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THE RISE, FALL, AND LEGACY OF THE STRUCTURE-CONDUCT-PERFORMANCE PARADIGM

BY
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The Structure-Conduct-Performance paradigm was the core framework of industrial organization for two decades, and had a significant impact on competition policy from the 1950s through the 1970s. This essay considers what made the SCP framework so influential in the United States, the shortcomings economists identified in the framework during the shift to the "new IO" in the late 1970s, and the lasting contributions that the SCP paradigm made on policy and the study of industry and competition.

I. INTRODUCTION

In 1982, Joe Bain was designated a Distinguished Fellow of the American Economic Association (AEA), with an accompanying statement referring to him as "the undisputed father of modern Industrial Organization Economics" (AEA 1983). The Structure-Conduct-Performance (SCP) paradigm that Bain developed and deployed had been the core framework of industrial organization for two decades, and had a significant impact on competition policy from the 1950s through the 1970s. And yet by the time of Bain's designation as a Distinguished Fellow, industrial organization was shifting away from SCP and instead relying on a foundation of game theory. This essay considers what made the SCP framework so influential in the United States, the economists identified in the framework during the shift to the "new IO" in the late 1970s, and the lasting

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II. ORIGINS OF SCP

The Structure-Conduct-Performance paradigm came out of Harvard in the 1930s. The label "Industrial Organization" for a distinct subfield of economics was born at this time as well, with the American Economic Association recognizing industrial organization as a subdivision of economics in 1941 (Mosca 2016; Phillips and Stevenson 1974). Up to this point, research papers and economics courses had in their titles terms such as: utilities, trusts, corporations, agriculture, marketing, etc. A topic would be discussed in depth but without much integration with economic theory and without a unifying framework. This changed once SCP offered a single paradigm under which various industrial issues could be analyzed.

Edward S. Mason was the earliest developer of what would become known as the SCP paradigm. Mason received his PhD from Harvard in 1925, and was a faculty member there for much of his career, receiving tenure in the economics department in 1936. Edward H. Chamberlin, who received his PhD from Harvard in 1927, was also a faculty member at Harvard, and it was the interaction between Mason and Chamberlin that inspired this new analytical approach to the study of industry. Of particular importance was the publication of Chamberlin's book *The Monopolistic Theory of Competition* in 1933, the same year that Joan Robinson published her book on the same topic (Chamberlin 1933; Robinson 1933). These two books opened up a new avenue of economic inquiry for markets that resembled something in-between the two poles of perfect competition and pure monopoly. Mason traveled down this new avenue with even "greater strides into the real world," pulled by empirical methodologies and public policy relevance (Grether 1970, p. 83). Mason's blend of theory and empirics stimulated a research program that followed his approach of analyzing firms in their own actual market structures instead of a representative market, and his framing of market structure acting on market outcomes (Phillips and Stevenson 1974, p. 339). Mason's studies in this research program were collected into his 1957 work *Economic Concentration and the Monopoly Problem* (Mason 1957).

This environment at Harvard in the 1930s galvanized a group of economists to shape a unified framework, empirically driven yet integrated with theory, for the study of imperfectly competitive markets. The most important scholar inspired by these ideas was Joe Staten Bain, who pushed them further scientifically and empirically than anyone else. After receiving a bachelor's degree from the University of California, Los Angeles in 1935, Bain went to Harvard to study economics. He received an MA in 1939 and a PhD in 1940, while also teaching in Harvard's economics department from 1936 to 1939. Bain's advisors while he was at Harvard were Joseph Schumpeter, Edward Chamberlin, and Edward Mason. Mason in particular had a significant influence on Bain, who wrote in the preface to his 1959 textbook: "a primary obligation must be recognized to Professor E. S. Mason of Harvard, who in large part created and developed the modern Industrial Organization field and who introduced me to it in the 1930's" (Bain 1959, p. x). After graduating from Harvard, Bain obtained a faculty position at the

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University of California at Berkeley, where he would remain until he retired in 1975 (Shepherd 2017).

Following the lead of Mason and Bain was a cohort of scholars who worked to create the body of research known as the Structure-Conduct-Performance literature, and among the most important for that literature was Leonard W. Weiss (Audretsch and Siegfried 1995; Scherer 1995):

> While Edward Mason introduced some of the fundamental concepts, and Joe Bain established the original framework, it took the painstaking research of a younger generation of scholars to implement the agenda first conceived by Mason and Bain. And, among those scholars, Leonard Weiss contributed some of the most original and pathbreaking studies relating market structure and firm conduct to subsequent economic performance. (Audretsch and Siegfried 1995, p. 121)

Weiss, who attended Columbia University for graduate studies in economics after serving in the navy, was not a direct student of Bain or Mason.[1] But he became involved in the research program, with most of his published work falling within the SCP literature. After teaching stints at a few institutions, Weiss moved to the University of Wisconsin in 1961 and remained there until he retired in 1990.

These individuals laid much of the intellectual format for the SCP research program, and therefore also for the field of industrial organization in the United States from the 1940s to 1970. And as we will see, this literature had significant policy influence in its heyday. Writing in 1970, Ewald Grether wrote that the SCP approach was then the basis for much of the analysis and judgments about antitrust at the Federal Trade Commission (FTC) and Department of Justice (DOJ), it influenced the merger guidelines issued in 1968, and "of even greater significance, courts—and especially the United States Supreme Court—are drawing heavily upon some of the hypotheses, research results, and generalizations of the literature" (Grether 1970, p. 86).

III. KEY ELEMENTS OF THE SCP PARADIGM

In SCP research, technical elements determined a market's structure, which in turn influenced the behavior of firms (conduct) and the market outcomes in terms of prices, profits, and output (performance).

Bain's work in the 1940s culminated in two landmark books, *Barriers to New Competition* published in 1956 and *Industrial Organization* in 1959 (Bain 1956, 1959). *Industrial Organization* is a textbook that lays out how Bain approached the problems of analyzing industry. A key goal in this work was to explain the way that prices were determined in imperfectly competitive markets. Bain used as the unit of analysis the industry or group of competing firms, rather than a single firm or the economy-wide aggregate of firms. With this framing, he was setting the scope of inquiry as the partial equilibrium analysis of a single "market," where a market was delineated by

[1] As F. M. Scherer remarked: "I will leave it for Len to explain how a World War II veteran studying at Columbia University, after a digression of several years teaching urban economics and other esoterica, became enmeshed in the 'Harvard' tradition of industrial organization research. But enmeshed he was, and he has enriched the field in many ways" (1995, p. 129).

