficiency. Assembly of manufactured parts, however, took place at a much smaller scale and required a market share of only 2%. But by integrating manufacturing and assembly and linking the two, particularly by making the parts specific to the design, the vertically integrated automobile manufacturer effectively gave assembly a minimum efficient scale of 15% as well.¹⁰⁶ In Bain's terminology the "critical" minimum scale for a vertically integrated firm was always the stage with the largest minimum efficient market share.

Bain also believed that product differentiation was a much less benign phenomenon in oligopoly than in Chamberlin's model of monopolistic competition. The model of monopolistic competition assumed easy entry. As a result, while prices were above marginal cost, they were always driven to total cost over the long run. Bain regarded product differentiation as an affirmative barrier to entry in concentrated markets. Product differentiation inherently favored established firms because it induced consumer brand preferences, thus giving incumbent firms an advantage over new entrants.¹⁰⁷ In addition, product differentiated markets also tended to have more patent protection for existing designs and tended to have more regimented distribution systems.¹⁰⁸ Bain concluded that product differentiation was positively correlated with concentration and also with higher accounting profits.¹⁰⁹ This group of observations led Bain to conclude that prices tended to be higher in markets as the degree of product differentiation was greater.

In contrast to these structural manifestations of inadequate competition, Bain found conduct to be extraordinarily difficult to assess.

106. BAIN, INDUSTRIAL ORGANIZATION, note ___ at 158. *See also* Joe S. Bain, *Advantages of the Large Firm: Production, Distribution, and Sales Promotion*, 20 J. MARKETING 336 (1956).

107. BAIN, INDUSTRIAL ORGANIZATION, note ___ at 239, 249, 261-262.

108. *Id.* at 240.

109. BAIN, INDUSTRIAL ORGANIZATION at 236. *See also id.* at 416 (finding that high profit rates are correlated with high product differentiation, tending "to cast a shadow of doubt on frequently repeated assertions that strong product differentiation is conducive to a more workable competition. The reverse may well be true").

He concluded:

We eschew, therefore, any general attempt to state an operational criterion of the conduct conditions of workable competition, and adhere in the main to a suggestion only of structural conditions.¹¹⁰

Beginning with this premise, Bain attacked the conduct orientation of §2 of the Sherman Act. Under the statute monopoly could be "attacked in the main only indirectly through assault on the predatory or exclusionary actions of firms, and not directly as a structural phenomenon with certain undesirable consequences for market performance."¹¹¹ The result was "lengthy and expensive" and largely indeterminate litigation, whose poor results were exacerbated by the fact that the courts were usually:

unwilling to remedy illegal monopolization by requiring structural changes through such devices as dissolution or dismemberment of offending firms. Thus, those revisions of market structure which might most strongly assure a more competitive performance typically are not imposed, even after a violation of Section 2 has been thoroughly established."¹¹²

Under the influence of the S-C-P paradigm the emergent view came to be that antitrust policy prior to World War II had been much too tolerant of anticompetitive industrial structures. For example, Vanderbilt economist George W. Stocking faulted the Supreme Court for an excessive emphasis on "intent and conduct," which he believed had served to undermine several government cases against dominant firms.¹¹³ He was particularly harsh in his treatment of the 1920 *United*

110. BAIN, INDUSTRIAL ORGANIZATION 427.

111. BAIN, INDUSTRIAL ORGANIZATION 607.

112. *Id.* at 608.

