Coase Fantasy of Zero Transaction Costs
And
Asymmetric Bargaining in Social Conflicts

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Abstract

Coase constructed a fantasy world with zero transaction costs. Implicitly, he proposes three hypothesis in his market solution of social conflicts: transaction costs are measurable in cost and benefit analysis of economic institution; optimal institution can be achieved without government regulation since transaction costs are driven down by market competition; social conflicts can be solved by bilateral bargaining when transaction costs are insignificant. His central argument is symmetry between demand and supply or symmetry between consumption and investment in equilibrium perspective.

Coase approach is contrary to the laws of physics and historical trends in division of labor. Symmetry breaking is an essential feature for origin of division of labor and root of social conflicts. Sustainable market can be maintained by asymmetric compensation in protecting disadvantaged groups and innovative forces.

Key Words: transaction costs, Coase Theorem, symmetry principle, symmetry breaking, and asymmetric compensation.

JEL Classification Numbers: B52, D63, K00, L14

I. Introduction:

Coase's 1937 paper on the nature of the firm attracted very little attention, but his 1960 paper on social costs generated storms in social sciences, since Coase

claims that all social conflicts can be solved by bilateral exchange without intermediate of government regulation or civil society. Among all the critics, Samuelson made a strong argument against the Coase approach, which stimulated a lengthy defense from Coase in his book (Coase 1988, p.159-163).

> "(Samuelson says) 'unconstrained self-interest will in such cases [negotiations over smoke nuisances and the like] lead to the insoluble bilateral monopoly problem with all its indeterminacies and nonoptimalities.' …..
>
> It is certainly true that we cannot rule out such outcome if the parties are unable to agree on the terms of exchange, ….. even in the world of zero transaction costs in which the parties have, in effect, an eternity in which to bargain. However, there is good reason to suppose that the proportion of cases in which no agreement is reached will be small."

In this article, we will start with different versions of the Coase Theorem and the implicit hypothesis behind the Coase approach. We will find out complexity of transaction costs and difficulties in applying transaction costs analysis. The Coasian world of zero transaction costs is against the basic laws in physics and historical experiences of division of labor. The simplistic version of price theory based on demand supply analysis has severe limits in institutional and social studies. Symmetry is the key assumption in Hamiltonian economics and market fundamentalism. Symmetry breaking is characterized the origin of division of labor and the root of social conflicts. Sustainable market can be achieved by asymmetric compensation in protecting disadvantaged groups and innovation forces.

II. The Dubious Coase Theorem and Re-formulations of the Coase Hypothesis

There are a lot of confusions generated by the famous Coase Theorem and the related concept of transaction costs. Under the term "Coase theorem" in the Palgrave Dictionary of Economics and Law, the article began with a startling question(De Meza 1998):

> " Is this statement (Coase Theorem) profound, trivial, a tautology, false, revolutionary, wicked? Each of these has been claimed."

Coase himself never made clear statements about the Coase Theorem and transaction costs. There are two versions of the Coase Theorem.

The first version was made by Stigler, an economist: "The Coase Theorem thus asserts that under perfect competition private and social costs will be equal (Stigler 1966)."

The second version of the Coase Theorem was given by Cooter, a legal scholar: "The initial allocation of legal entitlements does not matter from an

efficiency perspective so long as they can be exchanged in a perfectly competitive market " (Cooter 1987).

However, Coase accepted these statements with a strong reservation (Coase 1988a p.174). Coase prefer his trade mark concept of zero transaction costs to the textbook condition of perfect competition (Coase 1988a, p.175):

> " It would seem that the qualifying phrase ' under perfect competition ' can be omitted ….. the ultimate result (which maximizes the value of production) is independent of the legal system if the pricing system is assumed to work without cost."

There is a fundamental problem for these two versions of the Coase Theorem: the meaning of "perfect competition" in the externality problem. Both Stigler and Cooter seem assume that under perfect competition, the price of pollution or other external damage is well defined. In reality, there is no perfect market for harmful products that consumers would compete to buy. Therefore, Coase has a good argument to remove the condition of perfect competition. In this regard, Coase broke away from the Chicago tradition of anti-monopoly policy (Kitch 2000, p209, p215). In his own words:

> "When I first came t Chicago ….. people used to talk about monopoly and concentration …. And I used to say then that monopolizing was a competitive industry, but no one ever listened, I gave up saying it. …..
>
> the title of my (1960) paper came from Frank Knight. ….I don't think the concept of social cost is a very useful one, and I don't ever refer to it. But it did indicate to people what I was talking about."

