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Author(s): Richard Schmalensee

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# George Stigler's Contributions to Economics

Richard Schmalensee\*

Massachusetts Institute of Technology, Cambridge, MA, USA

## I. Introduction

George Stigler has made basic contributions to several fields of economics, has written a number of seminal papers, and has had a profound influence on the development of applied microeconomics. He ranks with Joe Bain as a founder of modern industrial economics, and he stands alone as the inspiration for the most exciting work on government regulation in recent decades.

Stigler's major publications can be grouped under four headings: history of economics, microeconomic theory, industrial economics, and public regulation.<sup>1</sup> I do not review his voluminous writings on the history of economics, as I am not competent to judge their quality or to assess their impact on the development of economic science.<sup>2</sup> I concentrate here on the content and impact of Stigler's studies of industrial economics and public regulation. But it seems appropriate to begin with a brief discussion of the relation of his work to "pure" microeconomic theory.

## II. Microeconomic Theory

Early in Stigler's career, he made significant (though perhaps not earth-shaking) contributions to microeconomic theory. His essays "Production and Distribution in the Short Run" and "Notes on the Theory of Duopoly" are particularly noteworthy.<sup>3</sup> His formulation of the diet problem in "The Cost of Subsistence", an empirical study, played an important role in the early history of linear programming.<sup>4</sup> Stigler's first clearly seminal paper,

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\* I am indebted to Paul Joskow for valuable discussions, but he shares no responsibility for my errors or opinions.

<sup>1</sup> He has of course written on other topics, and some of his writings make contributions to more than one of these four areas. His dissertation, for instance, which was published as *Production and Distribution Theories* (Macmillan, 1941), is both an interesting exercise in economic theory and a contribution to the history of economics.

<sup>2</sup> A number of these writings have been collected in Stigler's *Essays in the History of Economics* (University of Chicago Press, 1965).

<sup>3</sup> *Journal of Political Economy*, Vol. 47 (June 1939), pp. 305–27 and Vol. 48 (August 1940), pp. 521–41, respectively.

<sup>4</sup> *Journal of Farm Economics*, Vol. 27 (May 1945), pp. 303–14. On the role of this paper, see Dantzig (1963, chs. 1, 2, and 27).

“The Economics of Information,”<sup>5</sup> is a good candidate for the most influential paper on microeconomics published during the 1960’s. It inspired a huge literature on labor market search and its macroeconomic consequences, which Stigler himself began,<sup>6</sup> and it led to the development of a large number of models of markets with imperfect information. The main message of that paper, that information is generally imperfect in the real world because it is expensive to produce, has had a profound influence on the thinking of a generation of economists. Finally, Stigler has recently co-authored (with Gary Becker) a widely discussed essay on the proper approach to microeconomic theorizing.<sup>7</sup>

In these papers and those discussed below, Stigler’s theoretical work is generally distinguished neither by the use of particularly powerful or elegant mathematics (at least by current standards), nor by the solution of technical problems that had baffled others. It is, rather, distinguished by Stigler’s extraordinary ability to recognize and pose important problems and by the economic insight and ingenuity he applies to their solution. Except in his very earliest papers, Stigler has been clearly and consistently concerned with the use of economic theory to understand the world we live in, not with the development of a mathematical framework for its own sake. The fundamental contribution of “The Economics of Information” characteristically lies in the issues and possibilities it raises, not in the technical problems it solves. In that essay, as in others, Stigler both points out an important aspect of reality and shows how the careful application of economic principles can help one to understand its implications. Most of his writings that are not focused on the history of economics are devoted to either the development or use of microeconomic theory to solve applied problems. A great many of his papers contain substantial empirical analysis. And, as one might expect, Stigler’s empirical work is also generally distinguished by insight and ingenuity, not by technical pyrotechnics.

One can see Stigler’s approach to economic theory quite clearly in his elegant and influential text, *The Theory of Price*.<sup>8</sup> In it, Stigler emphasizes the development of analytical tools and styles of thought useful in applications. He is clearly willing to sacrifice theoretical generality and mathematical rigor in order to stress the development of empirically relevant, testable propositions.

<sup>5</sup> *Journal of Political Economy*, Vol. 69 (June 1961), pp. 213–25.

<sup>6</sup> In “Information in the Labor Market”, *Journal of Political Economy*, Vol. 70 (October 1962, Pt. 2), pp. 94–105.