113. George W. Stocking, *The Rule of Reason, Workable Competition, and Monopoly*, 64 YALE L.J. 1107, 1124 (1955), *citing* *United States v. Winslow* (*United Shoe Machinery Co.*), 195 Fed. 578 (D. Mass. 1912), *aff'd*, 227 U.S. 202 (1913); *United States v. American Can Co.*, 230 Fed. 859 (D. Md. 1916); *United States v. United States Steel Corp.*, 251 U.S. 417 (1920); *United States v. International Harvester Co.*, 274 U.S. 693 (1927). Stocking

States Steel decision, which he believed "emasculated" the Sherman Act by refusing to condemn an industrial combination unless it resulted in "complete" monopoly.¹¹⁴

The S-C-P Paradigm and the Courts

The implications of the S-C-P paradigm on post-war antitrust policy were far reaching. In merger law, the paradigm entailed that mergers could be analyzed simply by determining the market shares of the firms involved. This view came to be accepted by the Supreme Court¹¹⁵ and was expressly incorporated into Guidelines for assessing the legality of mergers that the Antitrust Division of the Justice Department issued in 1968, when Harvard trained economist Donald F. Turner was its head.¹¹⁶ Mainly, these Guidelines created a sliding scale of enforcement policy depending on the market shares of the firms and the number of firms in the market. The Supreme Court's *Philadelphia Bank* decision created a virtual per se rule that linked merger legality to the market shares of the merging firms.¹¹⁷

In monopolization law the S-C-P paradigm shifted the focus of analysis away from conduct, which had dominated the law in the first

was best known for his co-authored book GEORGE W. STOCKING AND MYRON W. WATKINS, *MONOPOLY AND FREE ENTERPRISES* (New York: Twentieth Century Fund, 1951)

114. 64 YALE L.J. at 1124.

115. *E.g.*, *Brown Shoe*, *Philadelphia Bank* and *Von's Grocery* decisions, note ___. See George W. Stocking, *The Rule of Reason, Workable Competition, and Monopoly*, 64 YALE L.J. 1107, 1110-1113 (1944) (advocating structure-conduct-performance paradigm and applying it to several major Supreme Court antitrust decisions).

116. The 1968 Merger Guidelines are still kept by the Antitrust Division of the Justice Department on its website, available at <http://www.justice.gov/atr/hmerger/11247.pdf>. Turner received his Ph.D. from Harvard under Mason in 1947, and then graduated from Yale Law School in 1950. He became head of the Antitrust Division in 1965, during the Johnson administration. The 1968 Guidelines were issued on his last day in office.

117. See note ___.

half of the century,¹¹⁸ and toward structure. In the important *Alcoa*¹¹⁹ and *United Shoe Machinery*,¹²⁰ decisions the courts condemned monopolists on the basis of minimal conduct requirements when significant power was clear. Indeed, the prominent judges in both decisions flirted briefly with the idea that the mere existence of monopoly was sufficient to warrant enforced dissolution.¹²¹ Writing in 1956, Donald Turner concluded that "[s]uch postwar decisions as *Alcoa* perceptibly decreased the law's requirement of bad conduct, perceptibly increased its attention to power, and substantially increased the volume of discussion as to which course the law had best pursue." In any event, he concluded, "*Alcoa* clearly consigned the abuse theory of monopolization to limbo."¹²²

In 1959, while he was still a law professor, Turner and his co-author Carl Kaysen proposed that the government should be permitted to break up monopolies without any proof of anticompetitive conduct, but based on structural criteria alone.¹²³ That proposal was even extended to durable oligopolies.¹²⁴ Twenty years later, in 1978, Turner

118. *E.g.*, *Standard Oil Co. v. United States*, 221 U.S. 1 (1911); *United States v. Am. Tobacco Co.*, 221 U.S. 106, 181-183 (1911); *United States v. American Can Co.*, 230 Fed. 859 (D. Md. 1916), *appeal dismissed*, 256 U.S. 706 (1921).

119. *United States v. Aluminum Co. of Amer.*, 148 F.2d 416 (2d Cir. 1945).

120. *United States v. United Shoe Machinery Corp.*, 110 F.Supp. 295 (D.Mass. 1953), *aff'd mem.*, 347 U.S. 521 (1954). *See also* *United States v. Grinnell Corp.*, 384 U.S. 563 (1966) (condemning series of acquisitions as unlawful monopolization).

121. *Alcoa*, 148 F.2d at 428 (Judge Learned Hand); *United Shoe*, 110 F.Supp. at 342 (Judge Wyzanski).