Both Stigler and Coase have strange imaginations about the behavior in a world without transaction costs:

> "A world without transaction costs has very peculiar properties. As Stigler has said of the 'Coase Theorem': 'The world of zero transaction costs turns out to be as strange as the physical world would be without friction. Monopolies would be compensated to act like competitors, and the insurance companies would not exist.' "(Stigler 1972, Coase 1988a, p.14).

Unfortunately, this imagination is inconsistent with logic of classical economics. If zero transaction costs imply perfect information, a monopolist would be capable of applying perfect price discrimination or nonlinear pricing, which would lead to price divergence, or non-ptimal pricing (Cheung 2007).

Clearly, the original Coase idea is not a "theorem" but a "hypothesis" since it goes beyond the scope of classical economics. We may reformulate the Coase Hypothesis in the following (Coase 1988, p.14-15):

> "In the Coasian world of zero transaction costs, private and social costs will be equal. In other words, the institution and legal system (of private property rights) do not matter if transaction costs can be ignored in the real world."

We should point out that the Cheung's version of the Coase Paradigm revealed the nature of the Coase approach and built a bridge to an alternative approach, since Cheung realized transaction costs as institution costs in nature (Cheung 1998):

> "The transaction costs paradigm in which I was brought up – and here I am sure Coase fully shares my view – has the merit that it entails only the simplest of economic tools. In fact, this paradigm contains no new theory whatsoever to speak of.
>
> Only three fundamental propositions are present in the (transaction costs) paradigm. First is the postulate of constrained maximization. Second is the downward sloping demand curve, which (because there is no need to separate consumption and investment activities) also covers diminishing marginal productivity. Third is the notion that cost is the highest-valued option foregone."

Coase explicitly proposed one specific symmetry in externality: "the reciprocal nature of the (externality) problem" where "both parties (say, the polluter and the victim) cause the damage" (Coase 1960). Cheung further identified the hidden symmetry assumption in equilibrium economics: the symmetry between consumption and investment, or the symmetry between demand and supply, which was justified by the principle of diminishing marginal returns. We will see that the Cheung's formulation of the Coase Theorem will bridge the gap between Hamiltonian economics and evolutionary economics.

III. The Irrelevance of the Zero-Transaction Costs in Social Studies

Coase invented a magic world of the zero-transaction costs for justifying his argument against government regulation (Coase 1988 p.14-15):

> "Cheung has even argued that, if transaction costs are zero, the assumption of private property rights can be dropped without in the least negating the Coase Theorem and he is no doubt right. Another consequence of the assumption of zero transaction costs ….. is that it costs nothing to speed them up, so that eternity can be experienced in a split of second."

There are three unsolved issues for the Coase Hypothesis:

First, if the existence of the Coasian world can be justified by natural laws in science.

Second, what are possible cases with minimum transaction costs?

Third, if the Coase Hypotheses are valid in a real world.
We will discuss the three hypotheses in theory and reality.

3.1. Impossibility of the Coasian World in Physics and Biology

The Coasian world of zero transaction costs became a magical tool against government regulation by using a physics analogy (Coase 1988a, p.14-15):

> "A world without transaction costs has very peculiar properties. As Stigler has said of the 'Coase Theorem': 'The world of zero transaction costs turns out to be as strange as the physical world would be without friction. Monopolies would be compensated to act like competitors, and the insurance companies would not exist.' "(Stigler 1972, Coase 1988a, p.14).
>
> "In the absence of transaction costs, there is no economic basis for the existence of the firm. ….. the assumption of private property rights can be dropped…. it costs nothing to speed them up, so that eternity can be experienced in a split of second."

As trained as a physicist, can we accept that the Coasian world is a good abstract for relevant reality? The answer is NO, since the Coasian world violates basic laws in physics. Specifically, Coase made four grand errors in his physics analogy (Chen 2007):

First, an inertial world without friction is not a "strange world" but a good approximation of classical mechanics, which has been confirmed by accurate prediction of planet motion and repeated success of launching artificial satellites. In contrast, the Coase approach has conflicting implications in favor of vertical integration and least regulation, which will be discussed later on the complexity of transaction costs.

