

The behaviour of firms: an old debate

Ana ROSADO
Universidad Complutense de Madrid

arosado@ccee.ucm.es

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Abstract

The Harvard School began with the early Mason/Bain research about the performance of the firms to get market power. This proposal opened a different field of the neoclassical economic theory valid since Alfred Marshall, whereas the Chicago scholars continued with the traditional paradigm. Nowadays the three main issues of discussion between these two schools of economic thought are the same as those of the 30's and 40's: barriers of entry into an industry for the new incumbents, the production function and profits maximization and behaviour of the firms within their industry. This article updates these topics.

Key-words: history of economic thought, Harvard School, Chicago School, firms behaviour

El comportamiento de las empresas: Un viejo debate

Resumen

La Escuela de Harvard comenzó con la temprana investigación de Mason / Bain sobre el comportamiento de las empresas para obtener poder de mercado. Esta propuesta abrió un campo diferente de la teoría económica neoclásica válida desde Alfred Marshall, a la vez que los estudiosos de Chicago continuaron sus investigaciones siguiendo el paradigma tradicional. Hoy en día los tres temas principales de discusión entre estas dos escuelas de pensamiento son los mismos que los de los años treinta y cuarenta: las barreras de entrada en una industria para nuevas empresas, la función de producción y la maximización de beneficios y el comportamiento de las empresas dentro de su industria. En este artículo se actualizan estos temas.

Palabras clave: historia el pensamiento económico, Escuela de Harvard, Escuela de Chicago, comportamiento de las empresas

JEL Classification: B21, D21, L10

Contents: 1. Introduction. 2. Origins of modern economic theory of the firm. 3. Background. 4. The controversy. 5. Conclusions

1. Introduction

In this article I'll attempt to show the difficult path one traverses in order to analyze the firm with mathematical tools. The first trial was made by Alfred Marshall at the end of the nineteenth century. His proposal finds never ending criticism among scholars throughout the world, but nobody has offered an alternative proposal. *Risk, Uncertainty and Profit* by Frank Knight (1921) and "The Nature of the Firm", a paper by Ronald Coase (1937) are the main different proposals to Marshall's model which have survived into the present. Furthermore, both of them are considered originators of different schools of economic thought.

Within the tradition of studying the behaviour of firms in their industry barriers to entry is still the most analyzed and studied topic. When I completed my analysis of barriers to entry in an industry in a historical perspective in 2010¹, I thought it would be relevant to consider the general framework in which entry barriers are located. Whenever a firm prevents other competitors entering its industry, it may in the short term make inefficient use of the factors of production. Moreover, a firm's traditional production function and how this determines the achievement of maximum profits, (the traditional economic criterion for a firm's continuation), would be the next stage to analyze whether the firm survives whilst being inefficient through the con-

¹ Rosado, Ana. 2010. Barriers to Competition.

struction of barriers that work. Logically, the school of industrial organization questions the axiom regarding the working of neoclassical production and prefers to speak of management, strategy, etc. This leads to the third point of the article, in which the behaviour school engages in rethinking about the whole traditional analysis of firms.

The main schools in the first field of the theory of the firm are the Harvard School, the Chicago School, Institutionalism, the Evolutionary School, the Schumpeterian School, The Property Rights School and The Behaviourist School. Perhaps we could find a good place for most of the scholars, but maybe not.

To pretend to separate the different issues and assign them correctly into each school is an impossible target. For example, the analysis of behaviour of the firm in industry is a chief concern to all of them. How the firm grows is a main topic of the evolutionary school and this is the issue of primary concern for the Harvard and Chicago Schools. Dilemma such as profits maximization is a basic subject in the Harvard, Chicago and Schumpeterian Schools. Transaction cost is the crucial matter for Institutionalism, but the others refer to how they deal with them.

My choice for this article has been Chicago and Harvard as schools of thought and the topics of barriers of entry, production function and profits maximization. I also explain the beginning of a new theory known as behaviourist, which endeavours to explain how the firms behave within their own industry.

The point of departure will be the theory used in industrial organization economics, which is known as the branch of economics that concern itself with microeconomics, empirical economics and economics of regulation. Harvard and Chicago were the two main schools of economic thought within the Industrial Organization theory, and the cornerstone should be placed in that while Harvard School draws up models with practical application for non-abstract business issues. The main theoretical tool is econometrics, its analysis a known as structure-behaviour-performance paradigm, referred to as the Bain-IO. On the other hand, Chicago School drafts mathematical models into the theoretical neoclassical economics where the economic agents tend to equilibrium. Both schools have the same target, to defend from competitiveness between firms in the industry. On the side of market demand, the Harvard School accepts that it is possible to manipulate customers; I will stop on the side of supply.

From the viewpoint of economic thought, this debate has its origins in the forties and fifties when Joe Bain and George Stigler, the most significant representatives of the Harvard and Chicago Schools, respectively, had published articles of great methodological interest. The influence of both authors, which led to the creation of a school throughout the twentieth century, seems to be the most correct criterion when choosing which schools of thought have been the most important in the topic we are dealing with. Therefore, I find it interesting to return to the original sources as a starting point for the article just as they were written in the 40's in order to show that the topics debated at that time are of no less importance at the present time.

The article is written along the following lines of presentation. Firstly, there is a review of the original sources in which a beginning is made to analyzing the firm as such and the first proposals for understanding their behaviour are made: Frank Knight and Ronald Coase are the main referents on this point. The appearance of Joe Bain in the late forties with his famous book on Barriers to New Competition in 1956 marks a qualitative leap in analysis of the firm, but also puts distance between him and the tradition of Chicago University, as represented by George Stigler. The problem was how to focus antitrust, or the supervision of firms by Government, since the Federal Trade Commission² had become highly influential and was giving firms serious trouble³. The Structure-Conduct-Performance analysis promoted by the Harvard School had not really been well received by the academicians of the Chicago School so the arguments put forward by the two schools are reviewed. From all the controversial points concerning firm behaviour two are prominent, namely the analysis of barriers to entry and the analysis of the production function, to explain a company's long-term profits. This is because the Marshall tradition maintains that in cases of perfect competition a firm's profits tend to vanish. Bain had

² Federal Trade Commission Acts passed in 1914

³ My present research centers on this point.

proposed a model for analyzing barriers to entry and Stigler contended that any barrier to entry in an industry was provisional. Bain's model was based upon imbalance equations mainly when estimating a limit price which was not an equilibrium price, so there was considerable argument concerning the way to estimate the production function which would enable the marginal cost to be estimated. This was because the Chicago tradition had always maintained that price is always equal to marginal cost in perfect competition.