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a set of competing firms. This analysis was distinct from the analysis of the internal decision-making of a firm, which he left to the field of management science.

While Bain relied on economic theory—and specifically a priori price theory—for concepts and hypotheses, the SCP program was not one of developing and elaborating theory itself. The textbook *Industrial Organization* is not formulated in mathematical terms. Instead, Bain's focus was empirical. "The emphasis is dominantly on empirical study concerning issues raised by such theory, or on the implementation, application, and critical testing of such theory" (Bain 1959, p. viii). An important endeavor of the SCP research was to determine from theory which hypotheses could be tested, which predictions from theory could be evaluated with available data, and how to accomplish such a task.

Two main elements of economic price theory informed the SCP approach. First was the theoretical analysis of atomistic, oligopolistic, and monopolistic markets. This is the idea that in an atomistic market, firms are all price takers and prices should approach marginal costs. Monopolists are price setters, and tend to restrict output and raise price. The oligopolistic market was the most difficult to analyze, requiring more assumptions to be theoretically determinate. Bain discussed many possible outcomes in such markets, including express or tacit collusion, imperfect collusion, or open price rivalry. The second key element of price theory for the SCP program was product differentiation, ranging from homogenous products to differentiated. Recognizing product differentiation opened up new theoretical dimensions of pricing policies and market conduct. This was the theoretical stage in which the SCP researchers aimed to take theory to data.

SCP researchers found cross-sectional analyses to be a fruitful empirical approach. The search was for generalizations regarding the relationships between structure and conduct on the one hand, and performance on the other; cross-sectional studies were amenable to uncovering such statistical relationships. The first task Bain identified for the SCP program was "to identify, describe, and classify the significantly different types of structure and conduct which are found in the markets for goods and services" (Bain 1959, p. 3). The second task was to then empirically find associations or even causal relationships from structure and conduct to performance. The early empirical work in this tradition, including Joe Bain's research, used simple correlations and comparisons of averages in small samples. As improved data sources such as from the US Census became available, and econometric sophistication such as the method of least squares permeated the profession, later work in the SCP literature reflected multivariate regression analysis in small samples and then in large samples.[2] Invariably, the ultimate interest was public policy, and being able to inform policy-making so that markets led to the most desirable outcomes.

The "conduct" piece of structure-conduct-performance received a significant amount of attention. Conduct includes the degree to which firms in an industry are acting independently or interdependently or even collusively, and whether firms engage in policies that can be considered "predatory tactics" or "exclusionary tactics." However, Bain also acknowledged that the conduct piece is hard to observe in data and therefore hard to pin down empirically. Thus, in practice, empirical work in the SCP framework

[2] Some of the early work in the SCP style using linear regression include Fuchs (1961), Weiss (1963), and Collins and Preston (1969). Later work in the tradition is exemplified through essays contained in Audretsch and Siegfried (1992).

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focused on associations between market structure and market performance, leaving "conduct substantially unascertained" (Bain 1959, p. 295). To the extent conclusions were drawn about conduct, they tended to be from case studies of individual industries. Bain's text discusses light bulbs, oil, cigarettes, and steel to draw some general tendencies, namely that very high seller concentration seems related to interdependent actions without collusion, more so than moderate seller concentration. Where there is evidence of collusion, it tends to be imperfect collusion. And entry barriers do not seem to have much systematic effect on conduct.

An important analytical question in the SCP framework, then, was how market structure related to market performance in cross-sectional industry data. On this question, Bain claimed that the empirical evidence showed a definite relationship that "high seller concentration tends to be connected with substantially higher rates of excess profit than does moderate or low seller concentration" (Bain 1959, p. 412). But this was not a linear relationship; instead, there was a critical degree of seller concentration, with the threshold at 70% of the market controlled by the largest eight firms. Above this threshold, firm profits were much higher, at an average of 11.8%, compared with 7.5% in industries with concentration below this threshold. Within each group, the rate of profit was not related to concentration. To Bain, this suggested that there were two types of oligopolists in the economy: those sufficiently concentrated that monopolistic pricing policies are usually successful, and those sufficiently unconcentrated that an approximation to competitive pricing is likely to ensue.

A second main finding in the cross-section studies was that industries with very high barriers to entry had "distinctly higher average profit rates than industries protected by lower barriers to entry" (Bain 1959, p. 414). Bain claimed that the effects of barriers to entry were distinguishable and separate from the influence of seller concentration. As well, he noted that industries with very high average profit rates also were the industries with a very high degree of production differentiation, such as automobiles, liquor, cigarettes, typewriters, and high-quality fountain pens.

For Leonard Weiss, the two main predictions of the SCP paradigm were "(1) that concentration will facilitate collusion, whether tacit or explicit, and (2) that as barriers to entry rise, the optimal price-cost margin of the leading firm or firms likewise will increase" (Weiss 1979, p. 1105). He noted that both Edward Chamberlin and George Stigler "predicted that the effectiveness of collusion and therefore the level of price-cost margins will rise with concentration" (p. 1106). Reviewing numerous empirical studies across a wide variety of industries, Weiss concluded, "In short, this evidence shows that concentration really makes a difference in prices as well as in profits" (p. 1115). When asked in May 1990 what he considered his greatest contribution to research in industrial organization, Weiss expected that these results on the relationship between concentration and prices would have the greatest long-run impact (Audretsch and Siegfried 1992, p. viii).

IV. GROWTH AND EFFICIENCY

Though the SCP paradigm found that very high levels of concentration led to poor market performance, scholars in this research program absolutely did recognize the

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benefits of economies of scale.[3] Joe Bain described in his textbook that structural changes leading to more concentration should, as the norm, be condoned as realizing greater efficiency in the economy. Policy-makers did need to make sure that real efficiencies were being realized, but cases where concentration increased without efficiency were more of the exception than the rule. And in fact, one of Bain's clearest concerns was that small firms sometimes had sufficient political power that they would obtain regulations only to protect themselves: "the sorts of interference sought and obtained ordinarily involve limiting *competition* in order to preserve *competitors*" (Bain 1959, p. 440; emphasis in original).