122. Donald F. Turner, *Antitrust Policy and the Cellophane Case*, 70 HARV.L.REV. 281, 281-282 (1956).

123. CARL KAYSEN AND DONALD F. TURNER, *ANTITRUST POLICY: AN ECONOMIC AND LEGAL ANALYSIS* 46, elaborated at 111 et seq (Cambridge, Ma.: Harvard Univ. Press, 1959).

124. *See* Kaysen and Turner, note ___ at 111. *See also* Donald F. Turner, *The Definition of Agreement Under the Sherman Act: Conscious Parallelism and Refusals to Deal*, 75 HARV.L.REV. 655 (1962).

and his new co-author and former student Phillip E. Areeda renewed the proposal that the government (but not private plaintiffs) be permitted to bring dissolution decrees against durable monopolists.¹²⁵ While the courts never adopted that position, both the government and the courts accepted definitions of the monopolization offense that required much less in the way of harmful conduct than earlier cases had found, provided that the firm was properly found to be a structural monopolist. In sum, the focus of monopolization law moved greatly from monopoly conduct to monopoly market structure. In true Harvard School fashion, evidence of subjective "intent" became formally irrelevant.¹²⁶

The economists advocating the S-C-P paradigm and the courts worked in tandem. Which one most influenced the other is difficult to say. For example, the S-C-P paradigm matured in the economics literature in the 1950s. However, the *Alcoa* decision condemning the aluminum monopoly is almost pure structuralism, but it was written nearly a decade earlier.¹²⁷ Industrial structure was first and foremost on the minds of Congress when they enacted the Cellar-Kefauver Amendments to the merger law in 1950.¹²⁸ The concerns that Bain expressed about a "trend" toward increased industrial concentration showed up clearly in that statute's legislative history. Indeed, they

125. 3 PHILLIP E. AREEDA & DONALD F. TURNER, *ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION* ¶¶614-623 (1978). The present author has preserved the proposal, largely for its historical value, in 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶¶630-638 (3d ed. 2008).

126. See, e.g., *United States v. Aluminum Co. of Amer.*, 148 F.2d 416, 431 (2d Cir. 1945) ("...we disregard any question of 'intent.'"). On the other side, in the *DuPont (Cellophane)* decision the Supreme Court found substitutes for the defendant's product and concluded that sufficient power was lacking. See *United States v. E. I. du Pont de Nemours & Co.*, 351 U.S. 377 (1956); and Turner's critique: Donald F. Turner, *Antitrust Policy and the Cellophane Case*, 70 HARV.L.REV. 281 (1956).

127. *United States v. Aluminum Co. of Amer.*, 148 F.2d 416, 431 (2d Cir. 1945).

128. See Derek C. Bok, *Section 7 of the Clayton Act and the Merging of Law and Economics*, 74 HARV.L.REV. 226 (1960); EDWARD S. MASON, *ECONOMIC CONCENTRATION AND THE MONOPOLY PROBLEM* 371-381 (1957).

were a principal subject of a Federal Trade Commission study in 1948, which expressed alarm at the trend toward concentration:

[N]o great stretch of the imagination is required to foresee that if nothing is done to check the growth in concentration, either the giant corporations will ultimately take over the country, or the Government will be impelled to step in and impose some form of direct regulation in the public interest.¹²⁹

The FTC's conclusions in part reflected views that stretched back to at least 1932, when Berle and Means criticized what they saw as rising concentration in their famous book on the Modern Corporation and Private Property. They spoke of the "centripetal attraction which draws wealth together into aggregations of constantly increasing size," and warned that "the trend is apparent" and "no limit is as yet in sight."¹³⁰ The 1950 legislation in fact followed upon a string of proposals in Congress to stop further concentration.¹³¹ To be sure, these earlier proposals were not based on the full blown S-C-P paradigm. For the most part they did not even share the basic concerns of the structuralist economists about reduced output and higher prices in concentrated industries. The earlier concerns were addressed mainly to aggregations of wealth or power as such, and the economics that drove them was as much institutionalism as neoclassicism.¹³² But whatever the source, the impetus for an antitrust

129. Federal Trade Commission, *Report on the Merger Movement: A Summary Report* 68 (1948). The FTC's conclusions were in fact strongly contested by economists. On this debate, see Derek C. Bok, *Section 7 of the Clayton Act and the Merging of Law and Economics*, 74 HARV.L.REV. 226, 234-235 (1960).

