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Empiricist approach to incomplete contract theory

불완전 계약이론에 대한 경험론적 접근

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[Title]

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[Abstracts]

Maskin and Tirole (1999a) lamented research findings of incomplete contracts studies as “hopelessly unrealistic”. Reason is that economics didn’t make progress toward modeling bounded rationality. Economics of empiricism is built on Hume’s epistemology (Hume 1739). Sympathy-consent process, such as trust, determines actions of exchange. Price becomes a part of sympathy-consent process. Market is what to build and what changes ceaselessly. Market is not what is given at the outset, unlike the premise of rational agent model (Arrow and Debreu 1954; Arrow and Hahn 1971). Rational agent model cannot avoid a dilemma when addressing real life problems like asset specificity, relational contracting, hold-up, indescribability of contingencies and incomplete contracts. Inductive reasoning of empiricist approach combines with deductive reasoning of value-cost rationalist approach to build the integrating analytical framework of economics.¹ It opens gateway to the economics of bounded rationality and resolves the dilemma.

[한글초록]

Maskin and Tirole (1999a)은 불완전 계약이론의 연구결과가 ‘실망스러울 정도로 비현실적’이라고 한탄하였다. 이들은 그 이유가 경제학이 제한적 합리성 모델(model of bounded rationality)을 만들어 내지 못했기 때문이라고 하고 있다. 경험론의 경제학은 흄(Hume 1739)의 인식론에 기반을 두고 있다. 공감-동의 과정(예컨대 신뢰)이 교환행동을 결정하는 것이다. 가격은 공감-동의 과정의 일 부분이 된다. 시장은 만들어지고 끊임없이 변화하는 것이 된다. 시장은 합리적 경제주체 이론(rational agent model)이 가정하는 것 같이 경제분석에서 처음부터 주어진 것이 아니다(Arrow and Debreu 1954; Arrow and Hahn 1971). 합리적 경제주체 이론은, 자산의 특수성(asset specificity), 관계적 교환(relational contracting), 포획(hold-up),

¹ Inductive reasoning indicates the reasoning which is dictated according to the navigation of experiences. In this paper, inductive reasoning is contrasted with deductive reasoning which indicates the optimization-equilibrium algorithm that is built on consistent measuring of value-cost indices. Inductive reasoning in this paper is different from Bayesian interpretation (Binmore 2011).

불완전 계약과 돌발상황에 대한 사전적 적시 (indescribability of contingencies and incomplete contracts)와 같은 현실적 문제를 분석하는데 혼돈을 피하기 어렵다. 이 연구에서는 경험론의 귀납적 접근법과 가치-비용 합리론의 연역적 접근법을 연결하는 통합적 경제분석 모델을 제시하고 있다. (본 연구에서 인용하는 귀납적 접근법은 Binmore (2011)가 사용한 Bayesian 귀납방법이 아닌 흄 (1739)이 경험론에서 의미한 경험을 통한 진리의 추구방법을 의미함). 이것은 제한적 합리성 모델을 제시한 것이며 이를 통해서 경험론 경제학 방법론의 길을 제시한 것이다.

[Keywords]

Bounded rational, inductive reasoning, sympathy-consent process, open/indeterminate system, economics of empiricism, incomplete contracting

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I Introduction

This paper purports to answer to Maskin and Tirole (1999a) who lamented the research findings of incomplete contracts studies as “hopelessly unrealistic”. Their point of prognosis is “Unfortunately, our profession has, for the most part, made little progress toward modeling bounded rationality in a satisfactory way.” Similar confession was uttered about our ignorance about the firm and market after all the studies of new institutional economics (transaction cost Coase 1937, 2006; hold-up Klein, Crawford and Alchian 1978; metering Alchian and Demsetz 1972; asset specificity Williamson 1975, 1985, 1986; principal-agent Jensen and Meckling 1976; Holmstrom and Milgrom 1991; incomplete contract Grossman and Hart 1986; Hart and Moore 1988, 1990). As profound is the problem, any research attempts to stand up to the problem is daunting and should be fundamental in the approach. The starting point should be how to address the problem of bounded rationality.

After all the study attempts of modern property rights school, are we in better position to understand the problem raised by Coase question (1937)? This paper attempts to find the reason by putting the analytical framework of empiricism in place (Hume 1739).

This study is a continuation of previous studies which introduced the economics of empiricism (Rhee 2012b, 2016b) as contrasted with the value-cost rationalism of neoclassical economics. It is in the analytical framework of empiricism that the analytical structure of bounded rationality is appropriately contained by. In other words, the underscoring of bounded rationality prompts us to understand the need why the analytical framework of empiricism should be in place to distinguish it from the value-cost rationalism of neoclassical

economics.

The analytical framework of empiricism will be introduced in section II. The economics of empiricism is contrasted with the value-cost rationalism. Sympathy-consent process will be discussed to explore the sympathy-consent dimension as analytical dimension contrasted with value-cost rationality dimension. The open/indeterminate system of empiricism will be discussed and contrasted with closed/determinate system of value-cost rationalism. The question of how those two analytical systems are connected will be explored. Also, the ramifications of such analytical dichotomy on the study of incomplete contracts theory will be discussed.

In section III, specific problem issues such as bounded rationality, path dependence, market, exchange, price and more will be apprehended from the different perspectives of two analytical tenets. Especially, the analyses will be applied to the specific issues of incomplete contracts studies. The incompatibility of value-cost rationality models of modern property rights (MPR) school with sympathy-consent process, which is drawn out from the backdrop of overarching analytical frameworks, is investigated in section IV. It amounts to indicate that bounded rationality belongs to analytical structure of empiricism, not to that of value-cost rationalism. Section V concludes the paper.