<sup>7</sup> “De Gustibus Non Est Disputandum,” *American Economic Review*, Vol. 67 (March 1977), pp. 76–90. He also has interesting things to say about methodology in “The Existence of X-Efficiency”, *American Economic Review*, Vol. 66 (March 1976), pp. 213–16.

<sup>8</sup> Macmillan, 1946; 2nd Ed., 1952; 3rd Ed., 1966.

### III. Industrial Economics

George Stigler's general contribution to industrial economics may be summarized as the constructive demonstration that the creative development and application of neoclassical microeconomic theory can significantly advance our understanding of market behavior, even behavior in "imperfect" markets. To appreciate this contribution, one must consider the historical background. Beginning in the 1930's with its founding by Chamberlin and Mason at Harvard, mainstream industrial economics made little use of formal theory in the study of market behavior. (There are notable exceptions to this generalization, of course, as to any generalization of this sort.) Chamberlin's world view led one to expect richness and diversity in those markets, an expectation later apparently supported by numerous case studies, but his formal theorizing did not produce tools that could be rigorously employed in applied market analysis. Mainstream industrial economics thus concentrated on detailed (and valuable) case studies of particular industries, on the formulation of general hypotheses about such markets based in part on induction from those studies, and (later) on testing simple hypotheses about firms and markets by means of cross-section regression analysis.

Stigler, along with others generally identified with the University of Chicago, rejected this research program. (In addition to Stigler and Milton Friedman, in this context one must also mention Aaron Director, an economist at the University of Chicago Law School who wrote little but had a strong influence on the Chicago oral tradition in industrial economics.) Stigler's influential critique of Chamberlin, first published in 1949,<sup>9</sup> argued for rejection of much of the latter's work because it lacked clear predictions and thus did not provide useful tools for applied analysis. Since Chamberlin's world view seemed so "realistic", however, this argument would have lacked force unless it could be shown that empirically useful tools already existed or could be built from other materials. Stigler did exactly that during the next two decades. He showed by example that classic Marshallian models of competition and monopoly could be imaginatively and rigorously applied to yield important insights into actual market processes. (Joan Robinson's work on Marshallian monopoly theory was of great value in this program.) His demonstration of the power of this sort of rigorous approach to applied problems may have been as important as the specific results he obtained.

Two additional historical observations are in order here. First, I do not mean to suggest that Stigler himself was preoccupied with refuting or

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<sup>9</sup> In *Five Lectures on Economic Problems* (Longmans, 1949); it is reprinted in Stigler's *The Organization of Industry* (Irwin, 1968) and elsewhere.

discrediting Chamberlin. Stigler's writings show him to be a scientist, not a mere ideologue or scholastic debater. Second, I do not mean to imply that the Chicago approach to industrial economics has in any sense vanquished what I have called the mainstream approach (and which is usually associated with Harvard). The differences between the two approaches in practice was often less than the sketch above may suggest. Moreover, recent work seems to me to embody the best elements of both traditions: formal theory is more important than in traditional "Harvard School" work, but Marshallian models of pure competition and pure monopoly are less important than in traditional "Chicago School" analysis. It is thus better to think of Stigler's contribution as stimulating the creation of a new synthesis, rather than as overthrowing the mainstream work of the first two postwar decades.

Let me now discuss briefly some of the leading examples of Stigler's successful application of price theory to issues in industrial economics, proceeding more or less chronologically. In "The Kinky Oligopoly Demand Curve and Rigid Prices"<sup>10</sup>, he exposed both the theoretical incompleteness and the predictive failures of the kinked demand curve model of oligopoly. He stressed the frequency of price changes in actual oligopolistic markets, a point he later made even more forcefully in an influential empirical study with James Kindahl,<sup>11</sup> a study that successfully challenged many of the implicit assumptions of advocates of "administered pricing" and "oligopolistic inflation". Because of its surface elegance, the kinked demand curve model still appears in many textbooks; Stigler characteristically focused on its predictive power, not its esthetic appeal.

Stigler's treatment of basing-point pricing systems as devices for facilitating collusion,<sup>12</sup> which was characteristically supported by empirical analysis, clarified an extremely confused literature on a common pattern of market behavior and is now standard textbook material. His "Division of Labor" essay was a pioneering analysis of the determinants of the structures and boundaries of firms,<sup>13</sup> a topic that is now quite fashionable. Stigler's essay remains a standard reference on the subject and a source of intriguing hypotheses, particularly as regards the role of economies of scale.