In the midst of this argument fresh proposals were put forward which studied firms' behaviour or which designed entry barriers or better management techniques to produce an improved business production function. Many Harvard and Chicago school authors entered the fray of behaviourism and business strategy in search of a better explanation of the points in conflict. All of this happened at the same time as a new instrument emerged to explain strategies, one which economists still use; game theory.

2. Origins of modern economic theory of the firm

This first part is a survey of the origins of the theory of the firm; which are similar to that of microeconomics, and some methodological issues. In 1890 Alfred Marshall published *Principles of Economics*, in which he established the rules of scientific research for economics. This framework was the same one Arthur Pigou used in *Welfare Economics* in 1920, and also is found in the economic research of Lionel Robbins, Joan Robinson and John Hicks in the 30's. The principle of perfect competition is necessary to build economic law. This means, more or less, that a mathematical proposal is the only way to get scientific knowledge. The firm didn't place in these first models because in the law of physics it was not possible to introduce risk. The firm was a place where somebody known as an "entrepreneur" mixes labour and capital and draws as a result a product susceptible to sale in a market. In the words of Pigou "the risk is binding to waiting and then the analysis is impossible" (Pigou 1920, 655). In 1932 Lionel Robbins defended the proposition that it was possible to make a model and contrast it with reality through statistical proposition.

As Arnold Demsetz said in his article titled 'The Theory of the Firm Revisited' (1988), "From the truth of modern economics in 1776 to 1970, a span of almost 200 years, only two works seem to have been written about the theory of the firm that have altered the perspectives of the profession; Knight's *Risk, Uncertainty and Profit* (1921) and Coase's 'The Nature of the Firm' (1937)". This neglect is attributable fundamentally to the preoccupation of economists with the price system; the study of the price system, characterized as it is by Marshall's representative firm and Walras's auctioneer, undermines serious consideration of the firm as a problem solving institution. Knight's analysis of the firm as an institution for efficient risk-sharing is based on risk aversion and costly knowledge; Coase's theory, known as the transaction cost theory of the firm, has as its central theme the relevance of costly managing and exchanging, which certainly contain important components of information cost" (Demsetz 1988, 142).

The two theoretical proposals in the two works cited by Demsetz belonging to Knight and Coase deserve in depth consideration. The older proposal was made when Frank Knight published *Risk, Uncertainty and Profit*, in 1921. In this book Knight defended the concept that economics doesn't behave like a mechanical model, a copy of the physical world in which the equations must include a movement to equilibrium. Most markets work in imperfect competition because of risk and uncertainty, and the difference between them is "The fundamental uncertainties in economic life are the errors in predicting the future and in making the present adjustments to adapt to futures conditions" (Knight 1921, p. 232), while the risk is to assume the consequences of these decisions.

The main contribution of *Risk, Uncertainty and Profit* was that its sharp proposal allowed formulations of a mathematical model in which uncertainty will be measured, because statistics enable the clustering of a large amount of random and reduce to some degree of certainty, however intuitive wisdom made to the likelihood of a complex estimate. In Knight's words "The same method will be followed, beginning with a problem in as simple a form as possible and

studying the effects of different factors separately, analyzing the complexity of real life ‘synthetically’ by building it up in imagination out of its elements” (Knight 1921, p. 193).

The second work signed by Demsetz belonging to Ronald Coase, is an article published in 1937 and entitled “The Nature of the Firm” which continues to be read, cited and revue, Coase maintains that the size of the firm could be explained through a function of transaction cost, and he explains very precisely the meaning of combination and integration. He considers combination as a theoretical concept when economic transactions which were previously organized by two or more entrepreneurs become organized by one. The combination becomes integration, as a theoretical model, when it involves the organization of transactions which were previously carried out between the entrepreneurs on a market. The main theoretical contribution of Coase’ paper was that one firm includes all kinds of transactions and the internalization of each new transaction explains how the firm grows through time.

Coase believe that the Industrial Organization framework is a good tool for describing the behaviour of the firms within their own industry and against the threat of a new competitor in the market. The Coase’ proposal is close to the Harvard School as demonstrated in the following proposal taken from his article titled ‘Industrial Organization: A Proposal for Research’, and published in 1972, in which he describes the direct approach to Industrial Organization as discovering the characteristics of groupings of activities within the firms; altogether the contractual arrangements between firms, because they are the alternative to organization within the firm (Coase 1972, p. 63), that means, Coase’s theory of transaction cost.

In order to have at one’s disposal the theoretical model of Industrial Organization, I include some ideas of Scherer, Bain, Schmalensee, Bresnahan and Hsiao. The first author Michael Scherer in *Industrial Market Structure and Economic Performance* (1970) wrote that industrial Organization analysis differ from pure theory because is a command over three main techniques: history, statistics, and theory; economic theory being defined as a box of tools and Industrial Organization should forge rigorous predictive links joint to fundamental assumptions and their behavioural consequences. (Scherer 1970, 2).

Joe Bain changed the core of empirical research in industrial economics for statistical studies of industries cross-section data. Timothy Bresnahan and Richard Schmalensee in *The Empirical Renaissance in Industrial Economics* (1987) wrote about the statistical tools. They prefer the use of the panel data in order to make a best empirical research in industrial economics. The methodological basis for considering panel data better than cross-section data was explained by Cheng Hsiao; in *Analysis of Panel Data* (2003) he said that panel data provide the possibility of learning an individual’s behaviour by observing the behaviour of others and pooling the data is a more accurate description of an individual’s behaviour. (Hsiao 2003, p. 7)

Even today economics needs worthwhile analytical tools. It is easy to maintain that the economic theory or empirical economy as industrial organization faith struggles against this old limitation. William Baumol, one of the most important professors of microeconomics at Chicago University. He defends the empirical analysis in his book *Growth, Industrial Organization and Economic Generalities* (2003). Baumol stated that “today, it is hardly necessary to document the role of the study and analysis of data, its use to test theoretical models and hypotheses, and its place in the curriculum. Here, it is noteworthy that the first Nobel Prize in economics was awarded [to Tinbergen] for pioneering empirical work” (Baumol 2003, 25).