II Analytical frameworks of empiricism and value-cost rationalism

(1) Sympathy-consent dimension

Although we are not conscious, rational agent model belongs to the philosophical tradition of rationalism. It will be called value-cost rationalism hereafter. In contrast, empiricism approach may be compared with (Hume 1739), the epistemology of which presumes that human understanding comes from cognitive system of perception and intuition (Kahneman 2003) or impression Hume (1739). Every impression is built on experiences and repetition. Images or ideas are copies of impression. Logical reasoning arises as last step of the ladder of human understanding (Hume 1739, 1748).²

Individually, human beings arrive at understanding from experiences. Between or among individuals, two or more respectively distinct cognitive systems communicate each other by sympathy (Hume 1739, 1748, 1751) and consent (Buchanan and Tullock 1962). Such communication between individuals is critically important because they will lead to the actions of exchange. Such communication will be called sympathy-consent process. Relation exchange is behavioral action of exchange as the outcome of sympathy-consent process

² It is amazing that both behavioral studies (Kahneman 2003) and Hume's epistemology (Hume 1739) are consensual on human cognitive system. In this regard, Hume is considered as precursor of behavioral approach. In this paper, Hume and behavioral studies are compared just as they are contemporaries and cited in parallel.

(Rhee 2012b, 2016b). Rational agent model deals with the actions of exchange by means of price. However, relation exchange is more fundamental than the exchange by price (Rhee 2012b). It seems obvious from the fact that the history of market is no more than approximately 10,000 years, whereas actions of exchange have lived with us from primitive age. Even nowadays in the 21st century, our life, including life in the household, consists mostly of the actions of relation exchange.

Relation exchange is the action of exchange in the life of empiricism, which contrasts with the exchange by price in the value-cost rationalism. Since it is conducted by the sympathy-consent process, relation exchange is the real-life mode which is conducted by human beings who have intelligence, not rational but only bounded rational. To help reader's understanding, the conceptual diagram is provided in Figure 1.

[Figure 1 here]

Sympathy-consent process constitutes sympathy-consent dimension as analytical dimension, which is added to the value-cost rationality dimension. The two dimensions are connected through the sympathy-consent-free states, which is parallel to Coase's zero (or constant) transaction cost. Sympathy-consent-free states indicate that sympathy and consent are achieved immediately without any cost. In real life, it is unrealistic condition, however, such condition is presumed in mainstream economics consciously or unconsciously. It is something like *ceteris paribus* assumption. In Hume's terminology, it is parallel to uniformity principle (Hume 1739).

Table 1 compares the economics of empiricism with economics of value-cost rationalism. As distinctive attributes of each, open/indeterminate system is compared with closed/determinate system (Rhee 2013b).

[Table 1 here]

(2) Open/indeterminate system versus closed/determinate system

Distinctive attribute of rational agent model or value-cost rationalism is that it is closed/determinate system. Every economic state is identified as the solution of optimization-equilibrium algorithm. For this, there should be an important premise: consistent measuring of value-cost indices across coincidental instances, which corresponds to sympathy-consent-free condition. In incomplete contract theory, we should recognize that the indescribability of contingences doesn't break the premise, i.e. the consistency of value-cost index measuring across contingences (Grossman and Hart 1986; Hart and Moore 1988; Maskin and Tirole 1999a; Holmstrom and Milgrom 1991). However, the evidences of behavioral studies do not support the premise (Kahneman 2003). For instance, the reference point of prospect theory

vindicates that taste pattern may change before and after the reference points (Kahneman and Tversky 1979). What if the perceptions gained from experiences affect the change of reference points? Does the consistency of value-cost measure across contingencies still sustain?

If every coincidental experience and impression affects the change of reference points so that the consistency of value-cost indices measuring is not sustained, we cannot rely on the deductive reasoning of value-cost rationalism. We have to rely on inductive reasoning and sympathy-consent process. It is our real life stories of every day. Also, it is the rationale for year-to-year adjustment practice of sub-departmental budget planning and appropriation, which Simon witnessed as a college intern student to municipal government near Chicago city (Simon 1996a).

In the economics of empiricism, it is not price but sympathy-consent process that determines exchange transaction, which is relation exchange. It is the dramatic change that occurs by the introduction of sympathy-consent dimension, which adds to the value-cost rationality dimension. Price is a part of sympathy-consent process. Every exchange, including exchange in the market, is considered as relation exchange. Only when the consistency condition of value-cost measure (or sympathy-consent-free condition or uniformity condition or *ceteris paribus* condition) is met, sympathy-consent process is replaced by the price. Relation exchange becomes the exchange by price (Rhee 2012b, 2016). In real life, it is not market clearing equation $D(p)=S(p)$ but haggling, auction, offer/bid, mark-up and administered pricing that determines price in the market (Rhee 2016a).

We economists are not familiar with the reasoning mode that matches the life of bounded rationality. However, the economics of empiricism, together with the concepts of relation exchange and sympathy-consent process, serves as a beacon that illuminates on our analytical reasoning about the life of bounded rationality.

