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THEORIES OF THE FIRM REVISITED

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I. Choice vs. Transaction

"It is doubtful if there is yet general agreement among economists on the subject matter designated by the title 'theory of the firm', on, that is, the scope and purpose of the part of economics so titled." (Archibald 1987, p. 357)

Archibald goes along with the understanding that there exists a general agreement on the subject matter of economics itself: the allocation and distribution of scarce resources. Therefore, the purpose of the theory of the firm is to investigate the behavior of the firm as it affects allocation and distribution.

Archibald's definition of economics as the science which studies the allocation and distribution of scarce resources is somewhat neutral; but for those having a bit of background in the methodological studies, it is closely related or derived from the famous Robbins' definition: "Economics is the science which studies human bahaviour as a relationship between ends and scarce means which have alternative uses." (Robbins 1935, p. 16) This makes economics the science of human choice, and immediately invites the criticism of Ronald H. Coase, which we are going to discuss in detail in the next section.

Furthermore, if one identifies economic science as a science of choice, its natural corollary is to identify it as a set of approaches using maximization under constraints. In this context, ".... a 'firm' is a profit-maximizing agent ...., endowed with a known and given technology, and operating subject to a well-defined market constraint." (Archibald, ibid., p. 357)

The analysis goes together with the theory of the consumer which is constructed under the assumption that consumers maximize utility; and brought into harmony by the theory of exchange .... matching demands and supplies so derived.

Coase's response is immediate. "The elaboration of the analysis should not hide from us its essential character: it is an analysis of choice. It is this which gives the theory its versatility. .... 'what most distinguishes economics as a discipline from other disciplines in the social sciences is not its subject matter but its approach' (Becker 1976, p. 5) .... what has been developed is an approach divorced from subject matter." (Coase 1988, p. 3) For Coase the results are horrible: "entities whose decisions economists are engaged in analyzing have not been made the subject of study and in consequence lack any substance. The consumer is not a human being but a consistent set of preferences. The firm .... 'is effectively defined as a cost curve and a demand curve, and the theory is simply the logic of optimal pricing and input combination' (Slater 1980, p. ix). Exchange takes place without any specification of its institutional setting. We have consumers without humanity, firms without organization, and even exchange without markets." (Coase, ibid., p. 3)

Since every theoretical model is a result of abstraction, criticisms placed on the neoclassical theories of the firm for their oversimplifications and/or biases, on emphasizing the technological aspects of production and costs — the 'blackbox' type presentation — are neither fair nor productive.

As Kreps repeatedly states in his interesting but complex textbook, we can learn something out of many simplified, heuristic models if we locate them properly and pay attention to their limitations (Kreps 1989). Furthermore, the techno-aspects of the theories of the firm and industrial organizations are interesting as such (see, for example, Panzar 1989, Baumol, et. al. 1988).

The aim of this paper is to locate the various views given to the theories of the firm, and possibly to obtain some gains of division of labor or specialization or the economies of scope. We will concentrate

on the most fundamental problems, leaving treatments of more recent and advanced developments to the excellent surveys, such as Arrow (1959, 1974), Barney and Ouchi (1986), Clarke and McGuiness (1987), Holmstrom and Tirole (1989), Leibenstein (1987), Putterman (1986), and Williamson (1975, 1985, 1986).

II. Why Firms Exist: Coase's Criticism

"The firm in modern economic theory is an organization which transforms input to output. Why firms exist, what determines the number of firms, what determines what firms do .... are not questions of interest to most economists." (Coase, ibid., p. 5)

Coase's answer to this fundamental question is, in his words, 'the cost of using the price mechanism', 'the cost of carrying out a transaction by means of an exchange on the open market', 'marketing costs', or 'the cost of market transactions', later labled as "transaction costs". "In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of contract are being observed, and so on." (Coase 1960; 1988, p. 6)

In Dahlman's terminology, these are the "search and information costs, bargaining and decision costs, policing and enforcement costs" (Dahlman 1979, p. 148; quoted in Coase, ibid., p. 6).

Later, Williamson has summarized and expanded the view as follows (Williamson 1975, p. 8): (1) markets and firms are alternative instruments for completing a related set of transactions, (2) whether a set of transactions ought to be executed across markets or within a firm depends on the relative efficiency of each mode, (3) the costs of writing and executing complex contracts across a market vary with the characteristics of human decision makers ...., and the objective properties of the market ...., (4) although the human and environmental factors that impede exchanges between firms (across a market) manifest themselves somewhat differently within the firm, the same

set of factors apply to both.