The old controversy between both Schools has survived for years. In 1983, Oliver Williamson in his article titled “Antitrust Enforcement: Where it has been; Where it is going” exposed that reforms of antitrust enforcement in the 1970’s had their origins in critiques of the 1960’s, mainly the insistence of the Chicago School that antitrust issues be studied through the lens of price theory; the entry barrier approach; an assessment of the trade-offs between market power and efficiency; and a reformulation of transaction-cost-economizing considerations (Williamson 1983, 323)

In the same vein, he wrote “More important are the differences between George Stigler, who views industrial organization as applied price theory, and Ronald Coase, who insists that a ‘direct approach’ to the study of economic organization is needed in which transaction cost economizing is pre-eminently featured” (Williamson 1983, p. 313). Williamson’s proposal, to use

the methodological framework of transaction cost in order to develop an Industrial Organization model with it, will have to wait.

3. Background

3.1. The Harvard School

Most Industrial Organization studies were conceived by Edward Mason at Harvard during the 1930's and extended by numerous scholars. The research program outlined by Mason sought to learn about imperfectly competitive markets by induction from careful studies of particular examples. These studies made relatively little use of formal economic theory or of econometric techniques.

At the end of the 1940's, Joe Bain began to work on exertion of market power by firms within their own industry and the agreements maintaining them. Bain considered the necessity to learn the industry structure in order to know the conduct and achieve a proposal of performance for firms. Most of the time a firm pursues the *statu quo*. He respected the scientific framework of the theory of price and the analysis of general equilibrium; he knew well the work of George Stigler and vice versa. The basic assumption introduced by Bain and changing the neoclassical assumption was that the unit cost goes down when the firm grows. This was the first step toward his theory of the relationship between industrial concentration and extraordinary profit for the firm (understood as not connected with its own production). However the price theory made incorrect predictions for behaviour and performance of the firm within oligopolistic industries. Bain developed a model of how to measure and analyze a large group of industrial variables and barriers of entry in the industry known as Structure-Conduct-Performance or Bain-IO.

On *Barriers to New Competition, Their Character and Consequences in Manufacturing Industries* (1956) Joe Bain stated that the more typically American school, reflects the popular antimonopoly or 'antitrust' bias of this country, and is consistent in general with a policy position that high concentration is not necessary for efficiency and that much of American industry is substantially more concentrated than necessary. In front of the Chicagoan tradition which admires competition despite it increase industrial concentration, Bain said that atomistic competition is compatible with efficiency in the American economy (Bain 1956, p. 60)

Some of the most representative authors of The Harvard School were Joe Bain, Richard Caves, Michael Porter and Oliver Williamson in his beginnings. Scholars of the Harvard School, they continued working in this line, drawing up models for market structures in different industries, barriers of entry, kind of competitiveness, degree of concentration, horizontal integration, vertical integration, delivery market and so on. After this analysis the second step should be to understand the behaviour of firms, whether competitive, predatory or monopolistic. The last step consists in establishing conditions of performance.

Over the base of The Harvard School framework, Oliver Williamson's Ph.D. thesis in 1967 developed *The Economics of Discretionary Behaviour Managerial Objectives in a Theory of the Firm*. At this moment, he wrote that the causality runs from concentration and entry barriers to profits rather than the revers, and the determinants of discretionary behaviour (competition in the product market) rather than the apparent determinant (the profit rate). "Although these market variables might not perform as well as the profit rate among the smaller firms in the industry, it does not seem inappropriate to use them for studying the behaviour of the two largest firms where the relationship between market structure and behaviour is probably reasonably direct" (Williamson 1967, p. 133)

Michael Porter, some years later, defends the limitations of the Bain/Mason Paradigm in 'The Contributions of Industrial Organization to Strategic Management' (1981). Porter has worked in Industrial Organization with Richard Caves for years. About the problems of the Harvard School framework he wrote that "I.O. theory implicitly assumed that all firms in an industry are identical in an economic sense, except for differences in their size" (Porter 1981, p. 610). Porter is right; each firm is completely different from the others within the same industry. It is managed and pursues diverse targets; also most industries are composed of firms which work in several sectors. Usually I.O. researchers established modes of oligopoly that were built on

grossly unrealistic assumptions such as mechanical reaction functions, identical cost and demand functions among competitors; this means that the same firm in order to sell its products must confront different industries and therefore diverse structure markets.

On the other hand, Industrial Organization literature on product diversification of firms is largely distinct from the literature on competitiveness in oligopolistic markets. Porter assumes that firms cannot always change industry structure, and this concept is one of the foundation hearts of the Harvard School tradition.

The main limitations of the Harvard School were statistical tools and the small amount of data. The discussion point was to use cross-section data or panel data added to the estimation of structural parameters and to use or to omit unobserved variables. About the first point in 1987, Bresnahan and Schmalensee wrote, "While few followed Bain's lead immediately, the journals began to fill with cross-section work in the 1960s as computation costs fell and government-supplied data became more widely available" (Bresnahan and Schmalensee 1987, p. 2). But data collection is not a terribly activity. Harvard and some Chicago School variants was always center to a case study and as traditional case studies fell from fashion, so did the construction of new data sets; however, they were careful to gather the new evidence. Bresnahan and Schmalensee delved into the econometric question and they argued that like the earlier 'Chicago-style' industry studies, efforts focused on particular aspects of conduct used econometric techniques to estimate structural parameters and to test structural hypotheses. (Bresnahan and Schmalensee 1987, p. 4)

Again, panel data solved this issue. Regarding the same discussion point of the limitations of the Harvard School, Cheng Hsiao in 2003 wrote that the use of panel data also provides a means of resolving or reducing the magnitude of a key econometric problem because these techniques allow controlling the effects of missing or unobserved variables. (Hsiao 2003, p. 5)

3.2. The Chicago School

The traditional Chicago School or neoclassical theory used models of the competitive firm, which means markets work freely, price and technology are known by bargains, both firms and customers, and owners effectively controlling the use of their assets. The firm behaves in a price system but not its management, which is to say that if the system works well, the resources are allocated well. Only with imperfect information is the risk relevant in the theoretical model.

Under the influence of George Stigler and others identified with the "Chicago School", increasing use was made of the tools of Marshallian price theory. But, into this methodology, some explicit modeling of imperfect competition was done, and econometric techniques were not heavily employed. Since the 1970's the activity of the Chicago School continues unabated, with recent work making heavy use of the developing tools of non cooperative game theory.