130. ADOLF A. BERLE, JR. AND GARDINER S. MEANS, *THE MODERN CORPORATION AND PRIVATE PROPERTY* 18 (1932).

131. These are summarized in Note, *Corporate Consolidation and the Concentration of Economic Power: Proposals for Revitalization of Section 7 of the Clayton Act*, 57 YALE L.J. 613 (1948).

132. See Derek Bok's conclusion:

To anyone used to the preoccupation of professors and administrators with the economic consequences of monopoly power, the curious aspect of the debates is the paucity of remarks having to do with the effects of concentration on prices, innovation, distribution,

policy concerned with industrial concentration was clear.

The S-C-P views on vertical integration were also reflected in numerous antitrust decisions in the 1950s and 1960s that were very harsh toward vertical expansion by virtually any means, including long term contractual arrangements.¹³³ This suspicion of vertical integration was also reflected in Congressional amendments to the merger law in 1950, which extended its coverage to vertical mergers -- that is, mergers between a customer and a supplier. It also showed up in increasingly hostile attitudes toward long-term vertical contracts that were thought either to limit dealer freedom or to exclude rivals.¹³⁴

and efficiency. To be sure, there were allusions to the need for preserving competition. But competition appeared to possess a strong socio-political connotation which centered on the virtues of the small entrepreneur to an extent seldom duplicated in economic literature.

Bok, *Section 7*, note ___ at 236-237. See Herbert Hovenkamp, *Derek Bok and the Merger of Law and Economics*, 21 J. L. REFORM 515 (1988).

133. *E.g.*, *United States v. Yellow Cab Co.*, 332 U.S. 218 (1947) (vertical merger); *United States v. Paramount Pictures*, 334 U.S. 131, 174 (1948) (vertical merger "runs afoul of the Sherman Act if it was a calculated scheme to gain control over an appreciable segment of the market and to restrain or suppress competition, rather than an expansion to meet legitimate business needs..."); *Brown Shoe Co. v. United States*, 370 U.S. 294 (1962) (vertical merger). *But see* *United States v. Columbia Steel Co.*, 334 U.S. 495, 507-510 (1948) (refusing to condemn vertical integration that left sufficient unintegrated parties in the markets; this case was part of the motivation for Congress to pass the 1950 amendments).

134. *United States v. Arnold, Schwinn & Co.*, 388 U.S. 365 (1967) (vertical territorial restraints unlawful per se); *Simpson v. Union Oil Co.*, 377 U.S. 13, 20-21 (1964) (RPM enforced through consignment contracts imposed on dealers unlawful per se); *International Salt Co. v. United States*, 332 U.S. 392 (1947) (tying of a staple commodity unlawful even in the absence of proof of serious market power); *Standard Oil Co. of California v. United States (Standard Stations)*, 337 U.S. 293 (1949) (condemning exclusive dealing on relatively low market shares where other oil refineries were doing the same thing).

Conclusion: the S-C-P Paradigm in Decline

The dominant theme guiding antitrust policy under the Structure-Conduct-Performance paradigm was that competition policy should eliminate or at least reduce the amount of market power in the economy. Further, outside of monopolized industries the principal source of market power was thought to be oligopoly, where the threats were either Cournot-style behavior or express collusion.¹³⁵

By contrast, the guiding principle of the Chicago School critique of the S-C-P paradigm was that market power is not inherently a bad thing. Indeed, often market power as well as high concentration result from efficiency. To illustrate, suppose that widgets are made in a moderately competitive market at a cost of \$3. If I develop a cost-reducing technology or process that reduces my costs to \$2 but continue to sell my widgets at the market price I will have high margins between my prices and costs -- something that the prevailing measures would have identified as market power, as would accounting measures of profits.¹³⁶ Problematically, however, if I take advantage of my cost reducing technology to cut the widget price below \$3, then I will be excluding my rivals. So, the critique ran, many of the phenomena that the S-C-P paradigm had identified as anticompetitive market "foreclosure" or the creation of barriers to entry was nothing more than economic efficiency.

