Future directions of research in the Coasean tradition

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Article at a Glance:

- Ronald Coase's key insights about the theory of the firm and transaction costs continue to influence the economic research agenda today.
- Within a firm, the price system and constantly contracted tasks would be more costly than authoritative allocation of resources and labor.
- The implication of Coase's work for corporate governance and the imperfect aspects of prices as a coordinating mechanism in the economy require further research.

*This article is based on a speech delivered on March 27, 2015 in Washington, DC at a conference titled "*The Next Generation of Discovery: Research and Policy Change Inspired by Ronald Coase." *The conference was co-hosted by the Ronald Coase Institute and the Center for International Private Enterprise (CIPE) to pay tribute to Ronald Coase and celebrate his legacy.*

It is an honor to be present here to expand on the legacy of Ronald Coase, who was so provocative, so undriven by fads, and who took his own independent course, which has in the long run been so very productive in so many fields.

I want to expand on the possibilities of where we might go next in research efforts to carry out one aspect of Ronald Coase's program, and that is his original paper on the theory of a firm, one which has been cited a great many times, and yet, I think not really very much developed. I want us to [discuss] a number of research problems that have arisen, at least to me, by contemplating this paper. Of course there has been important work since then, especially by Oliver Williamson. I might also cite Herbert Simon, who dealt with some aspects of Coase's work, though I am not sure whether he cited him or not.

[One research problem is] the proposition of the straightforward observation that the price system is not used within firms. Actually, it is today, but solely for the purpose of minimizing taxes. We have, of course, internal pricing in large, complicated firms, particularly those involved in international transactions, but as far as I can make out, they play absolutely no role in allocative decisions – they are simply designed to make sure that most of the business takes place in countries or states with low tax rates. This is not quite, I think, what Ronald Coase would have regarded as appropriate.

He specifies two reasons. One is that the price system is costly in information terms. This is, indeed, the origin of the transaction cost economy argument, the idea that humans try to minimize transaction costs. It is also costly in terms of specifying the rules of action, and I think particularly of contracts. A contract is a statement: you will do this on these conditions. Instead of a contractual relationship to perform specific tasks, we have a general rule of authority: orders, directions are given. These are subject to limitations, of course, that you cannot do anything impossible. However, within limitations, people are assigned [tasks].

This raises an interesting question. Presumably prices, market transactions, do play a basic role [in the economy]. In fact, they play an unquestioned role in Coase's account with regard to interfirm communication and interfirm transactions: delivery of goods, services, the exchange of money for goods, or the exchange of money for commitment to deliver the goods within a certain length of time, or to perform certain services. These are carried out in the market within a price system. The question is: why does interfirm communication take place with prices while intrafirm allocations seem to have something that is clearly superior (superior from the point of view of the operation of the firm, which presumably means superior in minimizing costs or increasing profits)?

Some ideas have been developed over the intervening period, and I think some of them should be explored more. One set of insights comes from the development of communication theory and information theory. This will probably be a little too tidy and too unrealistic in Ronald Coase's view, but I think it does point in the right direction. We have a set of possible communications and the idea that is being communicated has certain probabilities of occurrence. You may want to design a language to communicate this, and you must have a message appropriate to every possible communication. You want to choose that language to minimize costs.

When the first telegraph codes were introduced, the letter “e” was given a single dot. Other letters could be maybe dashes and dots, but “e” was the most frequent letter, had the shortest. As a general principle, messages about items that are very frequent, when you are going to send the same message, are the ones that involved the least cost. If you look at the way you speak, words that are used frequently are generally very short. Another example, which rather annoys me, is the use of acronyms. You cannot pick up a paper about policy or even technical papers and newspapers, without finding acronyms. I scratch my head and try to remember what that acronym means. Sometimes now publications [have] little tables at the beginning giving the acronyms. People who are doing this all the time, find it efficient to compress a long phrase into three letters. So these [examples] all illustrate the fact that a code develops.

Now, within a firm, communication is not about the whole economic world. It is about the problems relating to that firm. [Thus] it pays for a firm to develop a code. Presumably these actually evolve with little conscious interference, but they do develop. The members of a firm find a way, evolve a way, of communicating with each other with a private language. Certain phrases are used over and over again with meanings that require a lot of richness of association. They mean more than the words appear to mean or would mean to an outsider.