The Chicago tradition insists on using a theory of prices renewed to resolve the efficient functioning of the market to achieve welfare-enhancing ends. Inside the framework on neoclassical price theory and assuming the perfect competition model, Stigler and Demsetz work in a maximized profits model, without information costs, and with a lot of suppliers and customers bargaining in the market. The first attack on the Bain-IO was that advertising serves to provide information to customers. The other attacks were that the efficiency of the firm will be related to the vertical integration, and then size and scope of the firm are determined by its efficiency. For the Bain-IO studies the behaviour of the firm will be to keep and even grow its place in a monopolistic market.

From Chicago University in 1942 George Stigler published *Theory of Price*; the production theory came from Frank Knight, whom Stigler always recognized as a most important teacher. Under the methodological influence of *Risk, Uncertainty and Profit*, the Knight's main book, George Stigler argued "A system of business may be explained as how the owners of the assets sell their services to the businessmen in exchange for money, which they then spend to purchase what they have produced" (Stigler 1942, p. 44).

Earlier criticism of this model was made by Machlup in 1967, who wrote about the problems due to building of a theoretical model in order to explain and predict the behaviour of the firm within industry, he stated the traditional model of the firm is not designed to serve to explain and

predict the behaviour of real firms, but it is designed to explain and predict changes in observed prices as effects of particular changes in conditions (Machlup 1967, p. 9) He concluded his critic with a rude sentence about Stigler's book, "any likeness between the theoretical construct of the firm and the empirical firm is purely coincidental" (Machlup 1967, p.10).

Some years later, Sherwin Rosen in his article entitled "George J. Stigler and the Industrial Organization of Economic Thought" (1993) wrote that Stigler sketched how a more flexible organization of production would better accommodate variations in output and why this refinement of the standard model was needed to account for empirical time-series insensitivity of average production cost, and how an industry pricing practice can be explained as a subtle form of price discrimination.

4. The controversy

There are three principal issues of controversy between the Harvard and the Chicago Schools. The first is how the barriers to entry work in order to expel a new entrant firm within an industry. The second is how get a worthwhile mathematical equation of the production function of the firm and if the firms behave maximizing profits or sales, perhaps just trying to grow and survive. The behaviour of the firm within its own industry is the last issue of controversy; this point should be a mix between both of them. In order to clear ideas, and keep in mind that the existence of a School of economic thought based on Herbert Simon paradigm of human behaviour is defensible, it is better to analyze this topic separately. Keeping in mind that the inclusion of transaction cost in the analysis of firms reflects the fact that both the Harvard and Chicago Schools have moderated their views toward the center. In fact, Hovenkamp recommended "Analyzing business firm conduct in a Coasean market is important for understanding its rationales and the full range of possible effects, but analyzing it in relation to the larger neoclassical market is essential to determine whether the conduct poses a threat to the economy generally" (Hovenkamp 2010a, p. 10).

4.1. Barriers to entry

The most fruitful point of discussion between Joe Bain and George Stigler was how much time the incumbents within an industry can maintain their share of the market while other firms threaten to sell their own product to the same customers. In other words, how established firms behave when a new competitor appears in a shared market. The cornerstone is how much it costs to keep the prey, as a simile we can imagine a cheetah which has just hunted a Thomson's gazelle. At this moment a laughing hyena becomes visible. The natural behaviour of the cheetah should be to eat as fast as it can and run away, just when the hyena is able to touch its dots. Like a cheetah, the firm keeps its market until cost will be its death. The collaboration (collusion in economic words) with other firms in order to push out the new competitor would be a useful way; however, the cost to maintain a market for a long time is higher than to compete.

The first definition of barriers to entry was made by Joe Bain. Today the same main barriers survive: economies of scales, brand identity and capital requirements, plus the next ones, access to distribution, access to necessary inputs, switching costs, proprietary learning curve, proprietary product differences, government policy, expected retaliation and so forth.

In 1956 Joe Bain published *Barriers of New Competition*, a book which even today creates controversy. The beginning of Bain's research of was how the firms behave within their own industry. The best way to understand the idea is to read his words:

The investigation was made because of two beliefs: (1) that most analyses of how business competition works and what makes it work have given little emphasis to the force of the potential or threatened competition of possible new competitors, placing a disproportionate emphasis on competition among firms already established in any industry; (2) that so far as economists have recognized the possible importance of this "condition of entry," they have no very good idea of how important it actually is. (Bain 1956, p.1).

A few pages later Bain defined exactly what he kept in mind:

Let us understand the term “condition of entry” to an industry to mean something equivalent to the “state of potential competition” from possible new sellers. Let us view it moreover as evaluated roughly by the advantages of established sellers in an industry over potential entrant sellers, these advantages being reflected in the extent to which established sellers can persistently raise their prices above a competitive level without attracting new firms to enter the industry. (Bain 1956, p. 3).

In order to develop his idea Joe Bain follows three steps. The first step was to make the classification of barrier to entry, therefore its successful evaluation:

- The first barrier was called economies of large scale as barriers of entry, and had three subtiles; 1. The entrant may enter at a small enough scale so that his entry will tend to have no perceptible effect on the prices or outputs of established firms. 2. He may enter at large scales thus necessarily influencing either prices or outputs in the industry. 3. With entry at or near the minimum optimal scale established firms may restrict output enough to allow the entrant a significant market share with unchanged prices. The second, known as product differentiation is of at least the same general order of importance as an impediment to entry as are economies of large scale production and distribution. The last, called absolute cost advantages of established firms, is a barrier to entry. In the terminology of price theory, the long run average cost or scale curve would then lie at a higher lever for the entrant than for the established firm.

- The second step was to develop a successful way in order to measure the conditions of entry; they may be conveniently evaluated in the following terms, for price theory, meaning the relevant gap between price and minimal cost at which entry may be forestalled.

For the typical circumstances giving rise to an *absolute cost advantage* to established firms, the measure will be:

- Control of production techniques by established firms,
- Imperfections in the markets for hired factors of production,
- Significant limitations of the supplies of productive factors in specific markets,
- Money-market conditions imposing higher interest rates upon potential entrants than upon established firms.

For the typical circumstances giving rise to a *product differentiation advantage* to established firms, the successful variables are:

- The accumulative preference of buyers for established brand names and company reputations,
- Control of superior product designs by established firms through patents,
- Ownership or contractual control by established firms of favored distributive outlets.