The Chicago School launched a frontal attack on the S-C-P paradigm's identification of industrial concentration as an inherent evil.¹³⁷ The most likely cause of industrial concentration, Chicago

135. See, e.g., Kaysen and Turner, note ___ at 82.

136. For example, the Lerner Index, developed in the 1930s, expressed market power as a relationship between price and marginal cost. See Abba Lerner, *The Concept of Monopoly and the Measurement of Monopoly Power*, 1 REV.ECON.STUD. 157, 169 (1934). See HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE §3.1 (3d ed. 2005).

137. On the initial differences and subsequent coalescence of the two schools, see HERBERT HOVENKAMP, THE ANTITRUST ENTERPRISE: PRINCIPLE AND EXECUTION, ch. 2 (Cambridge, Ma.: Harvard Univ. Press 2005). Many members of the Chicago School began in the Harvard camp and migrated rightward toward the Chicago position. At the same time, however, the Harvard school largely abandoned the S-C-P Paradigm. See Hovenkamp,

economists argued, is economies of scale. Further, the engineering studies of production that S-C-P economists had used to measure economies of scale vastly understated them.¹³⁸ And the fairly rigid Cournot and monopolistic theory that the S-C-P paradigm adopted to account for behavior in concentrated markets considerably *understated* the ingenuity of firms in finding ways to compete. Or to state it more technically, the S-C-P paradigm tended to view oligopoly as a structural problem in the Cournot sense, which rather strictly related performance to the number of firms in a market and their size distribution. In contrast, the Chicago School tended to look at concentrated industries as presenting a problem in price theory, in which each market participant weighed the net effects of various actions and anticipated responses.¹³⁹ To be sure, the number of firms was not unimportant, at least at very low levels, but it was hardly decisive. Collusion was often a possibility. The price theory perspective revealed the extent to which a firm's strategies depended not only on the number of firms, but also on such things as product differentiation and the amount of price information available in the market. The Chicago theory also rejected the purely structuralist notion that the oligopoly demand curve contained a "kink" that inclines fellow oligopolists to follow a price increase but not a price cut.¹⁴⁰

id.; and see GEORGE STIGLER, MEMOIRS OF AN UNREGULATED ECONOMIST 97-100 (Chicago: Univ. of Chicago Press, 2003); Ward S. Bowman, Jr., *Toward Less Monopoly*, 101 U.P.A.L.REV. 577, 589, 641 (1953); Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 UNIV.PA.L.REV. 925, 933-935 (1979). On the history of these movements see William E. Kovacic, *The Intellectual DNA of Modern U.S. Competition Law for Dominant Firm Conduct: the Chicago/Harvard Double Helix*, 2007 COLUM.BUS.L.REV. 1 (2007); NEIL DUXBURY, PATTERNS OF AMERICAN JURISPRUDENCE 330-348 (1995).

138. See, e.g., Sam Peltzman, *The Gains and Losses from Industrial Concentration*, 20 J.L. & ECON. 229 (1977); HAROLD DEMSETZ, TWO SYSTEMS OF BELIEF ABOUT MONOPOLY, IN INDUSTRIAL CONCENTRATION: THE NEW LEARNING (Harvey J. Goldsmid, H.M. Mann & J. Fred Weston, ed. 1974).

139. See, e.g., George J. Stigler, A Theory of Oligopoly 39, in *The Organization of Industry* (Chicago: Univ. of Chicago Press, 1968). On this point, see Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 Univ.Pa.L.Rev. 925, 931-932 (1979).