In fact, Bain spent a quite large amount of space in his textbook (nearly ten pages) describing the structural changes in grocery retail and distribution since World War I. This period saw a radical change in the structure of grocery retail with the rise of supermarket chains, which were hardly existent in the 1920s but widespread across the country by the 1950s. There were social and political questions about such a rapid transformation of the sector. In Bain's assessment:

> The weight of evidence strongly supports the assertion that, as compared to the nonintegrated small retailers and wholesalers who occupied most of the market before they entered, the large chain stores were markedly more efficient. Through advantages of integration and large-scale management they attained substantially lower operating costs than the old style independents could. (Bain 1959, p. 445)

Bain recognized that some portion of the lower inputs costs were likely due to large chains exploiting monopsony power, but that "the substantial reduction in operating costs reflected a real gain in efficiency" (p. 445). The chains could sell 10% to 15% below the prices of independent competition and still make profits. This in turn spurred small enterprises to increase efficiency in response, and so "the structural revolution in question was in the net a favorable change" (p. 445).

What Bain was quite concerned about was government regulations that protected the small independents and thus prevented the realization of economies of scale. This included antichain-store tax laws, the prohibition of discriminatory buying-price advantages of large purchasers as specified in the Robinson-Patman Act of 1936, and local fixing of minimum retail prices. Bain favored a full repeal of the Robinson-Patman Act. He was quite unsparing in his critique of that law, writing that its restrictions "shut off or discourage the use of one of the principal and most effective devices for actual price competition on oligopolistic markets," and so, in consequence, "the overall vigor and effectiveness of price competition has probably been reduced by the enforcement of the Robinson-Patman Act" (Bain 1959, p. 619).[4] He added that the effects of these various

[3] There is a misconception today that SCP rarely considered efficiencies. For example, "This [SCP] paradigm invariably downplayed efficiency claims of large-scale enterprises due to the disruption such companies caused to the market structure" (Wright and Portuese 2019, p. 10); "both the courts and economists of this time [the 1950s and 1960s] tended to downplay efficiencies associated with large-scale enterprises (Kovacic and Shapiro 2000, p. 52).

[4] Interestingly, Bain did briefly mention in his earlier 1956 *Barriers to New Competition* that legislation such as the Robinson-Patman Act could reduce entry barriers when enforced against monopolistic buying power of incumbent firms. "The enforcement of the Robinson-Patman law was given as a reason for the obliteration of certain strictly pecuniary economies formerly enjoyed … it is legitimate and, from the standpoint of our problem, desirable to attack the bases of strictly pecuniary advantages of size such as are derived from

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government interventions have not been as "socially noxious" as might have been feared, only because they didn't work well in accomplishing their intents; retailers integrated with suppliers to avoid price discrimination charges, and offered private label products to avoid resale price maintenance (Bain 1959, p. 448).

Leonard Weiss also recognized that an important efficiency to consider in merger reviews was the possibility for decreasing the "suboptimal capacity" of an industry, which is the condition in which some plants are too small to be efficient. Bain had shown that the size of the suboptimal fringe was unrelated to concentration, but new evidence in work by Weiss and Frederic M. Scherer on relationships between concentration and extent of suboptimal capacity led Weiss to reconsider his views: "It now appears that increased concentration creates social gains in the form of less suboptimal capacity, so merger policy must trade off that gain against the social losses caused by more effective collusion" (Weiss 1979, p. 1117).[5]

Given the attention to scale economies and suboptimal capacity of small firms, it is an overly simplistic characterization to say the SCP paradigm was only a deconcentration agenda that rarely recognized efficiencies.

V. POLICY IMPLICATIONS AND POLICY INFLUENCE

The policy implications of the SCP program were first and foremost to preserve and create market structures no more than moderately concentrated. This is because very high seller concentration appeared in the data as generally conducive to poor performance, without offsetting advantages in other dimensions of market performance. Second, the reduction of high barriers to entry should improve performance, though many acknowledged that lowering barriers to entry may be difficult to achieve through policy.

Assessing the competition policies in the United States through the lens of SCP, Bain found the law deficient. "If workably competitive performance throughout the economy is our general goal, we may say that the existing antitrust laws are considerably better than no such laws at all, but that they have fallen significantly short of the task of entirely or largely suppressing monopolistic performance tendencies in the economy" (Bain 1959, p. 533). Deficiencies in antitrust were not because of lax enforcement. "The major difficulty seems to lie in the content of the laws and in their judicial interpretation" (Bain 1959, p. 533).

monopolistic buying power through the enforcement of legislation like the Robinson-Patman law" (Bain 1956, p. 212). I thank Daniel Francis for pointing this out to me.

[5] Weiss was also willing to change his recommendations on merger policy in light of new evidence of critical thresholds that lead to harm: "It is obviously much too early to make precise recommendations to the antitrust authorities. However, if Kwoka's results [that increasing the shares of only the top two firms increased price-cost margins] withstand subsequent research and analysis, they would mean that we should not contest horizontal mergers that cannot increase the two-firm concentration ratio above 35 or the four-firm ratio above 50 and we should not contest horizontal mergers unless they affect firms that rank first or second in the market or would rank first or second after the merger. By these criteria, many of the horizontal merger cases that reached the Supreme Court in the 1960's were decided too strictly" (Weiss 1979, p. 1119).

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But Bain didn't see a need for sweeping or radical changes to the antitrust laws.[6] He viewed antitrust law as acceptable and useful, and a better alternative to direct government regulations. So instead of sweeping changes, he focused on improving existing policies through revisions or elaborations to the current statutes.

The SCP literature inspired proposals for revision to antitrust policy centered on one key theme: the primary deficiency of the Sherman Act is that it is a "conduct oriented" law (Bain 1959, p. 607). That is, the basic offense against the law is market conduct that excludes competitors. But this means that a monopolistic market with undesirable market performance can be attacked only indirectly, by casting the monopolistic firms as undertaking predatory or exclusionary conduct. There was no scope in the law to directly attack a firm for having a dominant market position. Showing that such conduct has been undertaken by a firm is more difficult than directly showing a market is monopolistic in a structural sense. Also, litigation centered on conduct was necessarily lengthy and expensive. Thus, the law left a great deal of ambiguity about what conduct a firm could and could not undertake.