<sup>10</sup> *Journal of Political Economy*, Vol. 55 (October 1947), pp. 432–49.

<sup>11</sup> *The Behavior of Industrial Prices* (National Bureau of Economic Research, 1970). Also worth noting in this context are their later essay, "Industrial Prices, as Administered by Dr. Means", *American Economic Review*, Vol. 63 (September 1973), pp. 717–721, and Stigler's earlier critique, "Administered Prices and Oligopolistic Inflation", *Journal of Business*, Vol. 35 (January 1962), pp. 1–3.

<sup>12</sup> "A Theory of Delivered Price Systems", *American Economic Review*, Vol. 39 (December 1949), pp. 1143–59.

<sup>13</sup> "The Division of Labor is Limited by the Extent of the Market", *Journal of Political Economy*, Vol. 59 (June 1951), pp. 185–93.

In 1958, Stigler proposed the “survivor principle”<sup>14</sup>, according to which economies of scale can be assessed by observing the sizes of plants and firms that survive and prosper in the marketplace. He applied this “principle” to data on several industries. Though a number of limitations of this “principle” were later uncovered, most industrial economists still make use of Stigler’s basic insight when analyzing particular markets.

I have mentioned the extraordinary impact of “The Economics of Information” on economic theory. That essay is in the process of having a similarly profound effect on industrial economics. One can see its effect on Stigler’s own seminal work on oligopoly theory, which I discuss below. It has forced economists to examine seriously the role of advertising as a direct and indirect (via signalling) source of information, it has led to studies of the impact of buyers’ search costs on sellers’ price decisions, and it has stimulated work on sources of consumer information about product quality. Its central theme has affected basic perceptions of many issues and served to alter and shape related research strategies.

In *Capital and Rates of Return in Manufacturing*,<sup>15</sup> Stigler performed a careful cross-section study of the effects of seller concentration in manufacturing that remains one of the best works of its kind. In his brief analysis of the Loew’s case,<sup>16</sup> he not only provided the outline of a theoretically coherent explanation of a puzzling business practice but also laid the foundations for the recent literature on “commodity bundling”. Stigler used a simple example to convey an important economic insight; he characteristically resisted the temptation to bury that insight beneath a mathematical edifice. And he attempted to test some implications of his analysis empirically.

Chronologically, this brings us to Stigler’s 1964 paper on the theory of oligopoly,<sup>17</sup> one of his most important works. In it he applies classic (but then neglected) cartel theory to the analysis of markets with “few” sellers. He argues that the stability and thus the persistence of collusive behavior depends on the possibility of detecting and punishing departures from tacit or overt agreements to restrict output. His formal analysis of the detection problem leads to a new information-based interpretation of the significance of seller concentration, and his discussion of punishment raises issues of credible threats, deterrence, and commitment that are at the heart of much of the most interesting current theoretical work in industrial economics. As

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<sup>14</sup> In “The Economies of Scale”, *Journal of Law and Economics*, Vol. 1 (October 1958), pp. 54–71.

<sup>15</sup> National Bureau of Economic Research, 1963.

<sup>16</sup> “United States v. Loew’s, Inc.: A Note on Block-Booking”, *Supreme Court Review* (1963), P. kurland, ed. (University of Chicago Press, 1963).

<sup>17</sup> “A Theory of Oligopoly”, *Journal of Political Economy*, Vol. 72 (February 1964), pp. 44–61.

is usual for Stigler, “A Theory of Oligopoly”, presents some interesting empirical work. This essay has had an important impact on the analysis of real markets by industrial economists. Before it appeared, the assumption of near-universal stable, tacit collusion in concentrated markets was commonly made, though often unconsciously or implicitly. (One can see the influence of Chamberlin in this.) It is now standard practice to examine stabilizing and destabilizing forces in individual markets and to recognize that nearly competitive behavior may be observed even with high seller concentration if destabilizing forces predominate. Many consider Stigler’s “Theory of Oligopoly” to be perhaps the best paper ever written on oligopoly theory, and I think a good case can be made for this view.