140. The notion was formulated by Harvard Professor Paul Sweezy, *Demand Under Conditions of Oligopoly*, 4 J. POL. ECON. 568 (1939); and

Indeed, in orthodox Chicago folklore the "kinky demand curve" became something of a joke about structuralism run amuck.¹⁴¹

The Chicago School also rejected the Bainian theory of entry barriers, which defined them as any market factor that excluded entry while the firms already in the market were earning returns above the competitive level.¹⁴² Under this definition both scale economies and product differentiation were entry barriers, because each gave incumbent firms advantages over new entrants. The Chicago view was that this definition penalized firms for being innovative and efficient, particularly if high entry barriers was used as a justification for government intervention. Rather, George J. Stigler argued, an entry barrier must be some factor that new rivals must overcome that established firms did not need to overcome when they entered the market.¹⁴³

The twin pillars of Chicago School revisionism were the views that attainment of economies of scale required firms much larger than Bain had supposed; and second, that firms in concentrated markets behave much more competitively than Chamberlin, Mason, Bain, Kaysen or Turner had supposed, at least down to the point that the market contains only three or four firms.¹⁴⁴

Oxford economists Robert L. Hall and Charles J. Hitch, *Price Theory and Business Behaviour*, 2 OXFORD ECON. PAPERS 12 (1939). For the Chicago rejection, see George J. Stigler, *The Kinky Oligopoly Demand and Rigid Prices*, 55 J. POL. ECON. 432 (1947).

141. On the history of the idea by a biased participant, see George J. Stigler, *The Literature of Economics: the Case of the Kinked Oligopoly Demand Curve*, 16 ECON. INQUIRY 185 (1978).

142. JOE S. BAIN, *BARRIERS TO NEW COMPETITION* (Cambridge, Mass.: Harvard Univ. Press, 1956).

143. See GEORGE J. STIGLER, *THE ORGANIZATION OF INDUSTRY* 67 (1968). Antitrust policy today continues to use mainly the Bainian rather than the Stiglerian definition, see 2B PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶1420 (3d ed. 2007).

144. See, e.g., Harold Demsetz, *Industry Structure, Market Rivalry, and Public Policy*, 16 J.L. & ECON. 1 (1973); and Wesley J. Liebeler, *Market Power and Competitive Superiority in Concentrated Industries*, 25 UCLA L. REV. 1231 (1978).

There were other important critiques as well. One of the most important was the 1950s critique of the "migration" or "domino" theory of monopoly, which was that a monopolist could use monopoly power in one market to "leverage" a second monopoly somewhere else. The theory was thoroughly embraced by the Supreme Court. Some Chicago School critics ascribed the theory to the Harvard School and the S-C-P paradigm, although without good foundation.¹⁴⁵

The leveraging theory of monopoly had many manifestations, but what they all had in common was that they involved the dominant firm's related operations in two different markets. If the markets were vertically related, then vertical integration became the problem; but leveraging applied in other pairings of markets as well. The thinking was that a firm that operated in two or more markets and had market power in one of them might use that power to create a second monopoly or reap an unfair competitive advantage in the second market. The theory showed up in antitrust law in the 1911 *Standard Oil* case, in the claim that Rockefeller's Standard Oil company continuously enlarged its monopoly by using monopoly profits in towns where it was already dominant in order to finance predatory pricing in towns where it had not yet attained power.¹⁴⁶ That theory was

145. *E.g.*, Posner, *Chicago School*, note ___ at 929, which characterized various members of the Harvard School, including Turner, as embracing the "leverage" theory and *citing* Donald F. Turner, *The Validity of Tying Arrangements Under the Antitrust Laws*, 72 HARV.L.REV. 50, 60-62, 63 n.42 (1958). In fact Turner never refers to any theory of multiple monopoly profits; his concern is for rivals in the tied product market.