Apparently (1) and (2) are the summaries of Coase's original statements, (3) and (4) are Williamson's new additional insights. For Williamson's human characteristics, the most important elements are the bounded rationality and opportunism, and for environmental characteristics, uncertainty/complexity and small numbers (Barney and Ouchi 1986, p. 74). Each of them need separate treatments and elaborations, which we can not afford to do now. But it is easy to see there exist room for considerations of cultural roots and institutional inertia. We will simply pick one example related to the Japanese firms and economy later in this paper.

Aoki (1984) summarized Coase's reasons why the 'cost of using the price mechanism' will be lower when the firm is introduced: (1) cost of discovering what the relevant prices are (p. 390) and (2) cost that may be saved by making 'a long-term' contract for the supply of some articles or services (p. 391). Of course, the most eminent in (2) is employment relations, owing to asymmetry of risk attitude between employees and employers.

Now, we have several answers to the questions of when the market will fail and be replaced by some other hierarchical organizations like the firms: Williamson emphasizes the role of transaction specific investments and Alchian and Demsetz (1972) stress the team production or economies of scale and scope.

"Team production exists when it is not possible, by observing output, to identify the individual productivities of inputs combining in the production process." (Clarke and McGuinness 1987, p. 11) Natural extention of the argument is to give the residuals after paying the factors of production (other inputs) to those who hold the property rights and the right to 'monitor' the team member. Here the property rights include: (1) the right to the residual productivity of the team beyond that which is necessary to keep the team operating, (2) the right to observe the productive input of individuals on the team, (3) the right to monitor all contracts with sources to input into the team, and (4) the right to sell these rights (Barney and Ouchi, ibid., p.76).

Back to Coase again, we see "in modern economic theory the market itself has an even more shadowy role than the firm" (Coase, ibid., p. 7). Markets are the institutions which minimize transaction costs. If transaction costs are assumed as zero, as in most of the microeconomic models, then markets have no function to perform. The co-existence of markets and zero transaction costs itself is a contradiction.

III. Transaction Cost Economics: Williamson's Summary

"Transaction cost economics adopts a contractual approach to the study of economic organization." (Williamson 1989, p. 136)

Characteristics of the transaction cost economics are: (1) more microanalytic, (2) more self-conscious about its behavioral assumptions, (3) introduces and develops the economic importance of asset specificity, (4) relies on comparative institutional analysis, (5) regards the business firm as a governance structure rather than a production function, (6) places greater weight on the ex post institutions of contract, with special emphasis on private ordering, and (7) works out of a combined law, economics and organization perspective (Williamson, ibid., p. 136).

Some of these characteristics are already familiar from the previous discussions beginning with Coase (1937). In addition, Williamson gives as a background for the developments in transaction cost economics, those contributions made in the 1930s: (1) transaction should be made the basic unit of analysis (Commons), (2) study of contracts should focus less on legal rules: private ordering or the efforts by the parties to align their own affairs and devise mechanisms to resolve differences (Llewellyn), and (3) powers and limits of internal organization should be brought more selfconsciously to the force (Barnard) (Williamson, ibid., p. 137).

"Transaction cost economics pairs the assumption of bounded rationality with a self-interest-seeking assumption that makes allowance for guile." (Williamson, ibid., p. 139)

The notion of the bounded rationality is, of course, taken from Herbert Simon. Simon enlarges the scope of rational economic analysis

and regards the economic actors as "*intendedly* rational, but only *limitedly* so" (Simon 1961). Economic models usually concentrate only on the rationality part, but organizational studies see that cognitive competence is limited. "It is only because individual human beings are limited in knowledge, foresight, skill, and time that organizations are useful investments for the achievement of human purpose" (Simon 1957: both quotations are from Williamson, ibid., p. 139).

About the self-interest-seeking assumption, transaction cost economics pays attention to the fact that economic agents are allowed to disclose information in a selective and distorted manner, as described in opportunism, moral hazard, and agency theories.

Bounded rationality and opportunism, in turn, help distinguishing between feasible and infeasible modes of contracting: (1) Incomplete contracting: Although the assumption of a comprehensive ex ante contracting is a convenient one, the condition of bounded rationality precludes this. All feasible contracts are incomplete. Therefore, the ex post side of a contract is very important for a more realistic economic analysis. (2) Contract as a promise: Another convenient assumption is that economic agents will reliably fulfill their promise. However, if economic agents are given to opportunism, this will never be realized. Ex post safeguards to detect opportunism should be set in order to prevent possible damages (Williamson, ibid., pp. 139-140).