Of course that also means something which Coase emphasizes: that a firm consists of relations that have some stability over time. A worker works for a firm, he does not shift every day or even every year from one firm to another. In the market, it does not matter which good goes to which person. In a labor market, [for instance], employees and employers can balance supply and demand but they do not necessarily go to the same firm every time. It is clearly true and implicit in Coase's remarks – maybe explicit by now – that firms do not, the membership in firms does not, change radically. It changes slowly. People do leave, of course, and there is labor mobility, but people stick to jobs for a while.

One of the reasons, clearly, is that having developed this code, you are more valuable at that job than you are in a new firm where you would have to learn the codes of behavior. This is what Gary Becker called "firm-specific human capital." He was referring to the evolution of human capital. He pointed out that some of it is firm specific: it is not useful if you go to another firm. This has all sorts of theoretical and practical implications, which we need not go into here. There has been at least one study by Andrea Prat, which has tried to test the idea that firms develop codes and has found evidence for it.

A second reason, which is in Coase's original paper and needs more exploration, is the incentive question. Within firms it is always assumed that all the individuals are trying to achieve the aim of the firm, presumably profit maximization. They have no incentive to withhold information from each other. They do not have the incentive to distort information. Since the individual firm is the profit center, the usual assumptions are that transactions among firms are not subject to the same limitations [as interfirm communication]. Or [put another way] it is a good limitation that you can rely on in intrafirm communication. In interfirm communication there is the assumption that firms have different information. They are not necessarily going to reveal all that information, so you have asymmetric information, which leads to distortions.

In an interfirm communication, or a communication between a firm and a consumer, all that really matters is the price and the buyer's information on quality. Given that, the sellers may try to influence the buyer's information. We have a rather large amount of economic activity devoted to advertising. Advertising is by no means an insignificant part of the economy, just in terms of its own resource use, and it also has important consequences for the allocation of demand. This is an important implication of Coase's approach and needs to be studied further because the incentives around information sharing are a part of the reason [for] the superiority of intrafirm allocations.

Let me turn to another question, the notion of authoritative allocation, which is so prominent in Coase's paper and was later taken up by Herbert Simon.

Coase stressed the superiority of authoritative relations. He knew that instead of saying, "You just follow what I tell you [to] do," where you shift from one department to another or you change exactly the product mix or the procedure in the department you are in, we could have a contract which says how to produce the good, and describes the tasks you will perform. Coase knew that you could have sufficiently complex contracts that would achieve the same aim as authoritative relationships. But, he argued, the cost of drawing up such contracts would be extremely high.

This is a very important issue for a lot of other considerations. For example, in government economic policy, should we have discretionary rules or should we have fixed rules, as many prominent economists like Milton Friedman or John Taylor have argued in the case of monetary policy? The implications of Coase's argument mean that we cannot think in advance of all the possibilities, so having a fixed rule denies that.

The underlying issue, of course, is uncertainty. The firm does not know in advance what will happen. The most prominent example of that are technological innovations. The firm or competitor of the firm may have an innovation and you have to respond to that in some way, which may change your work organization, or change the products you buy, and you may have shifts in demand. There may [also] be other competitive pressures, for example, a supplier will raise or lower his or her price, among other things.

Since the firm is facing these uncertainties, it wants to be able to have actions which are appropriate to the actual occurrences. Yes, you could have a contract. That is the standard approach in decision theory, say in Leonard Savage's famous book *The Foundation of Statistics*, which axiomatized the Bayesian approach. But it depended on specifying, for all possible contingencies, what you were going to do.

There is another problem, which is that computation is costly. Under "computation" I include things like logical inference: if I hold proposition A, I should also hold proposition B. Even enumerating the possibilities becomes an enormous and maybe impossible task. If you really have genuine innovations in the world, by definition, you do not know what they are going to be. When they occur, they occur in a form you probably did not even expect. So enumerating the possibilities to specify an action for each contingency is an additional cost. Therefore, Coase argued that having an authoritative relationship between employer and employee is more efficient than writing contracts to cover all contingencies or to leave the future to renegotiations.

One element of Coase's statement of the problem that seems to require more development than is suggested by Coase is the governance of the firm. I have said before that the idea of the intrafirm communication being reliable depends on the assumption that everybody in the firm is trying to do the same thing, which we think of as profit maximization. However, there is a large amount of literature on the principal-agent problem. Managers or even individual workers have some discretion [in the goals they pursue]. In fact, that is why authoritative relations are useful, and the actions may depend on information which is known only to the agent.