146. *Standard Oil Co. v. United States*, 221 U.S. 1 (1911). For the Chicago School critique, see John McGee, *Predatory Price Cutting: the Standard Oil (N.J.) Case*, 1 J. L. & ECON. 137 (1958) (disputing theory that Standard even engaged in predatory pricing). McGee's theory has itself been subjected to some criticism. See James A. Dalton and Louis Esposito, *Predatory Price Cutting and Standard Oil: A Re-examination of the Trial Record*, 22 RES. L. AND ECON. 155 (2007) (re-examining the trial record and finding numerous instances of predation, in conflict with McGee's conclusions). See also RON CHERNOW, *TITAN: THE LIFE OF JOHN D. ROCKEFELLER, SR.* (1998), at 113-117, 144-147, 202-225, 251-258 (finding anticompetitive agreements with railroads); Elizabeth Granitz & Benjamin Klein, *Monopolization by 'Raising Rivals' Costs': The Standard Oil Case*, 39 J.LAW & ECON. 1 (1996) (Standard used exclusionary contracts to impose higher costs, mainly for shipping on rivals). On the Standard litigation, see

embraced by Congress in 1914, when original Section 2 of the Sherman Act made it unlawful for a firm to charge a low price in a targeted community while selling similar goods at a higher price elsewhere.¹⁴⁷ Another manifestation of monopoly leveraging was the notion that a firm that operated in many markets but had a monopoly in only a few might use multimarket contracting to leverage additional advantage in its nonmonopoly markets. This view was advocated by the Antitrust Division and embraced by the Supreme Court in its 1948 *Griffith* decision, which condemned a large motion picture exhibitor's practice of negotiating film contracts for all of its theaters together, thus obtaining "unfair" advantages in towns where it lacked power.¹⁴⁸

Undoubtedly the most important debate over leveraging occurred in the law of tying arrangements, although the origins long antedate the antitrust laws. The idea was that by tying separate goods or transactions together the owner of a monopoly could obtain multiple sets of monopoly markups. The idea originated in patent law in response to attempts by patentees to impose post sale restraints on patented articles. The Supreme Court's responded with the "first sale" doctrine, which holds that once a patented article is sold the patentee loses all control over it and cannot impose further restrictions or collect additional royalties on downstream sales. Speaking through Chief Justice Taney, the Supreme Court embraced the doctrine already in its first *Bloomer* decision in 1852.¹⁴⁹ In litigation involving the same patent

James May, *The Story of Standard Oil Co. v. United States*, in ANTITRUST STORIES (Eleanor M. Fox & Daniel A. Crane, eds., 2007).

The leverage theory of predatory pricing antedates the passage of the Sherman Act. See Henry Stimson, *Trusts*, 1 Harv.L.Rev. 132, 134 (1887) (arguing that multimarket monopolist could use monopoly prices in monopoly towns to subsidize predatory pricing in competitive towns, creating a monopoly in them as well).

147. 15 U.S.C. §13. On the operation of the statute see 3A PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶745 (3d ed. 2008).

148. *United States v. Griffith*, 334 U.S. 100 (1948). On "leveraging" see 3 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶1652 (3d ed. 2008).

149. *Bloomer v. McQuewan*, 55 U.S. 539 (1852). The Supreme Court re-affirmed the doctrine in *Quanta Computer, Inc. v. LG Electronics, Inc.*, 128 S.Ct. 2109 (2008).

a decade later, the Court elaborated, stating that patentees "are entitled to but one royalty for a patented machine." As a result, when the patentee has sold the patented article he has "parted with his monopoly, and ceased to have any interest whatever in the machine...."¹⁵⁰ Justice Brandeis picked this idea up eighty years later in the *Carbice* decision, which found unlawful patent "misuse" in a patentee's contractual requirement that purchasers of its patented ice box purchase only its own dry ice, which was the refrigerant. This arrangement, Brandeis opined, enabled the patent-owner to "derive its profit, not from the invention on which the law gives it a monopoly, but from the unpatented supplies with which it is used." If a monopoly could be contractually expanded in this way a patentee:

might conceivably monopolize the commerce in a large part of the unpatented materials used in its manufacture. The owner of a patent for a machine might thereby secure a partial monopoly on the unpatented supplies consumed in its operation.¹⁵¹