These understandings of human nature are complemented by the criticism of the assumption of well-defined property rights and that courts dispense justice costlessly. As pointed out by Llewellyn, Williamson supports the stance to regard the "court as a framework". "Participants to a contract can often devise more satisfactory solutions to their disputes than can professionals constrained to apply general rules on the basis of limited knowledge of the dispute" (Galanter, M. 1981: quotation from Williamson, ibid., p. 191).

Compared with the standard solution given by the economists using market mechanism, transaction cost economics regard the 'transaction' as the basic unit of analysis. Concentrated attention is given to the economizing efforts to minimize the transaction costs by the organiza-

tion of transactions; in particular, "examination of the comparative costs of planning, adapting, and monitoring task completion under alternative governance structures" (Williamson, ibid., p. 142).

Principal dimensions with respect to which transactions differ are: (1) frequency, (2) degree and type of uncertainty, and (3) conditions of asset specificity. Although the first two are somewhat clear, the last one needs some explanation.

"Asset specificity has reference to the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value" (Williamson, ibid., p. 142). Five different kinds of asset specificity are considered: (1) site specificity — locations to economize on inventory and transportation costs, (2) physical asset specificity — specialized dies required, (3) human asset specificity — human capital accumulation via learning-by-doing processes, (4) dedicated assets — made at the behest of a particular customer, and (5) brand name capital (Williamson, ibid., p. 143).

Lastly, let us briefly describe the difference in the treatments of the working of the transaction process by the transaction cost economics from the ordinary treatments in economics. "Transaction cost economics fully accepts .... (the) description of ex ante bidding competition but insists that the study of contracting be extended to include ex post features. .... A full assessment requires that both contract execution and ex post competition at the contract renewal interval come under scrutiny" (Williamson, ibid., p. 144). Durable investments in transaction specific human and/or physical assets will facilitate more economic handling of the transactions.

IV. The Japanese Firm: Aoki's Three Principles*

Studies of Japan's economy, particulary the studies directed to the nature, organization and operation of the Japanese firm, have now entered a third generation. A first generation of *modern* or *modernistic*

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* Earlier version of this section was published in author's review of Aoki (1988) in *Tokyo Business Today* (July 1989), p. 62.

studies saw the Japanese firm and economy as somewhat underdeveloped, and attempted to criticize, in an effort to "upgrade" or modernize, using the economies of the advanced West as models. Japan's emergence as a major economic power, invited a second generation of *post-modern* studies, in which the Japanese way of doing things, including business organization and administration, was evaluated as "number one".

But as the illusions spun in the high growth period faded, new studies, based on theoretical and empirical advances, have emerged, producing a third generation of *neo-modern* studies of the Japanese firm and economy. Aoki's recent works are the masterpieces in this area (Aoki 1984, 1988, 1990).

Neo-modernism resembles the first generation of modernist analysis in its use of more or less standard theoretical and empirical studies, however, is distinctive in adopting a pluralistic rather than a simple approach. For the modernist, there is nothing mystical about the Japanese firm and economy. It is successful because it is "competitive" according to the paradigm, built on postulates which maximize the behavior of economic agents mediated by market-clearing mechanisms.

Therefore, as Aoki argues in describing this style of analysis, any international imbalances may be corrected by realigning foreign exchange rates and appropriate internationally coordinated public policies affecting the maximizing behavior of economic agents (Aoki 1988).

In reaction, many culturalists, mostly in the post-modern group, have argued the Japanese firm and economy as a coherent and distinctive system built on various cultural traditions and emphasizing values such as that of the small group and the reciprocal exchange of employee loyalty for employer paternalism. But, again, as Aoki points out, the implication (of such an argument) may be a dismal one. The current trade conflict may be impossible to resolve unless the Japanese change their erected cultural or protectionist walls (Aoki 1988).

Aoki's scholarship has been careful to avoid the sometimes simplistic arguments of both modernists and culturalists. In this, it has paved the

way for a more rational approach to understanding the Japanese firm and economy.