Stigler followed his work on oligopoly theory with a brief, now-classic analysis of the origins, policies, and effects of the U.S. Steel consolidation,<sup>18</sup> an interesting and provocative attempt to measure the actual effects of U.S. antitrust policy,<sup>19</sup> and a persuasive and influential attack on the then-common tendency of industrial economists to explain a host of puzzling phenomena by vague references to unspecified “imperfections in the capital markets”.<sup>20</sup> As a steady stream of empirical work in financial economics has continued to point toward the approximate perfection of those markets, this attack has grown in importance.

In 1968, Stigler published his landmark collection, *The Organization of Industry*,<sup>21</sup> containing all the articles discussed so far in this section, five previously-published essays that some might argue I should have discussed, and a good deal of interesting new material. Under the last heading one finds, for instance, an excellent survey of concentration measures (Chapter 4), a proposed alternative to Bain’s definition of “barriers to entry” (Chapter 6) that has attracted many adherents (though I must admit to preferring Bain’s usage), and addenda to a number of the essays mentioned above. Bound together, this body of work made apparent the power of Stigler’s price-theoretic approach to the study of industrial economics.

*The Organization of Industry* was a major influence on my own intellectual development; others who had not been systematically exposed to Stigler’s work were similarly affected. Stigler’s book helped to trigger the outburst of rigorous theoretical work in industrial economics that began in the 1970’s. (Another major stimulus was Scherer’s (1970) massively comprehensive text, which emphasized both Stigler’s work and the role of

<sup>18</sup> “The Dominant Firm and the Inverted Umbrella”, *Journal of Law and Economics*, Vol. 8 (October 1965), pp. 167–72.

<sup>19</sup> “The Economic Effects of the Antitrust Laws”, *Journal of Law and Economics*, Vol. 9 (October 1966), pp. 225–58.

<sup>20</sup> “Imperfections in the Capital Markets”, *Journal of Political Economy*, Vol. 75 (June 1967), pp. 287–92.

<sup>21</sup> Irwin, 1968.

theory.) Building on Stigler's contributions, that work has by now transformed industrial economics from something of an intellectual backwater to one of the most analytically exciting fields in economics. Though the major contributions of Chamberlin, Mason, Bain, and the "Harvard School" in general have not been discarded, the contemporary emphasis on the rigorous development and application of microeconomic theory makes apparent George Stigler's profound influence on the development of industrial economics.

#### IV. Public Regulation

Let me now turn to Stigler's work on public regulation and, more generally, on the interaction of government and the marketplace. He has written somewhat less on these subjects than on industrial economics, but one can argue that his work on regulation has been his most important. His first seminal paper in this area, "What Can Regulators Regulate? The Case of Electricity,"<sup>22</sup> seriously challenged the contemporary view of economic regulation in the U.S. in the early 1960's. Under that view, which arose from the case studies of Bernstein (1955) and others in political science, regulatory agencies follow a natural "life cycle". They were held to pursue "the public interest" in their youth but generally to decline (for reasons never quite made clear) into senile incompetence or docile service to those whom they were charged to control. Stigler was one of the first to attempt to examine directly the *effects* of regulation, rather than simply to observe the process of agency decision-making. He concluded that early state regulation of electricity prices in the U.S. had had no effect at all on those prices, so that even in their youth, state commissions had not served to protect the public from monopoly abuses. Though one can argue that the evidence presented in "What Can Regulators Regulate?" does not really support the conclusion that regulation had *no* effect at all, that evidence does suggest a much weaker effect than one might have expected from young, vigorous agencies pursuing the public interest by controlling monopolists. In a later study,<sup>23</sup> Stigler concluded that public regulation of securities markets had similarly not achieved its stated goal of benefitting investors.

Once again Stigler's work raised an important set of research questions: regardless of their statutory objectives, what have regulatory agencies in

<sup>22</sup> *Journal of Law and Economics*, Vol. 5 (October 1962), pp. 1–16, co-authored with Claire Friedland, Stigler's assistant in many of his empirical studies.

<sup>23</sup> "Public Regulation of the Securities Markets", *Journal of Business*, Vol. 37 (April 1964), pp. 117–42. This essay also contains an early and insightful discussion of "market efficiency", a topic later to become of central importance in financial economics.



fact accomplished? “What Can Regulators Regulate?” stimulated a great deal of important empirical work on public regulation, the study of which had become even more of a backwater than industrial economics in the preceding decades. Stigler’s work also posed a basic problem: if regulation does not in fact generally achieve its stated objectives, why have so many regulatory agencies been established and kept in existence?