(3) Incomplete contracts

The salient contribution of this study is in the presentation of integrated analytical framework which contains both empiricism approach as well as value-cost rationalism approach in one analytical structure.³ The critical difference between two approaches is pronounced by the understanding of market. Rational agent model doesn't elaborate on what is market because its tenet presumes market as given as exogenous condition. Such analytical defect often conflicts with the institutional studies according to its tenet of rational agent model because institutional changes affect the change of market. Doubtlessly, they don't recognize that

³ Although Figure presents an agile conceptual picture, we should be aware that sympathy-consent process cannot be presented as straight line as in Figure 1. It is open/indeterminate system and cannot be measured as index metric. In Figure 1, it is presented as three dimensional figure just to help enhance reader's intuitive imagination.

market is not what is given at the outset, it is what changes ceaselessly and what we have to build. It is the dilemma that challenges rational agent model.

How economists, especially modern property rights school, handled this dilemma? When they explain economic conditions, they borrow from empiricism approach to talk about real life story and often times make use of inductive reasoning (Klein et al 1978; Coase 2008; Williamson 1979, 1985, 2000, 2009; Grossman and Hart 1986; Hart and Moore 1988; Holmstrom and Milgrom 1994; Maskin and Tirole 1999a). However, tacitly, they have to adopt strict assumptions to confine their analysis to the deductive reasoning of value-cost rationalism. Transaction cost is the concept which belongs to the reasoning of value-cost rationalism. However, most of Professor Williamson's discourse addresses the issue of real life story such as asset specificity, relational contract, hold-up issues and governance structure of commercial transactions (recurrent, idiosyncratic) (Williamson 1979). Stories are same with Grossman and Hart (hold-up problem and residual control rights: 1986), Maskin and Tirole (indescribability of contingencies 1999a) and so on. When they introduce real life problem, they use inductive reasoning of empiricism approach like relational contracting. However, when undertaking analysis, they maneuver to change the problem of indescribability into stochastic specification problem (specific or generic widget: Hart and Moore 1999; stochastic investment and verifiability Maskin and Tirole 1999a).

Research findings become "hopelessly unrealistic" without doubt. What is the economics of bounded rationality? Since problem belongs to the realm of empiricism, the analysis has to be conducted within the realm of empiricism. That is the economics of bounded rationality. We should not transform the problem into the analytical setting of value-cost rationalism. Of course, deductive reasoning of value-cost rationalism gives us analytical insights. However, the current confusion or lack of recognition about the distinction should be overcome. Apparent advantage of the inductive reasoning of empiricism approach is the possible identification of institution and market in the analysis. While engaging in the operation with empiricist approach, we don't have to abandon the analytical insights drawn out from deductive reasoning of value-cost rationalism approach. By combining two approaches of empiricism and value-cost rationalism, we can draw twice the benefit of integrated analytical framework, realism as well as analytical insights.

Table 1 presents the classified cases of contrasting instances between empiricism approach and value-cost rationalism approach in the studies of incomplete contracts.

III Classified cases of contrasting instances

(1) Bounded rationality

No one in economics would oppose to the idea of bounded rationality. Problem is the difficulty to incorporate the idea in economic modeling. However, solution seems unexpectedly simple. Bounded rationality is real life stories of every day. Economics has been engaging in attempts to translate them into the analytical setting which is dictated by value-cost rationalism. It is not possible because the former belongs to open/indeterminate

system whilst the latter belongs to closed/determinate system. Coincidental instance (open/indeterminate system) cannot be represented by rational agent model (closed/determinate system).

It is not certain that the consistency of value-cost measure sustains after the occurring of coincidental instance. For instance, impression is an example, which arises due to the experience (Hume 1739). Prospect theory (Kahneman and Tversky 1979) seems to support this argument of empiricism. New impression may affect the change of reference point, which dismisses the idea of consistent value-cost measure across contingencies.

The indescribability of contingencies is translated into stochastic property of relevant variables or functional relation (stochastic actions and payoffs: Maskin and Tirole 1999a p.86; existence of Φ function: Grossman and Hart 1986 p.697) in incomplete contract theory. Indescribability belongs to the realm of empiricism, whereas the functional representation indicates the location to value-cost rationalism. Such representation itself is erratic.

Bounded rational stories belong to open/indeterminate system so that their actions can properly be described only by sympathy-consent process. They are real life stories where inductive reasoning is efficacious when attempting to track down logical analysis. When GM and Fisher make contracts, possible cases of contingencies are indescribably numerous. Turnout would be hold-up (Klein et al 1978) or trust relation (Coase 2006) or relational contracting (Macneil 1987; Williamson 1985). Common attribute is path dependency (Rhee 2012b, 2016b).

Hence, deductive reasoning is irrelevant for the analysis. Deductive reasoning requires the sustainment of consistency in the value-cost measure across any coincidences or contingencies, which is uniformity principle (Hume 1739) or sympathy-consent-free condition (Rhee 2012b, 2016b) or zero (or constant) transaction cost condition (Coase 1960) or ceteris paribus condition (Rhee 2016b). Such interpretation of these conditions attains the connection of economics between empiricism and value-cost rationalism, which is prominent finding of relation exchange economics (Rhee 2012b).

(2) Path dependence

Path dependence is incompatible with value-cost rationalism because optimization-equilibrium solutions are pursued in the latter. Path dependence is one of fundamental attributes of the empiricism. Essentially, human understanding comes from experiences. Every experience leaves path dependence as it affects the change of percepts and conceptual representation (Kahneman 2003). Epistemology of the empiricism begins with the impression (Hume 1739, 1748). Every experience affects the change of impression (Hume 1739). Path dependence is an inseparable attribute of impression (Rhee 2016b). Inductive reasoning is built on path dependence.

Once the consistency of value-cost measure becomes established, efficiency counting such as optimization begins to set out so that the base ground for inductive reasoning becomes

uprooted. If the empiricism is unavoidable choice of bounded rationality, then path dependence is an inseparable property of bounded rationality.