Second, zero information cost could not exist in a physical world. According to the uncertainty principle in quantum mechanics, any transmission of information must consume some minimum amount of energy (Brillouin 1962). So-called perfect information in economic models narrowly implies a chess-like game with rigid rules and finite choices.

Third, there is no possibility of infinite speed even without fricti.on, since the theory of relativity sets the light as the speed limit. The convergent speed in dynamic pricing may not be fast enough to reach an equilibrium solution.

Forth, the nature of transaction costs is associated with disordered form of energy, such as heat and waste release, while the nature of production cost is ordered matter such as raw material and electricity (Georgescu – Roegen 1976, Ayres 1998). As Georgescu – Roegen pointed out in 1976:

> "Thermodynamics is at bottom a physics of economic value – as Carnot unwittingly set it going – and the Entropy Law is the most economic in nature of all natural laws."

An organization or institution with zero transaction costs implies a perpetual motion machine of the second kind, i.e., a heat engine with single temperature source, which does not release any wasted energy in the form of heat dissipation. This engine would violate the second law of thermodynamics.

In sum, no human being or live animals could live in the Coasian world. The physics analogy of frictionless world cannot justify the Coase hypothesis in the real world.

3.2. Conflicting Cases with "Small" Transaction Costs in Reality

Coase mentioned two candidates as approximations of the Coasian world with minimum transaction costs: "hunting bands" and financial markets such as "commodity exchanges and stock exchanges … in which transactions are highly regulated" (Coase 1988a, p.4, p.8-9).

We agree that the primitive society without income and wealth may have minimum transaction costs because they lack incentive for cheat, robbery, and conflicts. However, we disagree when Coase said "these regulations …. Exist in order to reduce transaction costs and therefore to increase the volume of trade (Coase 1988a, p.9)."

Comparing the mature New York Stock Exchange with newly emerging market in China or Russia, the latter are much loosely regulated and result with larger volatilities and less trading volumes. Clearly, financial markets serve as a counter example to Coase argument. The primitive society of hunters and gathers might have least transaction costs or institution costs because they have no motivation to cheat or create information asymmetry in an egalitarian society without property and income disparity. In a financial market with information asymmetry and market instability, promoting false information and manipulating price movements may benefit a few at the costs of majority of market participants. Market regulation by market makers and regulative agents are aimed to reduce information distortion and price manipulation with high costs in terms of entry barrier during IPO and monitoring costs of market trading. The stabilization and expansion of financial market in developed countries are resulted not from market competition with "invisible hand" by self-disciplined by professional traders and government regulation such as Security Exchange Commission. We will return to this case in discussing the selective nature of market institution.

Coase believes that transaction costs are insignificant in the real world (Caose 2004). It might be true if the above two extreme cases can serve approximates of the Coasian world, since any case would fall between these two extreme cases. Unfortunately, financial markets are cases with high transaction costs when expanding the volume of trade. We will further study the general trend of increasing transaction costs in developing division of labor.

3.3. Complexity of Transaction Costs and Multiple Effects in Market Exchanges

In classical economics, the doctrine of maximizing profit is equivalent to minimizing costs under the condition that the value or price of the product is fixed under perfect competition. In applying the demand-supply theory to firm and

institution, the Coase hypothesis has an implicit assumption that market competition would drive down transaction costs, if the value of the firm or institution is known and constant. This is not the case for transaction costs.

First, we can classify transaction costs into two parts: ex ante and post ante. Clearly, ex ante transaction costs should be finite because of finite period of past events; but post ante transaction costs must be infinite because of future information flow is infinite. If the issue is related to future events, such as GM taking over Fisher Body or rancher's rights of cattle running over crops, the deal would be indeterminate if judgments are based on the magnitude of transaction costs, say, the future uncertainty in body supply or future price of crops. Therefore, the calculation of the costs and benefits in the case of GM vs. Fisher Body or rancher vs. farmer is less concerned about transaction costs but more to incentive mechanism in sharing possible gain of future discount cash flows (Coase 2000, Stiglitz 1974). There is no clear cut criteria that how much transaction costs should be considered as costs of products rather than costs of capital costs. In all his writings, Coase never gave a clear measurement of transaction costs and corresponding institution value; and how their magnitudes are calculated in his empirical cases.