The first serious attempt to provide a general solution to that problem was given in Stigler’s seminal 1971 essay, “The Theory of Economic Regulation”.<sup>24</sup> In that paper, Stigler extended the economist’s fundamental assumption of self-interested, rational behavior to the political arena. (He had applied this same approach in a penetrating analysis of income redistribution by governments the year before,<sup>25</sup> when he also published a pioneering economic analysis of law enforcement that has become a model for what is now the field of “law and economics”<sup>26</sup>.) Stigler argued that regulation generally has its origins in the self-interested political activity of the regulated, so that it should be no surprise that it usually serves their interests by sheltering them from competitive market forces. (This theory thus suggests that state regulation of electric power in the U.S. was promoted mainly by electric utilities seeking to avoid competing with each other or with new entrants. The results of “What Can Regulators Regulate?” are broadly consistent with this hypothesis, though they are also consistent with others.) From the assumption of wealth maximization, Stigler deduced a number of hypotheses about conditions under which regulation-seeking political activity is most likely to be undertaken successfully. And, since Stigler values theory for its predictive power rather than its internal elegance, he provided suggestive tests of those hypotheses in “The Theory of Economic Regulation” and a later “Appendix”.<sup>27</sup>

Stigler’s conclusion that regulation generally exists to serve the regulated has stimulated a decade of basic re-examination of the origins and effects of regulatory institutions in the United States. Though it is now clear, I think, that one must enrich Stigler’s basic model of the political process in order to permit other outcomes under some conditions, his extension of the rational actor model to the study of that process has endured. He has applied it to study the sizes of legislatures,<sup>28</sup> and others have applied it to a wide variety of topics. Though Stigler was not the first to assume selfish

<sup>24</sup> *Bell Journal of Economics and Management Science*, Vol. 2 (Spring 1971), pp. 3–21.

<sup>25</sup> “Director’s Law of Public Income Redistribution”, *Journal of Law and Economics*, Vol. 13 (April 1970), pp. 1–10.

<sup>26</sup> “The Optimum Enforcement of Laws”, *Journal of Political Economy*, Vol. 78 (May/June 1970), pp. 77–84.

<sup>27</sup> “Free Riders and Collective Action: An Appendix to Theories of Economic Regulation”, *Bell Journal of Economics and Management Science*, Vol. 5 (Autumn 1974), pp. 359–65.

<sup>28</sup> “The Sizes of Legislatures”, *Journal of Legal Studies*, Vol. 5 (January 1976), pp. 17–34.

behavior in the political arena, his characteristic insistence on the careful derivation and testing of specific predictions of theoretical models has shown by example the real power of this assumption in that context. Economists simply cannot look at regulatory policy, or indeed at many other government policies, as they did before 1971.<sup>29</sup> Stigler has made us all a bit more cynical but, in exchange, has opened up a broad new field of economic research.

## V. Summary Evaluation

George Stigler's most famous essay, "The Economics of Information", has had a profound and lasting impact on many fields of economics. But, as I have attempted to show, that essay represents only a fraction of his contribution to economic science. Throughout his long and productive career, Stigler has concentrated on the development and use of microeconomic theory as a tool for understanding real phenomena, and he has demonstrated it to be a very powerful tool indeed. His writings do not display the sort of advanced mathematical technique that has become increasingly common in economics journals. Rather, they exhibit Stigler's extraordinary ability to pose important questions and his exceptional economic insight and ingenuity. They are distinguished as well by his rigorous insistence on testing the predictions of theory, by his clear and incisive prose, and by brilliant flashes of his justly famous wit.

Though many of Stigler's individual works on industrial economics have become and remained classics, I think his general contribution to the style of work in that field may be even more important. By the force of his example, he has led industrial economists to a new appreciation of the power of microeconomic theory when carefully and imaginatively applied. His work on public regulation has raised fundamental issues, suggested provocative and fruitful hypotheses, and, perhaps most importantly, again demonstrated by example that microeconomic theory can be creatively applied to yield basic insights about important phenomena. Stigler has revolutionized the study of public regulation.

Overall, George Stigler has surely been one of the most influential applied microeconomists of the last several decades. He has not only written a number of seminal papers and made a large and lasting contribution to our knowledge, he has also had an extraordinary positive influence on the general development of economic science as a tool for understanding the world around us.

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<sup>29</sup> A number of Stigler's writings on the role and behavior of government are collected in *The Citizen and the State* (University of Chicago Press, 1975).

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