The problem of relational contracting between GM and Fisher is essentially inseparable from the attribute of path dependence. Any attempt to build analytical model to track down the problem of relational contracting from the tenet of value-cost rationalism (Grossman and Hart 1986; Hart and Moore 1988; Maskin and Tirole 1999a) dooms to fail because path dependence does not abide in the latter.

(3) Market

The concept of market differs distinctively between the perspectives of empiricism and of value-cost rationalism. According to the former perspective, market is what has to build and what changes ceaselessly. Market becomes open/indeterminate system. According to the latter perspective, market is what is given at the outset. Market becomes closed/determinate system.

The choice questions of market or firm (Coase 1937), market or hierarchy (Williamson 1975), contract or changes in residual control rights (Grossman and Hart 1986) and relational contracting (recurrent, idiosyncratic) (Williamson 1979) emanate from the perspective of identifying market as open/indeterminate system. In other words, the possibility of choice itself vindicates that market is not given or exogenously determined, but may change according to how the choice question is addressed. These questions belong to the realm of empiricism. Akerlof's lemon market (1970) vindicates the validity of the argument for open/indeterminate system.

It is worthwhile to note that the analytical approaches of modern property rights school are justified only under the assumption of consistent measuring of value-cost indices across contingencies or coincident instances (under uniformity condition or sympathy-consent-free condition).

(4) Exchange

Exchange is the concept which changes dramatically as the conceptual condition change from value-cost rationalism to empiricism. In the realm of value-cost rationalism, exchange is determined by price because consistent measuring of value and cost is presumed from the outset. However, in the realm of empiricism, exchange is attained by means of sympathy-consent process. It is relation exchange (Rhee 2012b, 2016b). Exchange by price is just an extreme and special case of relation exchange. That is the case of consistent measuring of value-cost indices across coincidences or contingencies.

In other words, any exchange by price is in fact nothing but relation exchange. Price is a partial component of sympathy-consent process (Rhee 2016a, 2016b). This point will be more elaborated in the discussion of following subsection (5) Price.

There are plenty of evidences supporting the argument that exchanges are attained by sympathy-consent process rather than price. Akerlof's lemon market failed due to the lack of trust (Akerlof 1970), which is sympathy-consent process. Relational contracting between GM and Fisher (Williamson 1985; Klein, Crawford and Alchian 1978) may work or fail to work according to the trust factor between the two, which is again sympathy-consent process. More often than not, the role of entrepreneur is efficacious to attain the exchange, which indicates that market is open/indeterminate system (Rhee 2009). It supports that exchange is sympathy-consent process.

(5) Price

If exchange is determined by sympathy-consent process, then price becomes a partial component of sympathy-consent process. What is practical meaning of that? Economists are familiar with market clearing equation $D(p)=S(p)$ as determining condition which makes price. Then, how market clearing equation is related to sympathy-consent process? Outright answer to the question is that market clearing equation $D(p)=S(p)$ exists only in economists' imagination, not in real life. What exist in real life is haggling, offer/bid, auction, mark-up, administered pricing as price setting mechanism (Rhee 2016a). They are partial components of sympathy-consent process.

(6) Transaction cost

Transaction cost is an attempt to measure institution by value-cost index units. By definition, it belongs to value-cost rationalism approach. Since such attempts are valid only under the strict premise of consistent value-cost indices measuring, it is not possible to measure institution by value-cost index units because institution belongs to the open/indeterminate system. In the open/indeterminate system, the premise of consistent value-cost indices measuring is untenable. Williamson (1979)'s discourses on hierarchy, institution, asset specificity, hold-up, relational contracting and governance structure follow inductive reasoning and address the instances of empiricist life, although he was pretending to claim transaction cost economics.

(7) Opportunism

Deductive reasoning is conducted by perfect price-cost competition, which does not allow opportunism. Sympathy-consent-free condition squeezes out the possibility of opportunism. By assuming of the consistency of value-cost indices measuring, opportunism turns to price-cost competition. Open/indeterminate system is open to opportunistic behavior. Hold-up is a possibility of sympathy-consent process. Asset Specificity and hold-up in relational contracting (Klein et al 1978; Williamson 1979) present an iconic story of empiricist economics.

(8) Institution

If value-cost rationality is presumed, institutions become external factor to the exchange transaction. Pure price-cost competition, instead of sympathy-consent process, holds. Institutions as exogenous factor cannot affect exchange directly. Institutions are exogenous to the deductive reasoning which holds according to price-cost accounting. However, the sympathy-consent process, which is open/indeterminate system, is open to opportunism. So, it allows the role of institution; 1) institutions have efficacy to control opportunistic behavior and facilitate sympathy-consent process. 2) 'Forbearance law' describes the contract law regime within hierarchy (Williamson 2009 Nobel lecture). Institutions work on the actions of relation exchange (Rhee 2016b, 2016c). Transactions are matched with institutions in a discriminating way (Williamson 1979).

(9) Contracts

The indescribability of contingences is translated into verifiable states of nature, which means to indicate the sympathy-consent process being considered as stochastic process (Maskin and Tirole 1999a). Contractual incompleteness is dealt with probabilistic forecasting of possible future payoffs (Maskin and Tirole 1999a). Incomplete contracting is dealt with by the ownership of residual rights of control (Grossman and Hart 1986). Modern property rights school studies as such attempt to translate cases of sympathy-consent process into deductive models of value-cost accounting. That is not real life stories of the empiricism. Real life stories of the empiricism are relational contracting (recurrent, idiosyncratic) (Williamson 1979), asset specificity leading to hold-up (Klein et al 1978; Williamson 1979, 1985, 2000, 2009). Indescribability of contingencies gives rise to incomplete contracting (Grossman and Hart 1986).