During the 1960's the study of market power was the core of this research line, and of course, this was the third step in Bain's theoretical model. Barriers of entry reach the behaviour of the firm in the following way “the extent to which, in the long run, established firms can elevate their selling prices above the minimal average costs of production and distribution [...] without inducing potential entrant to enter the industry” (Bain 1956, p. 67). Stigler didn't agree with Bain's theory about the barriers to entry in the industry mainly because they can't be permanent obstacles, maybe transitory in the time. The Chicago school has great confidence in long run effectiveness, even though the market mechanism works.

In 1968, George Stigler published *The Organization of Industry*. This book maintains some barriers and discusses others of one Bain's barriers to entry. Stigler wrote the most common definition of barrier to entry in an industry as “a cost of producing which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry” (Stigler 1968, p. 10). Also it means a cost advantage that an incumbent firm enjoys compared to entrants. With such an advantage, the incumbent firm can permanently elevate its price above its costs and thereby earn a supracompetitive return.

Stigler wrote that the tendency to avoid new competitors in the market is usual. After a thorough analysis of Bain's barriers to entry, he enumerated the following private (and in some cases illegal) techniques: control of needed resources, commercial disloyalty such as a reduction of price bribery and coercion to clients, fomenting resentment among workers, originating rumors

regarding the inferiority of competitive products and sabotage. Chicago school rejected theory of entry barriers (Hovenkamp 2010b, p. 361).

Some years later, the old discussion about barriers to entry still survives. There are some examples of authors who go on writing about this issue. The behaviour of a firm in the market is determined by the barriers to entry, its own function of production and as Michael Porter (1981) says, supplier concentration, importance of volume of suppliers, threat of forward/backward integration, into what he called sources of bargaining power (don't forget that some are barriers of entry). Porter with Caves articulated the concept of exit barriers, such as specialized assets and fixed costs of exit. In the same vein, Oliver Williamson in 1983 argued that it seems necessary emphasized that fixed costs are not necessarily sunk: the critical question is whether the assets in question can be effectively redeployed in alternative uses or by alternative users (Williamson 1983, p. 313) and this is the origin of the analysis of sunk costs as a barrier to entry.

In the 21st century Denis Carlton and Jeffrey Perloff in *Modern Industrial Organization*, (2000) developed a long-run barrier to entry as a variant of this, because Stigler gives no attention to sunk cost. The main objection to Stigler's definition of barrier of entry is that it does not help describe the post-entry equilibrium, because Stigler's definition of barrier to entry implies that it's transitory, even if he spoke about the sunk costs. Schmalensee wrote in "Sunk costs and antitrust barriers to entry" (2004) that "sunk costs may discourage entry by lowering expected profits, but if competition is not thereby limited, no antitrust barrier to entry is created" (Schmalensee 2004, p. 475). The core is how long the firms can hold on barriers to entry and how much they cost.

Sunk costs are a controversial methodological argument in order to maintain that barriers to entry exist or not. Furthermore, the possibility of affording economic barriers to entry within an industry for a long time has held the attention of scholars. Jean Tirole in 1988 wrote *The theory of Industrial Organization*, in this book he said, within the purest theoretical argument of The Chicago School, that product-market competition determines the market price in the short run, in the longer run firms compete through the accumulation of capacity. (Tirole 1968, p. 473).

Within the tradition of The Chicago School, Steven Salop respond to Robert Willig's proposal about sunk costs in 'Merger Analysis, Industrial Organization Theory, and Merger Guidelines' (1991) he stated that the problem is that sunk costs are the norm, especially in markets characterized by product differentiation and customer loyalty to established brands. When sunk costs exist, there may be no causal relationship between entry and the pre-entry price, the core issue is what happen in the contestable markets of Baumol, Panzar and Willing. In order to make sense of this theoretical proposal it is worthwhile to know the exact definition of Baumol's contestable market.

William Baumol wrote in 1982 an article entitled "Contestable markets: an uprising in the theory of industry structure", which develop a new competitive market, named contestable, in order to explain market structures. By and large, this is exactly the field of the Harvard School. Baumol's proposal was, let me say, ambitious. In his words, the article "aspires to provide no less than a unifying theory as a foundation for the analysis of industrial organization" (1982, p. 457). According to him,

A contestable market is one into which entry is absolutely free, and exit is absolutely costless [...] all capital is salable or reusable without loss other than that corresponding to normal user cost and depreciation, then any risk of entry is eliminated [...] their firms need not be small or numerous or independent in their decision making or produce homogeneous products [...] even a very transient profit opportunity need not be neglected by a potential entrant, for he can go in, and before prices change, collect his gains and then depart without cost, should the climate grow hostile [...] never offers more than a normal rate of profit [...] Absence of any sort of inefficiency in production in industry equilibrium [...] no product can be sold at a price that is less than its marginal cost. (Baumol 1982, pp. 459-ss).

Nowadays, the situation regarding the barriers to entry in some industries is as Richard Schmalensee maintains in his article "Sunk costs and antitrust barriers to entry" (2004). Conditions of

entry play no role in the analysis in antitrust cases, involving price-fixing or other cartel behaviour. In most other settings entry conditions are considered in the analysis of market power. Similarly, in monopolization cases, a finding of entry barriers is generally necessary to establish that a high market share actually confers monopoly power. In the same line of thought, John Sutton wrote that the chain of causation that ran from structure (concentration) to conduct (the pricing behaviour of firms) to performance (profitability) should be reconsidered; whereas high levels of concentration could be traced to the presence of certain “barriers to entry” (Sutton 2007, p. 2306).

By way of conclusion, in my book entitled *Barriers to Competition* I wrote that all decisions that relate to business investment, should be considered within the strategic decision-making and therefore, if used to expel competitors could be questioned with a cost benefit analysis. A simpler model is more easily functional in the academic world, but business is not a simple task. Economic theory would have to be as flexible as companies are, then theory would lose objectivity and allow us to reach reality. (Rosado 2010, p. 171)

4.2. Production function and profits maximization

When scholars of economics try to explain how markets work, usually they set out mathematical equations in order to explain the demand and supply for each consumer product, and then they obtain equilibrium between these theoretical functions.

Economists usually suppose that supply behaves like an exponential function, or a Cobb-Douglas. That means, for every good and service it is necessary to put together amounts of capital and labour. It also became necessary to include land. Since the work of Alfred Marshall the problem has been that we do not know how to express this activity as a mathematical function. In order to reach an acceptable theory it is necessary to start with clear assumptions without errors in logic and mathematics. The conclusions which follow from the theory will then be more certain to be correct. The third step is how to falsify our thesis. Even if we follow the path towards internal logical coherence already established, any attempt to contrast our proposal with empirical data will be difficult.