This perspective suggested to Bain three avenues for legislative change, which were also proposed in Carl Kaysen and Donald Turner's 1959 *Antitrust Policy, An Economic and Legal Analysis*. First and foremost, Bain suggested the law might state that structural situations with monopolistic tendencies should be generally illegal, "without particular reference to market conduct through which the undesirable structure has been created, maintained, and exploited" (Bain 1959, p. 608). Second, he thought the standard of liability should be spelled out in sufficient detail so as to limit the discretion of the courts. And third, the law should instruct the courts that dissolution should be the typical remedy for illegal monopoly, unless there would be significant adverse side effects from dissolution or a better alternative remedy existed.

Leonard Weiss likewise called for a substantive change to the law that would allow for dissolution in industries with extreme concentration even when no anti-competitive conduct has been shown. "My proposal is that dissolution proceedings continue to require a market share of a relevant market sufficiently high and persistent that the firm can reasonably be considered dominant—perhaps a share of 50% or more of a market with no close rival—but that the apparent requirement of anti-competitive conduct be eliminated" (Weiss 1979, p. 1140). Weiss thought that a dominant firm should be able to offer as defense evidence that its dominant position was due to economies of scale or valid patents, and that such a policy would be well-grounded in economic theory and evidence. "The adoption of such a standard by the courts or by Congress seems to be a highly desirable reform of monopolization law" (p. 1140).

Kaysen and Turner's *Antitrust Policy* was a direct and succinct SCP-inspired policy document. Edward Mason wrote the preface to the book, which was fitting because the book itself was a product of the Harvard SCP ideas.[7] Nicholas Johnson's PhD dissertation (2023) includes a chapter that discusses how Edward Mason convinced Carl

[6] Some institutional economists in the interwar period were more willing to advocate for sweeping reforms to competition policy in response to deficiencies they saw in the antitrust laws; see Panhans and Schumacher (2021). For a history of the cycles of deconcentration movements in the US, see Kovacic (1989).

[7] Mason writes that "although this volume has been written by the two authors whose names are appended, the study is, in an important sense, the product" of a discussion group of lawyers and economists at Harvard, extending over several years (Kaysen and Turner 1959, p. xix).

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Kaysen to study at Harvard after World War II, and how Kaysen then became enmeshed into the Harvard community. Kaysen was part of the Harvard Society of Fellows in 1947, became a professor at Harvard in 1950, and completed his dissertation there in 1954. That same year, Mason and Kaysen inaugurated an Antitrust Seminar at Harvard that was jointly coordinated between the economics department and the Law School. Franklin Fisher was an undergraduate at Harvard when Kaysen began mentoring him and invited him to this seminar, which included many distinguished participants (Johnson 2023).

Donald F. Turner was one such distinguished participant of the Antitrust Seminar at Harvard. Turner would be the first PhD economist to head the Antitrust Division. After receiving his PhD in economics from Harvard in 1947, he went to Yale and completed a law degree in 1950. He then clerked at the Supreme Court and worked at a law firm before returning to Harvard in 1954 as faculty at Harvard Law School; from 1965 to 1968, Turner was the assistant attorney general for Antitrust (Williamson 2002).

Turner had tremendous if underrecognized influence in shaping the trajectory of antitrust policy through his tenure at the Antitrust Division. Oliver Williamson reflected in 2002 that "the Turner administration deserves credit for bringing economic reasoning to bear on antitrust in a much more forceful and systematic way than had been done previously" (Williamson 2002, p. 11).[8]

Given political and legal constraints, Turner could make only gradual changes as the assistant attorney general for Antitrust. "Problematic cases that were already in progress were rarely dismissed but were reshaped, thereby to replace incorrect or vague arguments with more careful and nuanced arguments. New cases that could be brought and won under current law, as inferred by recent decisions, were not approved if they relied on mistaken or contrived economic thinking" (Williamson 2002, p. 5). For example, the merger of Shopping Bag and Von's grocery chains would have led to a combined market share in Los Angeles of less than 9%. Turner had inherited this case, and rather than dismiss it, he reshaped it to be more in line with economic reasoning. The DOJ under Turner "did not argue for blocking the merger to protect small businesses or advance other social goals; rather, it focused on the competitive effects of the Von's-Shopping Bag merger" (Niefer 2015, p. 56).

Another major accomplishment for Turner while in government was the issuance of the 1968 Merger Guidelines. This marked the first time an antitrust agency had issued a set of generally applicable guidelines, and was an idea sketched out in Kaysen and Turner (1959). Mark Niefer (2015) identifies three ways in which the 1968 guidelines reflected Turner's approach to antitrust, and therefore also SCP influence. First, competition is core to the guidelines, and there is no mention of broader social goals for antitrust policy. Second, the guidelines describe simple, administrable rules focused on key indicators, the most important being market shares. Third, the guidelines did not take the position that a merger should be illegal because of efficiencies conferring an advantage to the merging companies.

[8] "[Edwin Zimmerman] observed, and I agreed, that Donald Turner's role in bringing economic analysis to bear on antitrust enforcement was under-valued, even ignored … an accurate record of the progressive introduction of economics into antitrust should make prominent provision for the 'early years' from 1965–1968 when Turner was the Assistant Attorney General for Antitrust" (Williamson 2002, p. 1).

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The SCP framework also had a significant influence at the Federal Trade Commission. Willard F. Mueller, reflecting on his time as director of the Bureau of Economics and chief economist of the FTC from 1961 until 1968, wrote, "In providing economic advice to the Commission, we relied primarily on conventional micro-economic theory and empirical studies of that period. Especially useful was Professor Joe Bain's market structure-conduct-performance paradigm, his cross-sectional empirical method, and his analyses of barriers to entry and potential competition" (Mueller 2004, p. 94).

Many of the SCP reform proposals were aimed making the execution of antitrust law more effective and expedient. Although the major policy proposal in Kaysen and Turner (1959)—namely the creation of a new government agency that would have the power to break up firms with "unreasonable market power"—never came to fruition, such revisions to the law were aimed at a more direct and expedient attack on the core problem as they saw it. Turner was able to accomplish some efficiencies in administration of the law during his time in government; issuing merger guidelines was one way that the government, courts, and business could all see some additional clarity on antitrust policy. SCP reform proposals also viewed the current resources for antitrust enforcement as insufficient, and advocated for increasing the overall budget of the Antitrust Division by several times the current levels as warranted. Turner in particular was able to hire more staff economists and create higher-ranking positions for economists within the Antitrust Division.