(10) Entrepreneurship

If value-cost rationality is presumed, profit maximization and cost minimization squeeze out the role of entrepreneur. Pure price-cost competition is not compatible with entrepreneurship. However, in economics of the empiricism, entrepreneurship becomes a catalyst or leverage factor of the sympathy-consent process (Williamson 1990). Not only innovation but also business models of entrepreneurship are efficacious in the working of sympathy-consent process and relation exchange.

IV Sympathy-consent process and incomplete contracting

Coase's question 'firm or market' (Coase 1937) became the question of the century and prolific source of new thinking in economics. Transaction cost (Coase 1960) is supposed to answer the question. However, Klein et al (1978) raised dissenting voice by underscoring the

complexity of the problem. Asset specificity and ensuing hold-up problem opened “Pandora Box” (Williamson 2009). Nevertheless, Williamson preached transaction cost economics all through his life. However, we should note that most of Professor Williamson’s discourses (1990, 1975, 1979, 2000, 1985, 2009) were about real life stories rather than the strict deductive reasoning of transaction cost economics. Undergraduate education at Carnegie Mellon laid a firm ground of his intellectual underpinning. He was highly inspired and influenced by Herbert Simon (Williamson 2009).

Transaction cost belongs to the category of closed/determinate system. Coase’s question is a real life story, which reveals open/indeterminate system. That is why we cannot avoid the encountering of Frank Knight (1921) puzzle. Tracy Lewis’ version: “because an established firm can always ‘use the input exactly as the newer entrant would have used it...[and can furthermore] improve on this by coordinating production from his new and existing inputs’ the large firms will always realize greater value (Lewis, 1983, p. 1092). Transaction cost economics examines this argument by postulating two mechanisms – replication and selective intervention – which, if they could be implemented, would support the all-purpose superiority of larger firms... Why can’t a large firm do everything that a collection of smaller firms can do and more?” (Williamson 2009). We cannot extend closed/determinate system to explain open/indeterminate system.

Grossman and Hart (1986), Hart and Moore (1988) paid attention to the incompleteness of contracts. The source of incompleteness is bounded rationality (Simon 1957, 1959) (Smith and King 2009). Incompleteness of contracts or indescribability of physical contingencies (Maskin and Tirole 1999a) all belongs to the category of real life story, which is open/indeterminate system. They are stories of sympathy-consent process. However, when they (Grossman and Hart 1986; Hart and Moore 1988; Maskin and Tirole 1999a) introduced models to incorporate the story into, the models were closed/determinate system. The result is “hopelessly unrealistic” (Maskin and Tirole 1999a). Reason is that they described the story of value-cost rationalism, not the story of empiricism or story of sympathy-consent process. So, they failed in “modeling bounded rationality” (Maskin and Tirole 1999a).

Bounded rationality means to indicate real life story of the empiricism (Simon 1959). It belongs to the open/indeterminate system where human behavior and decisions for action are directed by the inductive reasoning (Rhee 2016b). Inductive reasoning follows the dictation of experiences (Hume 1739).

Proposition (MPR not compatible with SCP): In normal condition, the value-cost rationality models of modern property rights (MPR) school are not compatible with sympathy-consent process.

Proof: In normal condition, sympathy-consent process does not include the sympathy-consent-free condition (Rhee 2012b, 2016b). The value-cost rationality models belong to closed/determinate system (Rhee 2013b). On the other hand, sympathy-consent process

indicates open/indeterminate system. Hence, they are incompatible.⁴□

Proposition (MPR not compatible with SCP) demonstrates the power of the relation exchange economics (Rhee 2012b). The dichotomy between value-cost rationalism and empiricism, which is the finding of relation exchange economics, enables the vindication that the value-cost rationality models of modern property rights (MPR) school does not represent bounded rationality property of human behavior.

V Concluding remarks

Relational contracting (Macneil 1987; Williamson 1985), asset specificity and holdup (Klein et al 1978; Williamson 1979), incomplete contracts (Grossman and Hart 1986; Hart and Moore 1988), principal-agent problem (Holmstrom and Milgrom 1991), and indescribability of contingencies (Maskin and Tirole 1999a) are the practical answers of real life story to Coase question of firm or market. However, there is ambiguity and confusion between real life story and economic modeling or inductive reasoning of the empiricism and deductive reasoning of value-cost rationalism. The contribution of this paper is the distinction between the open/indeterminate system of the empiricism model and closed/determinate system of the value-cost rationality models. Also, the finding of sympathy-consent-free states allows the holding of grip on penetrating analytical apparatus which integrates the open/indeterminate system of the empiricism model and closed/determinate system of the value-cost rationality models.

The dichotomy between value-cost rationalism and empiricism allows the vindication that not the value-cost rationality models of modern property rights (MPR) school, but the sympathy-consent process of empiricist approach represents bounded rationality property of human behavior.

References

Akerlof, G. (1970), "The case against conservative macroeconomics: an inaugural lecture," *Economica*, 46(183), 219-237.

_____ (1980), "A theory of social custom, of which unemployment may be one consequence," *Quarterly journal of economics*, 94, 219-237.

_____ (1982), "Labor contracts as partial gift exchange," *Quarterly journal of economics*,

⁴ Proof may use the property of path dependence. Sympathy-consent process is path dependent. Value-cost rationality models do not hold the property of path dependence. Hence, they are incompatible.

97(4), 543-569.