Within the firm, we have asymmetric information. The assumption is that information is freely transferred, but that is not necessarily the case. It may be in the interests of the individual within the firm to misrepresent, or not to respond to information. This is part of the general theory of economic behavior under asymmetric information, which has been greatly developed with application to the professions and to the financial sector. These are the words that are tossed about like "moral hazard" and "adverse selection," which come ultimately from the insurance companies where these problems were faced more explicitly than anywhere else.

So far, I have stressed the problems of the managers, but what about the top management? What is the firm, anyway? Or who constitutes the firm? It is an institution which is something beyond an individual. Who are the members of it and what are the relations of the members to it? Coase implicitly assumes that they are all working together. However, a study by Coase's contemporaries, Adolf Berle and Gardiner Means, *The Modern Corporation and Private Property*, discussed the relation between the interest of management and the interest of stockholders.

The law says the stockholders are the owners of the firm. Yet, for a large firm, the relation of a stockholder to the firm is probably a lot less [strong] than that of the average worker. The stockholder feels quite free to buy and sell the stocks, does not feel committed to the firm any real way, it is just an investment. In fact, this gave rise in the 1960s to literature on managerial capitalism, where the firm is run in the interest of the management, not in the interest of the stockholders (William Baumol, Robin Marris).

Now, this work could be criticized. It did not put enough emphasis on competitive pressures and the usual views of perfect competition that the firm has to maximize profits in order to survive. Since survival is presumably in the interest of everybody in the firm, there is a common element. However, the world is really dynamic. In fact, it is an important part of the Coase story that the world be dynamic. Thus, there are uncertainties which are going to be resolved in the future. You do things today which have consequences for the future. Capital formation and production takes time. All these obvious characteristics make capital such a prominent part of capitalism.

The interests of management really may depend on current expectations of the future, not what is actually going to happen. I am referring to the fact that people are paid bonuses with regard to current activities because how can you pay a bonus based on the future? Of course, one idea is to pay it in the future, but, indeed, the [financial] collapse of 2008 has raised the question in many people's minds whether the incentives, in this case of managers in financial institutions, are necessarily aligned with the future of the firm.

Finally, one of the questions is why the firm does not use an internal price system. Maybe not for the prices that are on the market, but its own prices. We have a whole theory of welfare economics which says the way to get an optimal allocation is through the price system. So it looks like you should use a price system. After all, within the firm the information is reliable, presumably.

Let me refer here to the socialist calculation controversy in reference to Abba Lerner. The idea that socialist parties might come to power and actually have a socialist system raised the question of how would you run it. It was immediately after the First World War, and particularly in Austria, where this question was raised. Ludwig von Mises wrote an article saying you just can't allocate things naturally, you need prices. We can put the matter the other way, though. If the price system is not so good within the firm, and we have other methods of allocation, authoritative methods, why don't they work on the scale of the economy? I think that is a question that can be raised.

I think the kind of answer that needs to be explored is that prices really are imperfect. They do reveal scarcities and lack of scarcity, but they are not perfect signals. There are all sorts of reasons why commodities are too complicated to be fully expressed by prices, and so forth. Still, if you're dealing with the remote part of the economy, something far from you, the price is about as good as you can possibly get, and you should take account of that. Internally, when you have much more detailed information, you do not [need to] use prices.

So the implications of a market price system with local non-price intrafirm allocations may be better than either a market system, which covers the smallest and most local transactions, or centralized, non-price-based allocation mechanisms.

To view the full two-day conference, visit: http://www.cipe.org/coase-conference.

Kenneth J. Arrow is a Nobel Prize-winning economist whose work has been primarily in economic theory and operations, focusing on areas including social choice theory, risk bearing, medical economics, general equilibrium analysis, inventory theory, and the economics of information and innovation. In 1972, together with Sir John Hicks, he won the Nobel Prize in economics, for his pioneering contributions to general equilibrium theory and welfare theory. After receiving his Ph.D. from Columbia University in 1951, Arrow taught at the University of Chicago (1984-49), Stanford University (1949-68), and Harvard University (1968-79). In 1979, he returned to Stanford University as Joan Kenney Professor of Economics and Professor of Operations Research. Arrow became professor emeritus at Stanford in 1991. Prior to that, he served as a weather officer in the U.S. Air Corps (1942-46), and a research associate at the Cowles Commission for Research in Economics (1947-49). In addition to the Nobel Prize, he has received the American Economic Association's John Bates Clark Medal. He is a member of the National Academy of Sciences and the Institute of Medicine. He received a BS from City College, an MA and PhD from Columbia University, and holds approximately 20 honorary degrees.