Second, both strategies of decreasing and increasing transaction costs may win in market competition depend on market niches. For example, a retailing store may survive by spending or not spending transaction costs on advertising. But the store with large budget of advertising may win a larger market share than those spending less in advertising (Chen 2007). In social conflicts, the honest loser may end up with less compensation in comparison with the pollution victim who exaggerates his damage. There is no such thing of "perfect information" or zero transaction costs in market games full with information war and strategic games. Contrary to the Coase belief of a decreasing trend in transaction costs, there was a clear trend of increasing aggregate transaction costs in the US, whose transaction costs were about 25 % of GDP in 1870 and more than 50% in 1970 (Wallis and North 1986). This finding is consistent with evolutionary thermodynamics for increasing urbanization and complexity in division of labor.

Third, development itself is a process with surprises and uncertainties. Information complexity and ambiguity are integrable features of industrialization and division of labor. For example, scientists are not fully aware of possible environmental effects of global warming and generic effects of industrial pollution. Technological progress is much faster than biological evolution. There is no such thing of optimal solution regardless of historical conditions.

Fourth, transaction costs may have wavelike movements with a growing trend during institutional transitions. Cheung once argued that China's success in transition from command economy to market economy was driven by reducing transaction costs in agriculture reform (Cheung 1986, 1998). Obviously, the family contract system seemed to save a lot of monitoring costs in the people's commune system, which can be understood of an effective incentive mechanism in face of future uncertainty in crops yields. However, if we compare the simplistic life style in Mao's subsistence agriculture and an affluent variety in Deng's market economy, the increasing trend of transaction costs is visible from a

rapid growth of marketing, accounting, lawsuits, and regulations along with rapid economic growth. Clearly, the increased opportunity and productivity is associated with an increasing trend of transaction costs and income disparity. Government inaction is a dangerous policy for pollution, SARS, and global warming, if we believe the Coasian world could serve a policy guide in a real world.

In short, the magnitude of transaction costs cannot serve as a clear guideline in the ways of solving social conflicts, whether by bilateral negotiation, government regulation, or third intermediation. We will clarify the issue in the next section.

IV. Barriers to Market Solution of Social Conflicts

In his 1988 book, Coase struggled to defense the Samuelson critic, i.e., an "insoluble bilateral monopoly problem with all its indeterminacies and non-optimalities" (Coase 1988a p.159, Samuelson 1995).

Coase made two arguments to disarm Samuelson critic.

First, he retreated in the opening statement of his Nobel lecture that he "made no innovations in high theory" (Coase 1992). Therefore, any flaw in Coase theory should be traced back to the very foundation of equilibrium economics.

Second, he took the Friedman argument for an efficient market by asserting that non-negotiators "have little survival value" in reality (Friedman 1953, Coase 1988a, p. 161-162). More specifically, Coase argued that (Coase 1988a, p. 162-163):

> "Those who find it impossible to conclude agreements will find that they neither buy nor sell and consequently will usually have no income. Traits which lead to such an outcome have little survival value, and we may assume (certainly I do) that normally human beings do not posses them and are willing to 'split the difference.' Samuelson asserts …. that people … will not necessarily end up somewhere on the (Edgeworth) contract curve. This is no doubt correct, …. But I would regard such outcomes as being ….. most unlikely, particularly in a regime of zero transaction costs"

To examine Coase defense against Samuelson critic, we should study the actual barriers for market solution of social conflicts even if Coase could assume that transaction costs are small.

First, there is no theoretical basis for a downward sloping demand curve for externality such as noise and pollution. The classical assumption behind of the downward sloping demand curve is based on human nature of seeking more pleasure. It would be irrational for anyone who wants to maximize pain caused by noise or pollution unless the victim was forced to accept harm by delineation of property rights of polluters. There is no symmetry between polluter and victim if they have a choice, say, change mutual position by flipping a coin. This symmetry breaking is the origin of power and social conflicts in division of labor, which sets a fundamental limit to the contract theory of constitution. The asymmetric aspect in property rights is visible from historical outcome in Coase cases when

conflicting parties ended up not with voluntary agreements but court settlement (Simpson 1996).

Second, even if involved parties only consider ex ante transaction costs in finite amount, there may not an equilibrium solution when exists non-convexity in the form of S-shaped demand or supply curves. These phenomena are known in social interaction, survival threshold and scale economy (Becker 1991, Dessing 2002). Historically, changing California animal trespass law did have a great impact to change agriculture structure, counterfactual evidence to the Coase hypothesis (Vogel 1987).