Alchian, Armen A. and Harold Demsetz (1972), "Production, information costs, and economic organization," *American economic review*, 62(5), 777-795.

Arrow, K. J. and G. Debreu (1954), "Existence of an equilibrium for a competitive economy," *Econometrica*, 22, 265-292.

Arrow, K. J. and F. H. Hahn (1971), *General competitive analysis*, San Francisco: Holden Day.

Kenneth G. Binmore (2011), *Rational decisions*, Princeton University Press.

James M. Buchanan and Gordon Tullock (1962), *The Calculus of Consent*, Ann Arbor: University of Michigan Press.

Coase, R. (1937), 'The Nature of the Firm,' *Economica (New Series)*, 4(16): 386-405.

_____ (1960), 'The Problem of Social Cost,' *Journal of Law and Economics*, 3(1): 1-44.

_____ (2006), 'The Conduct of Economics: The Example of Fisher Body and General Motors,' *Journal of Economics and Management Strategy*, 15(2): 255-278.

Grossman S. and O. Hart (1986), "The costs and benefits of ownership: a theory of vertical and lateral integration," *Journal of political economy*, 94(4), 691-719.

Hart, O. (1989), "An economist's perspective on the theory of the firm," *Columbia law review*, 89(7), 1757-1774.

_____ (1990), "Is 'bounded rationality' an important element of a theory of institution?" *Journal of institutional and theoretical economics*, 146, 696-

_____ (1993), "An economist's view of fiduciary duty." *University of Toronto law journal*, 43, 299-313.

Hart, O., and J. Moore (1988), "Incomplete contracts and renegotiation," *Econometrica*, 56, 755-786.

_____ (1990), "Property rights and the nature of the firm," *Journal of political economy*, 98(6), 1119-1158.

_____ (1999), "Foundations of incomplete contracts," *Review of economic studies*, 66, 115-138.

Holmstrom, B. (1989), "Agency costs and innovation," *Journal of economic behavior and organization*, 12(3), 305-327.

_____ (1999), "The firm as a subeconomy," *Journal of law, economics and organization*, 15(1), 75-102.

Holmstrom, B. and P. Milgrom (1991), "Multi-task principal-agent analyses: incentive contracts, asset ownership, and job design," *Journal of law, economics and organization* 7(special issue), 24-52.

_____ (1994), "The firm as an incentive system," *American economic review* 84(4), 972-991.

David Hume (1739), *A Treatise of Human Nature*, edited by David Fate Norton and Mary J. Norton, New York: Oxford Univ. Press, 2000.

_____ (1748), *An Enquiry concerning Human Understanding*, edited by Tom L. Beauchamp, New York: Oxford Univ. Press, 1999.

_____ (1751), *An Enquiry Concerning the Principles of Morals*, edited by J. B. Schneewind in 1983, Hackett Publishing Company, Indianapolis-Cambridge.

Jensen, Michael and William Meckling (1976), "Theory of the firm: managerial behavior, agency costs, and ownership structure," *Journal of financial economics*, 3(4), 305-360.

Kahneman, Daniel (2003), "Maps of bounded rationality: psychology for behavioral economics," *American economic review*, 93(5), 1449-1475.

Kahneman, D., and Tversky, A. (1979), "Prospect theory: an analysis of decision under risk," *Econometrica*, 47, 263-291.

Kahneman, D., J. Knetsch, and R. Thaler (1986), "Fairness as a constraint on profit seeking: entitlements in the market," *American economic review*, 76(4), 728-741.

Klein, B., R. G. Crawford and A. A. Alchian (1978), 'Vertical Integration, Appropriable Rents, and the Competitive Contracting Process,' *Journal of Law and Economics*, **21**(2): 297-326.

Knight, Frank (1921), *Risk, uncertainty, and profit*, New York: Houghton Mifflin.

Lewis, Tracy (1983), "Preemption, divestiture, and forward contracting in a market dominated by a single firm," *American economic review*, 73(5), 1092-1101.

Macneil, Ian (1987), "Relational contract theory: a reply to professor Lindenberg and de Vos," *Journal of institutional and theoretical economics*, 143(2), 272-290.

Maskin, E. and J. Tirole (1999a), "Unforeseen contingencies and incomplete contracts," *Review of economic studies*, 66, 83-114.

Menard, C. (1995), "Markets as institutions versus organizations as markets? Disentangling some fundamental concepts," *Journal of economic behavior and organization*, 28, 161-182.

Polanyi, Karl (1944), *The great transformation: the political and economic origins of our time*, Amereon House.

Rhee, Sung Sup (2009), 'Jaedo wa Saupsim Kyongjaehak (institutions and entrepreneurship),' *Jaedo wa Kyongjae (Review of Institution and Economics)*, 3(2), 37-60.