The Cobb-Douglas production function first appears in 1928. The mathematician Charles Cobb helped Paul Douglas, an economist, who had been searching for an empirical product curve. Since then production processes are described by a linear homogeneous function with an elasticity of substitution of one between factors. The most telling criticism came from Ragnar Frisch and his pupil Horst Mendershausen: they argued that the mathematical relationship was purely accidental and not causal. Nowadays economists still think that it is the best proposal. The Cobb-Douglas function follows all the required scientific steps and firms still continue to make goods and services with capital and labour.

There have been several interesting ideas as to how to incorporate managerial activity into the equation. Some of them proposed to change the Cobb-Douglas function, altogether, but these have not been accepted by economists. The best proposals were made by Oliver Williamson and William Baumol. It is important keep in mind that they all read each other's works. On the other hand the criticisms are not so much about production function itself as about the profit maximization hypothesis. Fritz Machlup, Jean Tirole or Ronald Coase are some examples of scholars worried about the high assumptions made for neoclassical theory.

Production function has received attention in economic theory. Stigler's production function allows the firm, to get a monopoly through the combination of new inputs or because it begins a new industry. On the other hand, the first step was to put the risk (or the risk-averse) in the Marshallian model. Finally Williamson developed the theory of hierarchical organization within this model, and thereby developed a theory of the optimal size of the firm. His utility function had three variables; dollar expenditures on staff, management slack absorbed as cost and discretionary investment spending.

In 1958, in the article titled “On the Theory of Oligopoly” William Baumol proposed a third variant of a maximization model in which it is assumed that firms attempt to maximize total revenues rather than profits or the value of a utility function, drawn up by Williamson. Later in

1967, the profits maximization hypothesis had criticism from Machlup. In his article “Theory of the firm: marginalism, behavioural, managerial” he wrote that the question is not whether the firms of the real world will really maximize profits but the objective of the theoretical firms in the artificial world of our construction will lead to conclusions (Machlup 1967, p. 14-15)

How to get profit maximization under the theoretical lens was a controversial issue between the scholars nearest to statistical tools and scholars closer to mathematical equations. Both schools could find a meeting point in the use of the data panel. As Jean Tirole wrote in 1988 “Even if managerial slack invalidate the profit maximization hypothesis, the implications of this hypothesis for Industrial Organization need not be erroneous” (Tirole 1988, p. 35).

At this point we can look back to 1937, when Coase drew up a new proposal in order to explain which way the firms use to grow. He said that scholars of economics have to pay attention to transaction costs. With this theoretical idea, and thirty-four years later, Oliver Williamson, one of the most concern economists to build a worthwhile production function, argued into several articles about this issue in 1971, 1975 and 1979, and collected in *Antitrust Economics: Mergers, Contracting, and Strategic Behaviour*. (1987), Williamson said that whereas both the production function approach and inhospitality tradition regarded markets as the natural, hence efficient, it seems convenient to consider firms as governance structures (Williamson 1987, p. 326). He said that the theoretical models have to be making a framework with hierarchies; however the mixed models with the old tradition of markets in equilibrium should be successful. The right way to explain how the markets work had to assess the costs of transaction and the governance structure.

The Chicago School trusts in the long run efficiency of the market; if the profits continue the market works. On the other hand the Harvard School understands that when profits survive a long time it means successful collusion and an industry with concentration. This important issue nowadays doesn't have solutions, because empirical research shows that when the antitrust law was applied, sometimes firms lost competitiveness because they couldn't integrate with each other.

Within the tradition of The Harvard School, on “Industrial Organization, Corporate Strategy and Structure”(1980) Richard Caves argued that since the end of the 1970's, when I.O. tried to build a production function the following problem was discovered. “The matrix of organization is especially promising where scale economies in production must be reconciled with fragmented and diverse product-market” (Caves 1980, pp. 75-76). This means that the equation of production can take several dimensions. Since the 1980's, the large size of the matrix organization is the result of panel data and the major source of statistical information, and this is one consequence.

Production function is an important point of meeting and conflict between the Harvard and Chicago Schools. For both of them it is necessary to have a good production function. Harvard chooses to use function by explaining variables whereas Chicago argues for an easier function. In the words of Jean Tirole in his 1988 publications of the book *The theory of Industrial Organization*, it is necessary to consider that if an increase in the number of explanatory variables (arguments of the objective function) makes it easier to explain real-world phenomena, because the neoclassical economists' choices of embryonic variables is not yet known. Firstly information flows between members of an organization are limited, secondly, the assumption that optimal design of an organization at a given point of time and never change; and third, while neoclassical theory has tended to focus only on individual incentives Cyert and March [1963] have emphasized that organizational behaviour is often best predicted by the analysis of group incentives as well as individual incentives. (Tirole 1988, 96)

This issue generated a worthy controversy between scholars. Schmidt in 1989 in his book entitled *Chicago School of Antitrust Analysis* writing about profit maximization, he said that the Harvard School admits that high profits persist over a longer period of time when the observed enterprise has cost advantages in comparison to actual or potential competitors. Whereas the Chicago School admits that profits which have not been eroded over a long time show a firm which operates efficiently in the market. In 2002, Ghemawat confirms that things still haven't changed. “The structure of an industry would earn positive economic profits over long periods

of time. Chicago School doubted the empirical importance of this possibility” (Ghemawat 2002, p. 54).

Williamson usually agrees with nobody on this issue. With an excellent and different production function, he has concludes that the mistakes began when the firm is treated as a production function because a technological justification for nonstandard and unfamiliar contractual and organizational practices was the main lack under the neoclassical frame, the reason was that such practices were presumed to be anticompetitive

The cornerstone of this topic is if the firm is a production function or a bundle of resources. Inputs are homogeneous and it is acceptable to include them together in an equation, but resources are heterogeneous, in this case, it is necessary to measure the quality in order to get a worthwhile equation.