Third, there is a macro foundation for social conflicts which may not be solved only by micro exchanges. Friedman pointed out that the condition for downward sloping demand curve was the invariance of real income, not nominal income in Marshall's price theory (Friedman 1949). The Friedman condition implied that no unemployment exists in macro economy (Cheung 2001a). This is the Achilles kneed for market fundamentalism. Coase failed to understand the cause of persisting conflicts and the root of self-sufficient economy, because he did not understand Schumpeter's argument for creative destruction in market economy. China's Great Wall symbolized the survival ability of self-sufficient agriculture for two thousand years (much longer than Roman Empire and British Empire) and the failure of Coase argument against Samuelson critic. Chinese farmers could not accept animal invasion by nomads because limited land and dried climate could not sustain a large population based on animal husbandry.

Fourth, efficient criterion is not sufficient to solve social conflicts. The issue of fairness is also involved in social conflicts as revealed from ultimatum game (Henrich 2004). Lasting conflicts in the Middle East are characterized by asymmetric powers in negotiation where the rich and powerful side never accepts a solution of "splitting the difference."

V. Symmetry Breaking in Division of Labor and Asymmetric Principle in Social Compensation

We may have a better perspective of the origin of organization and social conflicts, if we take the evolutionary approach rather than equilibrium approach. There are two fundamental categories in dynamical systems in physics: the Hamiltonian systems with symmetry in time and space (i.e. the frictionless world with conservation of energy in time and conservation of momentum in space) and dissipative systems with symmetry-breaking in time and space as observed in living and social systems. Therefore, the origins of life, firm, and division of labor, are all characterized by symmetry-breaking in time and space. Emergence of dissipative structure is maintained by constant matter flow, energy flow, and information flow (Prigogine 1984). Therefore, there is no such thing as perfect information or zero transaction costs, but endless information flow associated with living organism.

Symmetry breaking is widely observed in economic systems. For examples, the asymmetric dynamics between consumption and investment caused by longer time lag and uncertainty in investment, the asymmetric competitiveness between a self-employee and a firm producing same products caused by increasing returns in

division of labor, asymmetric numbers between consumers and producers in market resulted from scale and scope economies, and asymmetric bargaining between workers and capitalists caused by asymmetric credit based on collateral assets.

Now, a fundamental question arises how to maintain a sustainable market if market economy is inherently asymmetric in power and wealth resulted from increasing productivity in division of labor? This is the critical issue which is avoided by market fundamentalism.

Based on evolutionary perspective and historical experiences, we have two conclusions.

First, there are rare cases of symmetric bargaining or fair game in an unequal society with private property rights. Economic policy should not focus on idealized cases of symmetric bargaining with symmetric information and symmetric power but more realistic cases of asymmetric bargaining with asymmetric information and asymmetric power or endowment.

Second, fair game in market in the sense of voting by money is not a fair rule in market economy. Instead, we propose an asymmetric compensation principle in dealing with social conflicts, i.e. the check and balance should be maintained by one type of asymmetric social policies such as progressive tax and government assistance to disadvantaged groups and another type of market rules such as scale and scope economy.

VI. Conclusion

Coase made a great effort to extend market solution to externality problem and social conflicts. There are some evidence of market solution in creating markets for public goods such as lighthouse, public schools, and pollution rights. However, Coase made exaggerate claim on market power by disregarding the role of government regulation and people participation.

Coase proposal of market solution of social conflicts is based on simplistic version of price theory in classical economics, which ignores economic complexity including non-convexity of scale and scope economy, asymmetric power in industrial economy, and macro foundations of micro behavior. Social conflicts often involve many parties. Coase does not understand the difference between equilibrium perspective based on representative agent and bilateral bargaining and evolutionary perspective based on complexity and chaos which deal with many-body problem with more than three players. The nature of economic organization and institution is not reducing transaction costs, but creating value by selective mechanism (Chen 2007).

As we learned from history of industrial countries and emerging markets, proper government regulation and wide people participation is essential for developing a virtuous market (Chen 2006). The choice between regulation and de-regulation is a trial and error process which is observed from history of financial markets. There is no simple rule of reducing transaction costs by removing regulation but a dedicated trade-off between stability and creativity (Chen 2005).

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