제도와 경제
제13권 제1호, 2019년 2월, 31-68
(사) 한국제도·경제학회

Review of Institution and Economics
Volume 13, No. 1, February 2019, 31-68
Korea Institution and Economics Association
https://doi.org/10.30885/RIE.2019.13.1.031

The Institutional Modality of Market with an Application to Financial Assets*

Sung Sup Rhee rheess@ssu.ac.kr

Emeritus professor at Soongsil University, Korea.

<Contents>

Abstract

The sympathy-consent dimension provides the analytics which is able to explain the economic problems that may arise from the interpersonal relations between and among bounded-rational agents. It is the open/indeterminate system which contrasts with the closed/determinate system of the value-cost rationality dimension. What difference does this dichotomy in analytics(Hume's divide) make in economic phenomena? One clear example is the wavering behavior which means to indicate the shying actions away from the market. Wavering action is in fact a causal root core reason for Akerlof's lemon market failure(1970). Institutional modalities of the market are learned from the experiences as a way to rein in the opportunistic behaviors of relation exchanges and to soothe the wavering behavior. When human beings were born to the primitive jungle, it was the anomie state of opportunistic behaviors of relation exchange. By developing technological innovations and institutionalized standards, human beings succeeded in building the modes of competition out of the anomie, thus holding the wavering action in check and triggering the explosive expansion of exchange transactions. The market is the most developed mode of competition.

Key words: Sympathy-consent dimension, Institutional modality, Opportunistic behavior, Wavering, Price-setting schemes, Inductive price.

* This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2018S1A5A2A01029958).

> "*In the real world, each market is entwined with other institutions and a particular social culture. Accordingly, there is not just one type of market but many different markets, each depending on its own inherent rules, cultural norms, and institutional makeup. Differentiating markets according to textbook typology, from prefect competition through oligopoly to monopoly-is far from the whole story. Institutions, routines, and culture have to be brought into the picture.*"
>
> *Geoffrey M. Hodgson (2015 page142)*

I. Introduction

One of embarrassing questions to economists is what the market is. The reason is because contemporary economics(rational agent model) fails to recognize the institution in its analytical architecture (Hodgson 1988). Especially, the rational agent model(RAM in short) is built on the analytical architecture by means of the indices of value-cost measure as the instrument. It is impossible to recognize the institution by means of the value-cost measure indices only. For instance, it is not possible to recognize the institution by means of, say, transaction cost only (Klein et al 1978). We need additional analytical dimension, which is the sympathy-consent dimension(Rhee 2012b, 2018a, 2018c).

Coincidence matters in the sympathy-consent dimension(Rhee 2012b, 2013b, 2018a, 2018c). Coincidental experiences give rise to consequential effects. The making of relationship is typical phenomena. We may track the philosophical ground of such tradition from Hume's epistemology (Hume 1739). It is the world of the empiricism. The world of the empiricism is the open/indeterminate system(Rhee 2013b). As utilitarian decision maker, human beings seek the actions of relation exchange. Every relation exchange gives rise to the division of labor, which benefits all the participants(Smith 1776 book 1, chapter 1). The open/ indeterminate system indicates the indeterminateness of the actions of relation exchange. It could be either trustable relationship or opportunistic behavior. Hence, we need morality, laws and regulations. They are the institutions which rule the indeterminateness of the actions

of relation exchange. Market is built on such institutions.

Upon the analytical ground of empiricism approach, the recognition of market modality will be discussed from four different angles: exchange specificity (Williamson 1975, 1985), rule of game, property rights, and exchange format. The price is determined by the price setting scheme, which is nothing but the sympathy-consent process. It may be called as inductive price. Inductive price is determined by the exchange formats such as haggling, ask/bid, auction, mark-up pricing or administered pricing. They are different from deductive price, which is determined by the market clearing system D(p)=S(p).

Section II will track down the evolutionary development of exchange modality. To underline the sympathy-consent dimension as a necessary condition for analytics, the interpretation according to the relation exchange model(RXM in short) approach is compared with that of the RAM(rational agent model) approach. An analytical ground will be explored to illustrate the legitimacy for the study of the institutional modality of market in Section III. The fundamentality of the sympathy-consent dimension is explained by human cognitive system. The legitimacy requires the separation of the open/indeterminate system from the closed/determinate system, which is denoted by Hume's divide. Inductive price is defined by the price setting schemes. The logic for the illucidation of the efficacy of market institutions on exchange trading conditions is drawn out from the analytics of Hume's divide in Section IV. In Section V, the analytical apparatus which is explored in this study is applied to the markets of financial assets to illustrate the institutional modalities of respective markets.