- _____ (2012a), ‘Sijangkyohwan, Kwankaejok Kyohwan, Sijangkineung wui Jaedojok Hyeongsik (market exchange, relational exchange, and institutional mode of market function),’ *Jaedo wa Kyongjae (Review of Institution and Economics)*, 6(1), 61-82.
- _____ (2012b), ‘KwankaeKyohwanKyongjaehak (Relation Exchange Economics),’ *JaedoWaKyongjae (Review of Institution and Economics)*, 6(2), 123-151.
- _____ (2012d), ‘Is the Rule of Law Friendly with Exchange Activities?,’ *Jaedo wa Kyongjae (Review of Institution and Economics)*, 6(3), 19-48.
- _____ (2013b), ‘YulrinKyongjaehak qua DatchinKyongjaehak (Open System of Economics vs. Closed System of Economics),’ *JaedoWaKyongjae (Review of Institution and Economics)*, 7(2), 13-43.
- _____ (2014c), ‘Relation Exchange and the Sympathy-Consent Dimension,’ revised version of ‘Imperfect Property Rights, Bounded Rationality and Relation Exchange’ which was presented at the Inaugural WINIR Conference on 11-14 September, 2014, London, UK.
- _____ (2016a), ‘Reinterpretation of finance as relation exchange in the sympathy-consent dimension,’ presented at 2016 KEA-KAEA annual conference, August 8-9, 2016, Seoul, Korea.
- _____ (2016b), “Economics of empiricism and relation exchange,” presented at 2016 WINIR conference in Boston, U.S.A.
- _____ (2016c), ‘Spontaneous order of relation exchange as the integral system of analytics for the study of public administration,’ *JaedoWaKyongjae (Review of Institution and Economics)*, 10(3), 119-149.
- Simon H. A. (1957), *Models of Man*, New York: Wiley.
- _____ (1959), “Theories of decision-making in economics and behavioral science,” *American economic review*, 49, 253.
- _____ (1979), ‘Rational decision-making in business organizations,’ *American Economic Review* 69: 495-501.
- _____ (1983), *Reason in Human Affairs*, Stanford, DA: Stanford Univ. Press.
- _____ (1996a), *Models of My Life*, MIT Edition, Cambridge, MA: MIT Press.
- Smith, A. (1759), *The Theory of Moral Sentiments*, reprint edition by D. D. Raphael and A. L. Macfie, Liberty Classics (1976), Oxford: Oxford University Press.
- Smith, G. and B. King (2009), “Contracts as organizations,” *Arizona law review*, 51(1), 1-45.
- Tirole, J. (1999), “Incomplete contracts: where do we stand?” *Econometrica*, 67(4), 741-784.
- Williamson, O. E. (1975), *Market and Hierarchies: Analysis and Antitrust Implications*, New York: Free Press.
- _____ (1979), “Transaction-cost economics: the governance of contractual relations,” *Journal of law and economics*, 22(2), 233-261.

- _____ (1990), *Organization theory: from Chester Barnard to the present and beyond*, edited by Oliver E. Williamson, Oxford university press.
- _____ (1990), “Chester Barnard and the incipient science of organization,” *Organization theory: from Chester Barnard to the present and beyond*, edited by Oliver E. Williamson, Oxford university press.
- _____ (1985), *The economic institutions of capitalism: firms, markets, relational contracting*, New York: Free Press.
- _____ (1986), *Economic organization: firms, markets, and policy control*, New York University Press, New York, NY.
- _____ (2000), “The new institutional economics: taking stock, looking ahead,” *Journal of economic literature*, 38, 595-613.
- _____ (2009), “Transaction cost economics: the natural progression,” Nobel prize lecture, [//www.nobelprize.org/laurates/Williamson](http://www.nobelprize.org/laurates/Williamson).

Figure 1

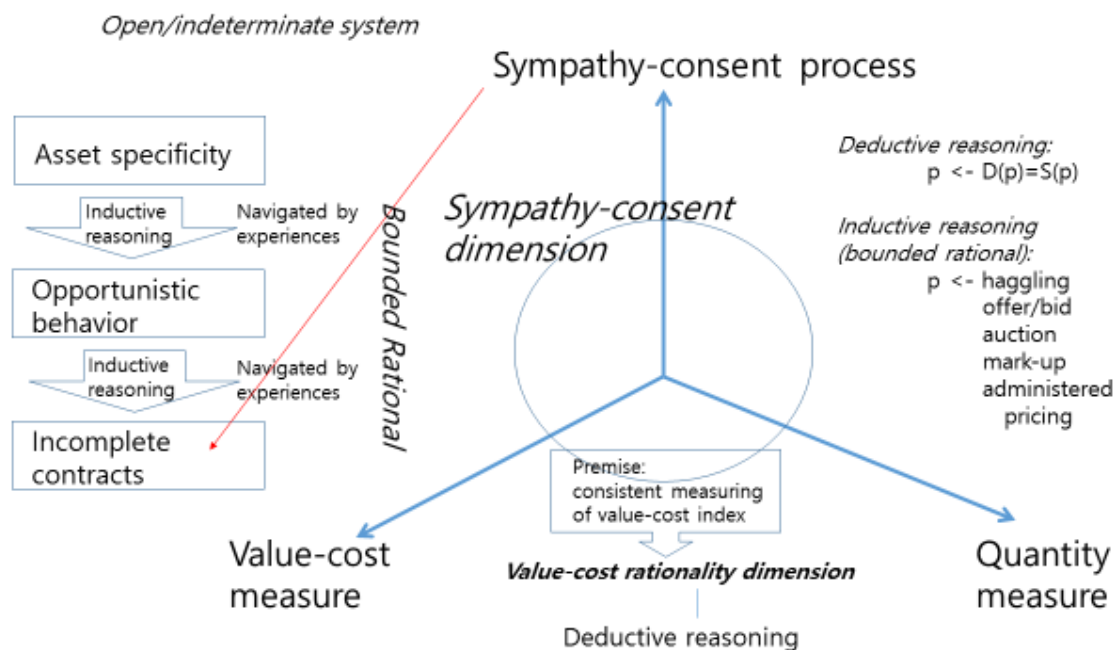


Table 1

| | | |
|--|------------|------------------------|
| | Empiricism | Value-cost rationalism |
|--|------------|------------------------|