The SCP proposals approved of using litigation through the courts as a means of enforcement. They did not view as warranted a shift toward administrative procedures as at the Federal Trade Commission for antitrust issues. In fact, Joe Bain even suggested moving all antitrust enforcement to the Department of Justice, and leaving the FTC with a jurisdiction of only unfair methods of competition. But because generalist courts were often ill-equipped to deal with the very specialized and complicated issues of antitrust suits, Bain did suggest a separate court system with specialized knowledge and experience to deal only with antitrust. This "would be more efficient, consistent, and fair than the system we have today" (Bain 1959, p. 615).

VI. THE *US V. IBM* LITIGATION

The antitrust suit that the US Department of Justice initiated against IBM in 1969 illustrates both the influence and limitations of the SCP program in this era. Notably, the economic testimony did not put on trial the SCP research program itself. Rather, economic experts from both sides were using the SCP framework to guide their analysis of competitive issues in the computing industry. The disagreement among the economists was about the proper application of that framework to the specific context in question.

The DOJ's complaint alleged that IBM used a variety of tactics to monopolize the market for "general purpose" computer systems. The case went to trial in 1975, and concluded in 1982 when the DOJ withdrew its complaint against IBM, a full thirteen years after the complaint had initially been filed. Leonard Weiss was one of the economic expert witnesses for the government in this case against IBM, and he used the SCP framework in his expert testimony on behalf of the Department of Justice to show that

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IBM was a dominant firm, that it was protected by high barriers to entry, and that it had earned exceptionally high profits (Weiss 1979, pp. 1124–1139).

Harvard-trained MIT economist Franklin M. Fisher was one of IBM's primary economic expert witnesses in the trial, and he along with two co-authors published a book afterward that was derived from their experiences and Fisher's expert testimony (Fisher, Greenwood, and McGowan 1983).[9] Fisher, like Weiss, also used the SCP framing to guide his inquiry into market competition. For example, in Chapter 2 on "The Analysis of Competition and Monopoly," Fisher and co-authors organize their explanation into sections on "structure," "conduct," and "performance." They find such a framing useful and a standard economic analysis of a market. The caveat comes with particular application to an industry like computers where technology is rapidly changing: "Particularly when technological change is important, certain aspects of market structure will be endogenous … in innovative competition, one cannot understand the significance of a large market share without understanding how that share came to be and how it is maintained" (Fisher, Greenwood, and McGowan 1983, p. 40). But even on this point, it is not an attack on SCP but rather an attack on its proper application. To give further weight to this point, Fisher quotes Edward Mason himself saying that "where the rate of innovation … is rapid, market share is essentially irrelevant to a judgement of market power" (Mason 1957, pp. 379–380, quoted in Fisher, Greenwood, and McGowan 1983, p. 100).

Similarly on entry and barriers to entry, Fisher and his co-authors cite Joe Bain and his 1956 *Barriers to New Competition* as an authoritative text. Rather than critique that work, they instead take Bain's measures of entry barriers there as the best empirical guide available. And then they argue that, when properly measuring barriers to entry in the computer industry, and when inflation-adjusting Bain's values on what should be considered a significant barrier to entry, "capital requirements for entry [in the market for general purpose computing] are not 'very large' by Bain's standard" (Fisher, Greenwood, and McGowan 1983, p. 190). In his testimony, Fisher did not object to SCP but rather used the same framework to come to different conclusions from those of Weiss and the other expert witnesses for the government.

The one place where Fisher did attack SCP literature directly was the line of studies that attempted to explain profits by variables measuring industry structure, a strand of literature led by Leonard Weiss. Fisher pointed out that such an exercise was conceptually and practically problematic for several reasons, including that economic costs were not the same as accounting costs, and also that competition leads to zero profits only on long-run equilibrium, thus finding profits could indicate not monopoly but short-run disequilibrium. Fisher and co-authors summarize, "The literature that supposedly relates concentration and economic profit rates does no such thing, and examining absolute or relative accounting rates of return in order to draw conclusions about monopoly profits is a totally misleading enterprise" (Fisher, Greenwood, and McGowan 1983, p. 253). Fisher and Weiss agreed that IBM was a highly profitable enterprise, but while Weiss interpreted that as evidence of monopoly, Fisher argued that the profits in this case were the reward for innovation and bearing risk and rents from past achievements.

[9] In this book, Fisher and co-authors argue that the government's case against IBM was one that no reasonable economist could support. Dennis (1985) offers an excellent review of the book that provides a more balanced explanation of the government's reasoning behind bringing the suit.

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The economic arguments in the IBM case encapsulate much of the SCP legacy in terms of both its contributions and weakness. Economists for both the government and for IBM used the framing of SCP to organize their explanations about market competition, and they were all influenced by Mason and Bain and used their writings on the subject as the framework. The economists differed on the proper application of that framework to the context at hand. And just like the SCP literature was attacked on some specific methodologically problematic inferences, Franklin Fisher, too, did attack the government economist's relating profits to concentration measures, and what could be learned from such endeavors. And that is a big part of the lesson learned from empirical IO pre-game theory: it provided a useful framework for the analysis of market competition, and although theory predicts that monopolized markets have high profits and competitive industries have zero profits, it is no straightforward task to empirically take that theory to data by relating measures of market concentration to industry prices or profits.

VII. BATTLES WITH THE CHICAGO SCHOOL

While the First Chicago School of the 1930s and 1940s, exemplified by writings of Henry Simons, was emphatically anti-monopolist, the post-WW II Second Chicago School was equally against government intervention even for antitrust or competition policy reasons.[10] This put the Chicago school scholars of the 1950s and 1960s at odds with researchers in the SCP paradigm.