4.3. Behaviour

The next issue of controversy I want to survey is the different theories of behaviour of the firm. I will begin with empirical theory and continue with the most theoretical knowledge, Behaviourism. Rules of thumb should be a worthwhile proxy to a model of rationality behaviour, and this route was followed by several scholars from different origins: Fritz Machlup, William Baumol, Joan Woodward, Richard Caves and Garrel Pottinger are some examples. In the sixties of the past century, Herbert Simon, Joe Bain, Richard Cyert and James March founded the Behaviourism School and at the end of this decade, Oliver Williamson developed a model of business behaviour which focuses on the self-interest seeking behaviour of corporate managers. Behaviour however is precisely Williamson’s comfortable field and he works with mathematical tools. Obviously for the Chicago School the analysis of behaviour will be less important; perhaps it may touch on the oligopolistic theory, however in the 1980’s, game theory became visible as a theoretical instrument which put together strategic behaviour with neoclassic theoretical tools.

The firm is an old issue between theoretical scholars, and sometimes someone takes up this hot potato. The main concern used to be how to put the firm in the theoretical economic model, whether this question is of interest and furthermore whether it is feasible to make a fruitful hypothesis about the firm’s behaviour.

We could continue using models with production limited and endogenously established, but where firms should have no internal working, like a Marshallian model. This however isn’t the case. From the 1940’s till now, scholars have been trying to find the mechanisms of behaviour of firms with each other in the market, and managerial behaviour inside the firm. Some examples are these of Machlup, who wrote in the beginnings of this controversy, of Baumol from The Chicago School and of Woodward from The Harvard School.

Fritz Machlup published “Marginal Analysis and Empirical Research” in *The American Economic Review* in 1946. This paper starts with the interpretation of business behaviour offered by the critics of marginal analysis, because the firm works on a routine model. It’s possible to find the beginning of behaviour theory because he argued that businessmen do not always calculate before they make decisions, and they do not always decide before they act. Frequently their actions are routine. In this case it should be reasonable to analyze his routine behaviour in terms of marginal revenue. Some years later, in 1967, he rethought the assessing of routine with marginalism tools because noncompetitive cases were developed naively. The topic is mainly theoretical. The old models show that the theoretical variables need not be estimated and the theoretical equations need not be solved, because the real world perform as the model supposed to be (Machlup 1946, p. 6).

In the origins of this theoretical issue, William Baumol in ‘Reasonable Rules for Rate Regulation: Plausible Policies for an Imperfect World’ (1964) said the following about behaviour of the firm, “As a result managers have developed behavioural rules for making decisions. Behavioural rules (rules of thumb) are modes of behaviour that the firm (or individual) develops as a guide for making decisions in a complex environment with uncertainty and incomplete information” (Baumol 1964, p. 172). But, the point is how the firms behave within their industry, the possibilities are to compete or to collude, or change the strategy depending on the environment.

The first trial to develop a theory of behaviour was made at Harvard University by Joan Woodward in 1965. Her book, reprinted in 1980, set forth her theoretical approach over an understanding of the limits to the rationalities individuals and the acknowledge of organizations because they are not necessarily congruent dimensions such as function, level, and occupational reference group” (Woodward 1965, p. xxviii)

This proposal was to understand how the mechanisms by the organizational process and outcomes work, because of these groups of people are held together and pursue their own interests. Woodward kept in mind that different interest groups have access and a range of power resources, such as information, skill, expertise, and ability to offer rewards and sanctions. She draws up the anatomy of organization of the firm, but like Fayol or Ford, it is only for management. She used dates “day to day” to understand planning production, marketing, etc. The most significant point to keep in mind was that her theoretical proposition was contrasted because changes in organization and behaviour happened as she had predicted they would occur.

In the line of the rules of thumb as the right way to explain the firm, in 1979, Richard Cyert and Garrel Pottinger wrote “Toward a Better Micro Economic Theory”. They affirm that the firm develops their own rules of thumb as guides for making decisions in a complex environment with uncertainty and incomplete information (Cyert and Pottinger 1979, p. 218) and this behaviour is susceptible of rationalize to analyzing what is essential in the industrial process in order to establish behavioural rules.

Richard Caves, from Harvard University, in his article entitled “Industrial organization, corporate strategy and structure” (1980) said that “Decisions rules are learned and the ways in which such rules are modified in the face of feedback from the environment. This approach takes the view that the firm is an adaptive mechanism that can learn from its environment” (Caves 1980, p. 88). Some years later, the most theoretical scholars agree that game theory and conflict strategy should be a worthwhile theoretical framework in order to explain the old topic of behaviour of the firm.

In the 1960’s some scholars developed a new idea about the behaviour of the firms within their own industries. Herbert Simon, Joe Bain, Richard Cyert and James March were the first behaviourists. Over the foundation laid by Simon and Bain, in the early 1960’s James March with Richard Cyert began to analyze the behaviour of the firm, in their own words “It is fruitful to develop an understanding of the process of decisions making within the firm. 1. How does the allocation of resources within the firm’s budget relate to organizational goals. 2. How do objectives change over time. 3. What happens to information, and so on” (Cyert and March 1963, p. 193). This proposal should be a good approach to behaviour of the firms selling in noncompetitive markets. In a framework where firms working on perfect markets and having unique behaviour pursue equilibrium, marginalism offers the best theoretical model. The main contribution of this model was that these firms have some freedom to develop decisions strategies or rules that become part of the decision-making system within the firm.

For Industrial Organization firm behaviour may be at least as much the result of conscious choice as it is a forgone conclusion from industry structure. In 1963 the Behaviourist School was closed to Harvard School and the Carnegie-Mellon Group, under Richard Cyert’s leadership. This school began to draft a theory of behaviour; the proposal was to try to develop a methodological alternative with more theories of organizational goals and because time is always a main question, Behaviourist theory works in the short run. Cyert and March wrote, in their book entitled *A Behavioural Theory of the Firm* that using rules we will be able to develop models of organizational decision making, despite simplification involves some clear risks when we generalize to long run dynamics. (Cyert and March 1963, p. 31)

The fight against marginalism has huge theoretical importance. The basis of Cyert and March discussion was because in behavioural theories, organizations simplify the decision problem in a number of ways looking for find the best imaginable solution. They allocate attention by monitoring performance with respect to target. (Cyert and March 1963, p. 214)

In Neoclassical theory the importance of plan predictions is obscured by the assumption that the predictions are always correct. Cyert and March ended the book with the conclusion of that modern theories of the firm assumed that rational action in a firm is subject to limited rationality

and also to conflicts of interest between lobbies, but under maximization targets, the proposal of behavioural theories of organizations have been built on somewhat less rationalized versions of the same ideas. The topic of the long run should be reflected through a special mechanism of adaptation to changes of goals within the industrial structure.