The first critique of this theory did not come from the Chicago School at all, but rather from Myron W. Watkins, a professor at NYU, who observed that a monopolist could charge a high price for the second product only by offering a compensating price reduction in the first product. That is, a monopoly creates the opportunity for a single monopoly markup, and a buyer will simply attribute a price increase in a tied product to the monopoly product itself.¹⁵² The critique was famously elaborated by Ward Bowman in 1957,¹⁵³ and since that time has been considered a core principle of the Chicago School critique of the Harvard School.¹⁵⁴

150. *Bloomer v. Millinger*, 68 U.S. at 340, 350 (1863).

151. *Carbice Corp. v. American Patents Dev. Corp.*, 283 U.S. 27, 31-32 (1931)

152. MYRON W. WATKINS, *PUBLIC REGULATION OF COMPETITIVE PRACTICES IN BUSINESS ENTERPRISE* 220-221 (3d ed. 1940).

153. Ward S. Bowman, *Tying Arrangements and the Leverage Problem*, 67 *YALE L.J.* 19 (1957).

154. See, e.g., Posner, *Chicago School*, 127 *Univ.Pa.L.Rev.* at 296 (listing explosion of the leverage theory for tying as the first hallmark of the Chicago approach to antitrust theory).

The leverage theory was clearly a part of the economic folklore of the Supreme Court, and it accounts for a good deal of the Court's hostility toward a variety of practices. Among these were the per se antitrust rule against tying arrangements, developed in the 1940s and 1950s.¹⁵⁵ The leverage theory also accounts for much of the Supreme Court's hostility toward vertical integration, which it viewed as a way of spreading monopoly vertically.¹⁵⁶

In fact, the leveraging theory never held a secure place in either the writings of Harvard School economists and lawyers or in the Structure-Conduct-Performance paradigm generally. When the writers representing the S-C-P paradigm spoke of tying, vertical integration, or other monopoly extensions the stated concern was not the leveraging of additional profits but rather "foreclosure," another term that produced considerable controversy with the Chicago School but which nevertheless remains a much more viable topic of debate. For Bain, Kaysen and Turner in the 1950s and Areeda and Turner in the 1970s the real concern that arose from the monopolist's operations in a second market was that the firm would be able to deny market access to rivals.¹⁵⁷ This view remains viable as a matter of legal policy to this day -- as, for example, in the court's condemnation of Microsoft's tying of Internet Explorer in order to deny market access to rival internet browser Netscape.¹⁵⁸

The Harvard School abandoned most parts of the S-C-P paradigm in the 1970s, and since then Chicago and Harvard positions on competition policy have converged on most but not all issues.

155. *International Salt Co. v. United States*, 332 U.S. 392 (1947); *Times-Picayune Pub. Co. v. United States*, 345 U.S. 594, 606-609 (1953); *Northern Pacific Ry. Co. v. United States*, 356 U.S. 1 (1958).

156. See the following chapter; and Robert H. Bork, *Vertical Integration and the Sherman Act: The Legal History of an Economic Misconception*, 22 U.CHI.L.REV. 157 (1954).

157. On Turner and leverage, see note _____. See also KAYSEN AND TURNER, ANTITRUST POLICY, note ___ at 157 et seq (tying and entry barriers).

158. *United States v. Microsoft Corp.*, 253 F.3d 34, 59-60, 66-67, 72-74, 79 (D.C.Cir. 2001), *cert. denied*, 534 U.S. 952 (2001). See 3 AREEDA & HOVENKAMP, ANTITRUST LAW, note ___ at ¶617.

Further a "post-Chicago" critique, sometimes known as the New Industrial Economics,¹⁵⁹ has emerged which uses the mathematics of marginalism and game theory in a highly technical fashion, in many cases far beyond the ability of any court to administer in the context of legal regulation.

159. See, e.g., JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION (Cambridge, Ma.: MIT Press, 1988).