The Chicago school attacked the SCP program on two main points, one empirical and one theoretical. On the empirical front, Chicago school scholars argued that the SCP had a massive endogeneity problem, such that their empirical results were invalid. Rather than market structure leading to performance, the Chicago school argued the causality ran the other way (Brozen 1971; Demsetz 1973). Market performance of firms in the industry affected the market structure. Efficient firms were able to grow faster than their less efficient rivals, and these efficient firms were also more profitable because their costs were lower.[11] Correlations found in cross-sectional industry studies were impossible to interpret as competitive problems, and could form no basis on which to create public policy.

The second attack on SCP was theoretical. Chicago school scholars argued that markets tended quickly toward long-run equilibria that were approximately competitive (Reder 1982, p. 12; Giocoli 2015, p. 100; Martin 2007, p. 35). If a market had firms with significant amounts of persistent market power, a new entrant would be able to profitably enter. While barriers to entry could exist, they were likely to be small and fleeting. And

[10] For an excellent example of the perspective of the First Chicago School, see Simons (1934); also see Stigler (1952), which contains a dissolution proposal, a position that Stigler later revised. For more on the shifting views of the Chicago school on questions of antitrust and monopoly, see Horn (2011), Martin (2007), and Medema (2011).

[11] Scherer (1995) recounts how "in a contest of heavyweights, Weiss and Demsetz were brought together by Columbia Law School to debate this 'new learning'" (p. 131), and while Weiss conceded several of Demsetz's points, Weiss then proposed tests for the contending hypothesis, and in the end a "modified variant of the structure-conduct-performance paradigm was supported" (p. 133).

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thus market power tended also to be fleeting. "In such a world, the a priori hypothesis can be no other than market perfection and the burden of proof should lie on those who claim otherwise. That burden has never been light" (Giocoli 2015, p. 101). The foundation for these arguments was what Chicago scholars called a rigorous application of price theory. They accused the "old IO" of Harvard of being only loosely based on theory, and argued that a rigorous theoretical approach would in fact lead to the opposite logical conclusions.

Richard Posner, reflecting on the economics of industrial organization of the 1950s and 1960s, described the field as "untheoretical, descriptive, 'institutional,' and even metaphorical.… The result was that industrial organization regularly advanced propositions that contradicted economic theory" (Posner 1979, p. 928). A rigorous application of price theory, in the view of Chicago school advocates, was needed to remedy the field of IO. Conduct such as predatory pricing and tying that had been concerning to scholars of competition was shown, with the application of price theory, to be irrational to undertake. By following price theory to its conclusions, Aaron Director and the proponents of the Second Chicago School found that "a conclusion of great significance for antitrust policy emerges: firms cannot in general obtain or enhance monopoly power by unilateral action—unless, of course, they are irrationally willing to trade profits for position" (Posner 1979, p. 928).

For Posner, another confusion that was sorted out by price theory was the concept of barriers to entry. Suppose it costs $10 million to build an efficient plant to serve a market. Posner argued that the traditional perspective viewed this entire amount as the hurdle a new entrant would have to overcome to compete on the same level as incumbent firms. "But is there really a hurdle?" he asks (p. 929). If the plant has an expected ten-year lifespan, then the cost is only $1 million per year. "Existing firms bear the same annual cost, assuming that they plan to replace their plants. The new entrant, therefore, is not at any cost disadvantage after all" (Posner 1979, p. 929).

The lens of Chicago price theory also emphasized the instability of cartels and the difficulties of sustaining collusion (Posner 1979, p. 932). Cartels could be unstable, as member firms had incentives to cheat for greater profits (Stigler 1964). Moreover, if true barriers to entry were negligible, cartels could not survive for long periods of time; the most effective way to sustain collusion, in fact, was through the government.[12] In stark contrast to the SCP perspective, price theory predicted that tacit collusion would rarely occur, and when it did, the welfare consequences were small and likely lower than the costs of enforcement. "By 1969, then, an orthodox Chicago position (well represented in the writings of Robert Bork) had crystallized: only explicit price fixing and very large

[12] "When competitors agree on higher prices and put them into effect, they necessarily restrict output and so reduce total wealth.… Over time, of course, such resources will move back into the industry as new firms are attracted by the higher rate of return there and move in. Usually the only way for the cartels to prevent this result is to persuade the government to impose legal barriers on entry into the industry, but that is not always possible. The tendency of competition to erode cartels does not, however, disprove the value of the rule against price-fixing. Though its life is limited, the cartel may last long enough to cause a substantial loss in output" (Bork and Bowman 1965, p. 365). "The key to sustained monopoly power is the ability of an industry to restrict or retard the expansion and utilization of productive capacity. Government can offer to industry much greater powers of coercion to accomplish this end than can be supplied by the industry itself" (Demsetz 1974, p. 181).

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horizontal mergers (mergers to monopoly) were worthy of serious concern" (Posner 1979, p. 933).

The main argument of Posner's 1979 essay is that it no longer made sense to talk about a Chicago school and a Harvard school, as insights from both sides of that earlier debate have been integrated into a single consensus framework with rigorous price theory as the foundation. In a comment on Posner's essay, Richard R. Nelson takes issue with Posner's characterization, calling it a "good old-fashioned polemic disguised as a reasonable man's survey of today's consensus position" (Nelson 1979, p. 949). Nelson argues that Posner's history conveniently ignores recent developments in economic theory, on models of signaling, consumer search costs, imperfect and asymmetric information—in short, the integration of game theory into economics:

> But the price theory to which Posner refers is the old-fashioned price theory of the textbooks of twenty years ago. What Posner does not see is that over the last decade or so a newer price theory is replacing the old. I suggest that the new price theory probably provides better support for the old industrial organization than it does for what Posner calls the new. Indeed, the journals are full of a "new new" industrial organization literature based on the newer price theory, viewing the problem in a way that is more consistent with the old Harvard than the new Chicago. (Nelson 1979, p. 949)

What Nelson pointed out was that in the 1970s, game theory began changing industrial organization in fundamental ways that took it in a far different direction from the research programs of either the SCP paradigm or the Chicago school.

Game theory transformed industrial organization in such a significant way in the 1970s that the field felt a need to rebrand as the "new Industrial Organization." As Richard Nelson pointed out in 1979 and others since him, the introduction of incomplete and imperfect information through game theoretic models opened up the possibility for many types of anticompetitive conduct that had been a concern for SCP scholars but that Chicago price theory had deemed impossible.[13] The theoretical frameworks to which SCP researchers sought to bring to data implicitly assumed perfect and complete information. Anticompetitive conduct was mostly discussed in industry studies and not through axiomatic economic models. Once John Harasanyi and others showed how game theory allowed for the formal modeling of information in markets, and that the assumptions about information were critical for a model's outcomes, there was no going back (Giocoli 2009).