Aoki begins with a reinterpretation of the labor market myth — the view of a distinctive Japanese corporate structure based on life-time or long-term employment, wage rate based on seniority, and the company union. Using information structure analysis, he arrives at an interesting principle — what he calls the *First Duality Principle*: the Japanese firm is decentralized (horizontal) for information, but it is supported by a strongly centralized (non-market or vertical) personnel administration.

In his more recent expression, the First Duality Principle is stated as "In order for firms to be internally integrative and organizationally effective, either their coordination or their incentive mode needs to be hierarchical, but not both. Japanese firms tend to be less hierarchical in coordination mode, while they rely upon rank hierarchies in their incentive system" (Aoki 1990, pp. 13-14).

The American-type firm, on the other hand, is centralized in terms of information but decentralized (subject to markets) in personnel administration. More precisely, for the hierarchy (H) mode, it is necessary to have (1) hierarchical separation between planning and implemental operation, and (2) emphasis on the economies of specialization meanwhile, in the Japanese (J) mode, we see (1) horizontal coordination among operating units based on (2) the sharing of ex post on-site information (learned results). Prior planning sets only the indicative framework and as new information becomes available to operating units, prior plans will be modified.

Note that the distinction is not simply a general reflection of cultural differences but stems from reasonable and explainable differences in the applicaton of on-the-job training in skill accumulated with the company over very long periods of time. Of course, they are subject to comparative studies of advantages, particularly for cases of rapid or modest environmental changes.

A basic difference between the Japanese firm and the American-type firm is in the roles played by the worker (employees), owner (stockholders), and management. The Japanese management plays the

role of a mediating agent which harmonizes the interests of the other two:

(1) In the H-mode, operating tasks are separated from the coordinating task and divided into specific functions.

(1)' In the J-mode, operating units are expected to be engaged in mutually coordinating their tasks as well. Abilities to communicate and work together with peers are evaluated.

(2) In order to facilitate smooth adaptation of production scheduling, each operating unit changes quickly via knowledge sharing.

(3) Job rotation among different offices are frequent and regular, both for white collar workers and blue collar workers. In order to make this possible, (i) designs of incentives (rewards) are not tightly related to specific job categories, and (ii) personnel office for evaluations are developed.

Aoki's restatement of the financial structure offers another conclusion which is of interest: Japanese banks, especially "main banks", can be seen as monitoring agents. His *Second Duality Principle*: the internal organization and financial control of the Japanese firm are dually characterized by weak-decision hierarchy and incentive-ranking hierarchy (Aoki 1990, p. 18).

Applying his analysis to national industrial organization, including the workings of subcontracting groups and their efforts at research and development, Aoki offers a third interesting conclusion: social reputation, rather than monetary reward, acts as an incentive for top corporate managers, as well as actions of bureaucrats in their efforts at mediation in macroeconomic sphere. Within the Japanese firm structure, we see his *Third Duality Principle*: the corporate management decisions of the Japanese firm are subject to the dual control (influence) of financial interests (ownership) and employee's interests rather than unilateral control in the interests of ownership (Aoki 1990, p. 20).

Summarizing the essential developments in the principal-agent theory, which is one of the main lines of developments in the theories of the firm: (1) hierarchical decomposition of control originating at

stockholders (H- mode), (2) market- conditioned incentive contracting, and (3) the control of the management decision according to the value maximization criterion, Aoki emphasizes that his three principles would give contrasting alternatives. Are there some ways to join the commonalities and set converting trends into a more general model of the firm, or see some parallel developments preserving the essential common features and differences, is an interesting open question.

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「企業の理論」再訪

〈要　約〉

木村憲二

その長い歴史にもかかわらず、「企業の理論」はいまだに安定した内容を与えられていない。1937年の論文以来のコースの批判点は、「企業の理論」が「何故に企業が存在しなければならないのか」という根源的な問を回避して、ロビンズ流の経済学の「稀少性定義」の延長として、合理的選択理論の系である消費者行動理論と同一の軌道をたどっている点にむけられている。コースの批判を継承したウィリアムソンの構想は、「選択」の科学から「取引」の科学へという方向づけをもっており、後に「取引費用の経済学」として結実した。「企業」は「市場」と対比され、企業が存在するのは、取引費用を極小化しようとする行動の結果である、というのがその結論である。

青木昌彦氏による日本企業の分析は、この一般的な分析により具体的な内容を与えている。本論はこのコース・ウィリアムソン・青木のラインによる「企業の理論」の再構築をあとづけてみようとするものである。