In the same vein, during the 1960's and the 1970's, Oliver Williamson developed a model of business behaviour which focuses on the self-interest seeking behaviour of corporate managers. In "A Dynamic Theory of Interfirm Behaviour" (1965) working with Almarin Phillips, Williamson argued that a unified framework that combines organizational with economic variables is needed, and they proposed a general set of relationships designed to achieve this end. The model was, as a performance variable, an index of the level of achievement of the firms in the industry and as endogenous variables they propose that one of them should be a variable adhering to a group goals variable and an interfirm communication variable; under the condition that the values that these variables take on are not independent but are mutually determined as part of a simultaneous system. The econometrical issue of this model was a model built as described considering that the condition of competition that prevails in the industry is an essential variable to transmit the influence of changes, even though in the description of interfirm behaviour" (Williamson 1965, p. 582)

Williamson's 1983 model was mathematically much more exact. In his article entitled "Anti-trust enforcement: Where it has been; Where it is going" he said that it seems useful to point them out.

The study of strategic behaviour has been clarified in the following significant respects: (a) severe structural preconditions in both concentration and entry barrier respects need to be satisfied before an incentive to behave strategically can be claimed to exist; (b) attention to investment and asset characteristics is needed in assessing the condition of entry – specifically, nontrivial irreversible investments, of a transaction-specific kinds have especially strong deterrent effects; (c) history matters in assessing rivalry – both with respect to the leadership advantage enjoyed by a sitting monopolist as well as in the incidence and evaluation of comparative costs; and (d) reputation effects are important in assessing the rationality of predatory behaviour" (Williamson 1983, p. 342)

Only one difficulty survives in Williamson's model in 1983 which still hadn't found the theoretical solution for a model of oligopolistic behaviour. The main point was the old controversial issue between The Harvard and Chicago School namely barriers to entry, because some barriers survive through the time and they are not necessarily economic. To satisfy the conditions of equilibrium, in this case, becomes hard. Williamson said that addressing the issues of entry in this more limited context has analytical advantages, but limited applications to satisfied the oligopolistic model preconditions (Williamson 1983, p. 324)

In the beginning of the twenty-first century the science of economics has game theory as a proxy to the behaviour of the firm join together with psychology and sociology to understand firms, scholars have also developed large bodies of research on issues ranging from compensation and job design to leadership and organizational change. And the overlaps between organizational economics and other areas of management are also significant (Gibbons and Roberts 2013, p. 4)

The framework of game theory is critiqued with a different argument; however, it is the paradigm in force. William Baumol wrote in 2003, defending game theory, that economic growth of the capitalist economies must be explained by the behaviour of firms, and in the process of innovation which happen into the set of routine business decisions it should be possible to bring innovation closer to the core of micro-theory. In his own words,

Game theory certainly contributed a powerful and revolutionary set of mathematical instruments, offering economists a route for escape from exclusive dependence upon the physicists' formal tools. The new approach is a flexible way to deal with a variety of special issues and situations in oligopoly markets. Add to that the demonstrated relationship of the theory to

mathematical programming, duality theory, and other analytic developments of the twentieth century, and it is clear that the field of oligopoly analysis has undergone a major and useful upheaval. (Baumol 2003, p. 22)

Criticism of game theories and dynamics come mainly from Pankat Ghemawat and Denis Carlton. In 2002 Pankat Ghemawat wrote “Competition and business strategy in historical perspective” pointing out that Industrial Organization started to turn to game theory in the late 1970’s as a way of studying competitor dynamics. However, this theoretical model requires high assumptions. “The formalism of game theory is accompanied by several significant limitations, the sensitivity of the predictions of game theory models to details, the limited number of variables considered in any one model, and assumptions of rationality that are often heroic, to name just a few” (Ghemawat 2002, p. 66). Dennis Carlton who in 2004 published “Why barriers to entry are barriers to understanding”, wrote, “The source of any successful strategic behaviour must ultimately be traceable to an asymmetry among firms” (Carlton 2004, p. 466), and this is the field of game theory and contestability literature. The main question become how will uncertainty affect the option value of entering?

Game theory has been criticized by John Sutton; his argument was that some economic models hide this problem by ignoring the troublesome “unobservable”; because the majority of economic data are driven by a number of factors, some of which are inherently difficult to measure, proxy or control for in empirical work (Sutton 2007, p. 2305).

5. Conclusions

Industrial Organization has continued to be an important field of research in economic thought. The researchers who work in I.O. have to include econometrics, economic theory, statistics, mathematics and so on, in order to get published. This competitiveness has carried the paradigm into a fruitful field of new proposals. To pretend to know all of them, however, is almost impossible which means that the controversy survives for years.

The most significant contribution made by the article is to review the proposals made for analyzing firms, and showing how Marshall’s production function has become outmoded for talking about management, and how analysis of barriers to entry should have been expanded to include corporative strategy. Both problems conjointly cast doubt on the S-C-P tradition, since what is broken is the rule *per se* which dictates that a market structure *per se* means behaviour of its firms. The breakthrough occurs when other factors which are difficult to quantify are studied, as is the contention of the article and when an attempt is made to gain a better study of the firm from the inside. The behaviour of a firm in its market is the basis for its survival, and to understand it we academics have designed several theoretical models, the present one being Game Theory.

In this article I choose only three main issues in which the Harvard School and the Chicago School differ; I believe it will be hard to reach agreement regarding barriers of entry. On the controversy over the profits maximization harmony should come when both Schools accept the same paradigm for production function. If the two Schools agreed sometimes to the methodological framework, accord about behaviour of the firm would come.

That is to say, a hypothesis which seeks to explain how firms are already set up prevent a new firm from entering successfully into their market, thus reducing their market segment of the industry which had been conquered and maintained at great cost. In the competitive framework of the Chicago School almost every kind of frictions in a market disappears in the long run. And barriers to entry will follow suit. The last issue in conflict is about information, mainly statistic data collected by state institutions. The point is what kind of information the firms want to share.

One of the most stimulating methodological debates within Industrial Organization is that between the Harvard School and the Chicago School, largely because Chicago has always preferred models taken from Microeconomics. Joe Bain and George Stigler were the main protagonists in this debate, even though they were in agreement over many points as to how to build models which explain different industrial structures and the behaviour of firms. The discussion

begun between both schools, perhaps better described as a discussion between two old friends, George Stigler and Joe Bain, promote a worthwhile field of theoretical framework criticism today.

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