[13] For example: "Like Pandora, who loosed the ills of the world and found they could not be closed up again, the Second Chicago School invoked formal theory in its contest with the S-C-P approach, and found it could not close it up again. Faced with the fact that game theoretic models reproduce, as often as not, the conclusions of the S-C-P paradigm, the reaction of the Second Chicago School was to reject the use of game-theoretic models" (Martin 2007, p. 43); "It is crucial for our story to realize that, exactly when the Chicago approach made its breakthrough, by convincing ever more US courts of the validity of the economic arguments supporting pro-competitive explanations of several, supposedly anti-competitive, business conducts—*exactly then*, a series of new results in industrial economics seemed to prove the contrary, namely, that there could well be an anti-competitive rationale behind these very same conducts!" (Giocoli 2009, p. 196). See also Giocoli (2015).

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VIII. THE LEGACY OF SCP

When the SCP paradigm is mentioned today, it is often described as dead, discredited, and defunct.[14] Some criticisms are valid, even given that the empirical and theoretical tools available to IO economists mid-century were less developed (Richard Schmalensee 1989 provides a good assessment). But in context, the SCP paradigm did break ground on understanding of market structures and the economic considerations for competition policy.

One valid criticism of the SCP paradigm is how it considered the consequences of product differentiation for market analysis. Bain certainly did not ignore product differentiation; it is one of the four key market characteristics described in his textbook, and Chapter 7 of the textbook discusses in detail the degrees of product differentiation in various industries of the US economy. In terms of the empirical relationship to profits: "the industries in our sample of 20 with the highest average excess profit rates over the two 5-year periods … are also *all* industries with very high degrees of production differentiation (those producing automobiles, liquor, cigarettes, typewriters, and quality fountain pens)" (Bain 1959, p. 415; emphasis in original). But Bain interpreted this relationship as suggesting that product differentiation was harmful to market outcomes, as it was associated with high profit rates, perhaps through increased entry barriers or facilitated tacit collusion. This is quite at odds with the conventional view of today that increasing variety and better meeting of consumers' varied preferences are things consumers value, and those firms garner higher profits as a consequence of better serving the market.

A second criticism with some merit is about the difficulty of inferring causality from market structure to market performance.[15] SCP researchers did think that structure affected market performance to an extent, and Franklin Fisher attacked Leonard Weiss's conclusions about profits and concentration in the general purpose computer system market during the *US v. IBM* trial. Because economic theory predicts that profits are zero in competitive markets and higher in monopoly markets, SCP research attempted to see whether such a relationship could be measured empirically, and several researchers including Bain and Weiss thought the empirical evidence did show such a pattern existed in the US economy. A lesson from this literature is that one must be cautious before jumping hastily to causal claims from regressions of profits on market concentration; but it should also be recognized that SCP researches themselves mostly—though not always—tended to be nuanced in their conclusions. SCP researchers did recognize that market structure could be endogenous, and that structure was affected by underlying conditions of supply and demand, as well as by firm conduct. Bain described that market structure, conduct, and performance are an "interrelated complex of phenomena" (Bain 1959, p. 20). The first edition of Scherer's industrial organization textbook showed in Figure 1.1, A Model of Industrial Organization Analysis, arrows pointing from structure to conduct to performance, but there were also feedback arrows going the other way

[14] "Within the field of industrial organization, the structure-conduct-performance approach has been discredited for a long time" (Berry, Gaynor, and Morton 2019, p. 46); "The critique of the S-C-P paradigm has been effective. Antitrust policy has largely abandoned the paradigm's core presumptions" (Orbach and Rebling 2012, p. 638).

[15] Salinger (1990) details many of the difficulties in relating concentration to profits.

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(Scherer 1970, p. 5).[16] And Bain himself made significant contributions to the concept of limit pricing, which is a case where conduct affects the market structure (Bain 1949; Martin 2007, pp. 31–32).[17]

Understood in the proper context, one can appreciate that the SCP research program broke ground on developing the scientific field of market competition. And moreover, that some criticisms are based on an overly simplistic characterization of the program. Cross-industry studies were only one part of the SCP framework and literature. The broader goal of the SCP literature was to uncover empirical patterns in the economy as a first step to connecting theory with empirical evidence; such stylized facts about the economy had not been systematically investigated, and the theoretical models of imperfect competition had not been juxtaposed to any empirical patterns. There was a need for more systemic empirical evidence and categorization of the various flavors of imperfectly competitive markets, and SCP researchers were the first to answer some very basic empirical questions: How should researchers actually measure industry concentration? How should one actually measure market performance? How are these measures changing over time? Is there any statistically detectable relationship between the two?[18] Once these empirical studies were conducted and published, economists were then pushed to extend both theory and econometric techniques to better interpret the results.

The contributions of SCP researchers have had a lasting impact on pushing the field of industrial organization to where it is today. Perhaps the foremost way the literature has shaped the field of industrial organization is through the framework provided by SCP to organize analysis of market competition. As we have seen, that framework was useful to economists on both sides of the *US v. IBM* litigation, although they disagreed on what the proper analysis using that framework implied about the market for business computing. The discussions of market characteristics and classifications made in Bain (1959) hold up very well today, such as the identification of four key market characteristics (seller concentration, buyer concentration, the degree of product differentiation, and the conditions of entry), and the detailed discussions of each of these elements and how they can be analyzed in different contexts. And by taking the unit of analysis to be the industry, i.e., a competing group of firms, Bain and SCP research were also delineating their scope of inquiry from both management science, to which were left questions about the internal decision-making of single firms, and macroeconomics, to which were left questions about the economy in aggregate. This delineation has largely been the focus of most industrial organization research ever since.

The SCP paradigm also had a lasting influence on merger guidelines and court decisions, by taking the position that economic evidence and logic can be an input into

[16] And as Scherer wrote in his textbook, "Readers already acquainted with the literature of industrial organization will recognize in this conceptual scheme a heavy intellectual debt to the pioneering work for Joe S. Bain" (Scherer 1970, p. 6).