| | Open /indeterminate system (OIS) | Sympathy-consent process (SCP) | Inductive reasoning | Closed /determinate system (CDS) | Sympathy-consent free (SCF) | Deductive reasoning |
|----------------------|--|---|---|---|--|---|
| Bounded rationality | Impression (epistemology: Hume 1739, 1748); human cognitive system (Kahneman 2003) | Sympathy (Hume 1739; Smith 1759), Consent (Buchanan and Tullock 1962) | Organizational behavior (budget planning: Simon 1996a); indescribability of contingencies (Tirole 1999); asset specificity, opportunism, increasing cost of contracting and vertical integration (Klein et al 1978) | Optimization-equilibrium algorithm | Perfect foresight | Indescribability of contingencies being translated as stochastic actions (Maskin and Tirole 1999a); |
| Path dependence (PD) | PD upheld by empiricism epistemology (impression Hume 1739, 1748) and human cognitive system (Kahneman 2003) | Reference point of prospect theory (Kahneman and Tversky 1979) | Relational contracting between GM and Fisher (Williamson 1985, Klein et al 1978, Coase 2006) | Optimization-equilibrium algorithm squeezing out the possibility of PD (Rhee 2012b) | SCF indicating value-cost rationalism. So, no PD. | Deductive reasoning conflicts against PD. |
| Market | Market is what to build or what is changing; market or hierarchy | May fail without trust (lemon market: Akerlof 1970) | Relational contracting (recurrent, idiosyncratic) (Williamson 1979); | What is given | Value-cost measure replacing SCP; purchasing standard material | Market clearing: $D(p)=S(p)$ |

| | | | | | | |
|---------------------|---|---|--|--|---|---|
| | (Williamson 1975, 1979) | | transaction attained by SCP (Rhee 2016a, 2016b) | | (non-specific, recurrent) (Williamson 1979) | |
| Exchange | Relation exchange (exchange by SCP: Rhee 2012b); entrepreneur's role as exchange catalyst (Rhee 2009) | Exchange by trust (lemon market: Akerlof 1970); relation exchange (Rhee 2012b, 2016b) | Relational contracting between GM and Fisher (opportunistic: Klein et al 1978 versus trustable: Coase 2006) | Exchanges being determined solely by partial or general equilibrium system | Exchange by price (value exchange: Rhee 2012b) | Optimization-equilibrium algorithm as the backdrop of exchange |
| Price | Inductive price determined by haggling/offers-bid/auction/mark-up/administered pricing (Rhee 2016a) | The process of haggling/offers-bid/auction/mark-up/administered pricing as a part of SCP (Rhee 2016a) | Price being determined by the SCP (Rhee 2016a, 2016b) | Price being determined by partial and general equilibrium system | Consistency in the measuring of value-cost index assumed as premise (Rhee 2016b) | Price being determined by market clearing $D(p)=S(p)$ |
| Transaction cost TC | Measuring TC is untenable in OIS. | SCP and TC are two different (orthogonal) analytical dimensions (see the figure). | TC is the approach of deductive reasoning; Williamson (1979)'s discourses on inductive reasoning to address the instances of empiricist life while pretending to claim TC economics. | TC is compatible with CDS. | Measuring of TC implicitly assumes SCF condition. SCF states indicate the condition of zero (or constant) TC. | TC attempts to identify institution by deductive reasoning with cost measure. |

| | | | | | | |
|-------------|---|---|--|--|--|--|
| Opportunism | OIS is open to opportunistic behavior. | Hold-up is a possibility of SCP. | Asset specificity-hold-up (Klein et al 1978, Williamson 1979) as a case of inductive reasoning | By assuming of the consistency of value-cost measuring, opportunism turns to price-cost competition. | The instantaneous attaining of SCP squeezes out the possibility of opportunism. | Deductive reasoning conducted by perfect price-cost competition, which does not allow opportunism. |
| Institution | OIS is open to opportunism. So, it allows the role of institution. | 1) Institutions have efficacy to control opportunistic behavior and facilitate SCP. 2) 'forbearance law' to describe the contract law regime within hierarchy (Williamson 2009 Nobel lecture) | Institutions work on the actions of relation exchange (Rhee 2016b, 2016c); Transactions being matched with institutions in a discriminating way (Williamson 1979). | Institutions are external factor to the exchange transaction. | Price-cost competition, not SCP, holds. Institutions are exogenous factor and cannot affect exchange directly. | Institutions are exogenous to the deductive reasoning which holds according to price-cost measure. |
| Contracts | Indescribability of contingencies gives rise to incomplete contracting (Grossman and Hart | Relational contracting (recurrent, idiosyncratic) (William | Asset specificity leading to hold-up (Klein et al 1978; Macneil 1987; Williamson | Contractual incompleteness being dealt with probabilistic forecastin | Indescribability of contingencies turning to verifiable state of nature; SCP being | Incomplete contracting being dealt with by the ownership of residual rights of control (Grossman |

| | | | | | | |
|---------------------------|---|--|---|--|--|--|
| | 1986) | son 1979) | 1979, 1985, 2000, 2009) | g of possible future payoffs (Maskin and Tirole 1999a) | considered as stochastic process (Maskin and Tirole 1999a) | and Hart 1986) |
| Entrepreneur ship (EP) | EP is viable only in OIS (Rhee 2009, 2013b). | EP is a catalyst or leverage factor of SCP (William son 1990). | Not only innovation but also relation exchanges are efficacious in the business models of EP. | Cost-price efficiency drives out the room for EP. | Price-cost competitio n replacing EP. | Profit maximizati on and cost minimizati on squeezing out the role of EP. |