[17] Martin (2007) describes the argument that the SCP paradigm took market structure as exogenous "a difficult position to defend" (p. 31).

[18] After critiquing the SCP paradigm, Berry, Gaynor, and Morton (2019) suggest a research approach that is arguably what much of the SCP program did: "As a starting point, we might seek to establish a descriptive baseline for analysis, without jumping to causal statements. Is concentration in general rising across many firms and industries or a relatively small number? Are accounting markups rising? Are prices rising? What are the descriptive correlations across these variables? The answers to these questions can often point to fruitful areas for detailed study as well as rule out concerns that are unsupported by the facts" (p. 48).

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determining which concentration levels are likely and unlikely to be problematic. The best illustration of this is the work that Donald Turner did to release Merger Guidelines in 1968 that had a consciously economic perspective on antitrust enforcement. As Oliver Williamson remarked in 2002 at the twentieth anniversary of the 1982 Merger Guidelines, "But I also want to remind you that there were some important antecedent events … the 1968 Merger Guidelines [broke] new ground upon which the 1982 Guidelines could build" (Williamson 2002, p. 11).[19] A specific policy question implicated by the economic perspective was the role of efficiencies. Joe Bain excoriated the Robinson-Patman Act as antithetical to competition for protecting inefficient small businesses from more efficient chains. The 1968 Merger Guidelines reflected a similar influence by not stating that efficiencies could make a merger illegal by conferring an unfair advantage to the merged entity, despite the Supreme Court suggesting as much just a few years earlier in its *Brown Shoe* decision.

Another key area where SCP had a lasting influence is in defining the scope for inquiry by the field of industrial organization in various dimensions. Joe Bain explicitly said that his focus would be limited to narrow material outcomes, and he was not going to consider the argument that "concentrated big business undermines the foundations of a Jeffersonian democracy." He acknowledged that it was an important question but considered it as outside the scope of his research program (Bain 1959, p. 21). The 1968 Merger Guidelines released under Turner's tenure also reflected this perspective that antitrust enforcement should focus on matters of competition.

A final contribution worth mentioning is the emphasis on risks of market collusion. One of the key concerns of the SCP literature was that concentration could facilitate collusion, whether tacit or explicit. If concentration made it easier for an oligopolistic market to achieve a monopolistic pricing regime, then this could be a significant mechanism by which markets could produce adverse performance. The new IO research since 1970 has led to an enormous development in the tools to study unilateral conduct but with relatively less emphasis on the development of tools to measure and evaluate coordinated effects. Recent evidence on coordination suggests that collusion may be a significant issue in the economy (Miller, Sheu, and Weinberg 2021; Kawai and Nakabayashi 2022; Kawai et al. 2023), and an area poised for a re-examination.

The publication of the *Handbook of Industrial Organization* in 1989 marked the completion of the transition from SCP to the new IO. Indeed, the first volume of the two-volume handbook was almost entirely game theoretic models, and while the second volume included some empirical considerations, it made a conscious distinction from the earlier empirical IO of the SCP researchers. Tim Bresnahan, for example, wrote in his handbook chapter, "This 'new empirical industrial organization' (NEIO) is clearly somewhat different than the previously dominant empirical method in the field, the structure-conduct-performance paradigm (SCPP)" (Bresnahan 1989, p. 1012); and Schmalensee noted that "interest shifted to work on the theory of imperfectly

[19] "Indeed, it is not hard to find commentators who believe that DOJ merger policy did not really become 'modern,' in the sense that economics played a key role, until the 1980s. That position is debatable. There plainly was not a one-time jump in the 1980s from a state of the world in which economics played little or no role in antitrust policy to a state in which economics played a key role. Instead, there has been a gradual evolution in the extent to which economics has guided policy—and it is clear that AAG Turner played a key, if sometimes overlooked, role in that evolution" (Niefer 2015, p. 58).

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competitive markets and, more recently, to econometric industry studies employing formal models of conduct. Inter-industry studies are now out of fashion" (Schmalensee 1989, p. 952).

Sam Peltzman in a review of the *Handbook* wrote that its focus on game theory may have omitted an important contribution that industrial organization has made to policy. He wrote that the *Handbook* was virtually silent on developments in antitrust policy, which "is especially regrettable given the Handbook's emphasis on developments of the last two decades. That period has witnessed a profound change in policy, and economists have contributed importantly to the intellectual foundations of that change" (Peltzman 1991, p. 215).

The overlooked contributions in the *Handbook of Industrial Organization* that Peltzman refers to in his review are the SCP contributions that had a lasting impact on the field of industrial organization and on antitrust policy. While some specific methodological implementations have been determined to be problematic, and have pushed the field forward through trying to solve those problems, the framing of the study of market competition and bringing together of empirical and theoretical tools marked a significant contribution. At a time when antitrust policy could have gone forward as an entirely legal exercise, the SCP program made sure that economists had something useful to offer and a seat at the table of antitrust policy formation.[20] Even Bresnahan and Schmalensee in their respective chapters in the *Handbook of Industrial Organization* make these connections to the earlier empirical literature.[21] The New IO took the shape it did by building on top of and answering questions raised by the SCP developments in the preceding decades.

Perhaps John Howard Brown put it well when he described that "the structure-conduct-performance model is not a straightjacket, but rather a tool for organizing the scientific study of particular problems" (Brown 2002, p. 105). While the specific way that theory is integrated with empirics has changed, in many ways that SCP tool is still the one used to organize the scientific study of industry and competition today.

COMPETING INTEREST

The author declares no competing interests exist.

[20] Relatedly, Audretsch (2018) uses the three editions of Scherer's textbook to show how industrial organization responded to and addressed pressing policy issues of the time.

[21] "The SCPP did, however, introduce something into the field of tremendous value: systematic statistical evidence. The NEIO is an attempt to continue the use of such evidence while returning to the study of single (or related) industries. On its more optimistic days, the NEIO therefore sees itself as taking the best from the two great empirical IO traditions: SCPP and industry case studies" (Bresnahan 1989, p. 1013); "Cross-section studies also fail to be persuasive when they ignore serious measurement problems…. Again I take an intermediate view: these problems deserve to be taken seriously but, if handled sensibly, they are not so severe as to render cross-section work valueless" (Schmalensee 1989, p. 952).

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