II. Evolutionary Changes of the Exchange Modality

How the markets appear? How to create the market? It is quite an unfamiliar question to economists(Hodgson 2015). Economists are used to exercise their reasoning in the rationality dimension. In other words, the analytical reasoning of economists is confined by the structure which is set by the RAM(rational agent model)(Arrow 1951; Arrow and Debreu 1954). The RAM presumes the market as given from the beginning(determinate model: Roth 2002).

However, the question as such is a natural question to those who

conduct their reasoning in the dimension of empiricism(Rhee 2018a). Market is not legitimately conceived as being given at the outset. Then, it has to be built through the track of anthropological development.

Table 1 unfolds an analytical structure of the exchange modality which developed along the evolutionary tracks of the market. Such analytical structure of exchange modality is absent in the approaches of the RAM. Market institution belongs to the domain of the sympathy-consent dimension. The analytical reasoning of the RAM belongs to the domain of the value-cost rationality dimension. The two analytical dimensions, sympathy-consent dimension and value-cost rationality dimension, are completely separated from each other(Rhee 2018a, 2018c).[1)] The former is an indeterminate system, whereas the latter is a determinate system. Hence, the institutional modules of the market, which belongs to the indeterminate system, are unable to appear in the analytical reasoning of the RAM, which belongs to determinate system(Rhee 2018a).

1. RXM approach being compared with RAM approach

Table 1 compares the relation exchange model(RXM in short) with the RAM in order to envision the difference of perspective in the analytical exposition of the institutional modalities of exchange and their evolutionary changes.

Most of all, the systemic difference has to be understood between RXM and RAM. The RXM is the open/indeterminate system, which belongs to the analytical domain of the empiricism(Hume 1739). It is the domain of the bounded rationality(Kahneman 2003; Rhee 2018a). In this domain, every phenomenon is conceived as indeterminate/coincidental/path-dependent(ICP in short) incidence(Rhee 2018a).

On the other hand, the RAM is the closed/determinate system. It is the domain of the value-cost rationalism(Rhee 2018a). This system is built on the premise that every economic phenomenon is consistently identified by the measure of value-cost indices(Rhee 2018c). *Ceteris paribus* seemingly refers to this premise, although, very often than not, it is not explicitly mentioned. Later on, the premise will be recalled as CMVCI(consistent measuring of the value-cost indices: Rhee 2018a). Every economic incidence is identified as the outcome of the behavior according to the optimization-equilibrium algorithm. Economic incidence

1) It will be denoted as Hume's divide in Section Ⅲ.

is closed and becomes determinate by the working of the optimization-equilibrium algorithm in the RAM.

The two systems are completely divided as separate systems (complement sets: Rhee 2018c).[2)]

It is the human cognitive system of the behavioral economics(Tversky and Kahneman 1981, 1983; Kahneman and Tversky 1979) that upholds the theoretical footing of the open/indeterminate system. Human beings, whose consciousness is put under the influence of the human cognitive system, are not free from the phenomena of ICP(indeterminate/coincidental/path-dependent) when the sympathy-consent process is carried out between persons(Rhee 2012b, 2018a).

The institutional modality of the market tends to be drawn up so as to stimulate the sympathy-consent process in the empiricist domain which entails the ICP phenomena.

2. The modality of exchange in the market

There is no logical ground in the RAM that argues for the modality of exchange in the market as *raison d'etre*. In the RAM, the market is assumed to exist from the outset. In the RAM, there is the logical architecture only with no existential specificity of the market which explains the operation of the economy as the extension which stretches out from the assumption. There is no real substance that gains from the experiences. In the logical architecture, the price assumes the role as the sole determiner of the exchange. The price is determined by the market clearing system D(p)=S(p).

To fill the gap between the theory and reality, the law of one price is argued as *deus ex machina* to support the theory. The actions of arbitrage are the chivalry which come by as to rescue the RAM from the abyss of gap. However, the arbitrage is the concept that belongs to the sympathy-consent dimension(Rhee 2018a).[3)] Only the experiences can verify the validity of the arbitrage argument. As the sympathy-

2) Again, let's remind of the note that the separation is denoted as Hume's divide in Section III.

3) In the literature(Persson 2018), the law of one price does not hold by the extent of transportation and transaction cost despite the force of synchronization due to the arbitrage. This is not correct in the sympathy-consent dimension. The invalidation of the law stems not from the (transportation and transaction) cost, but from the sympathy-consent process.

consent process turns out to be more fundamental than the price(Rhee 2012b, 2018a, 2018c), the euphoria is premature in the side of the RAM.

It is the sympathy-consent process, not the price that determines the exchange transaction(Akerlof 1970; Rhee 2012b). Price is a part of the sympathy-consent process. The sympathy-consent process is the ICP(indeterminate/coincidental/path-dependent) phenomena. To draw out the exchange transactions from ICP process, we need the modality of exchange in the market. Market institutions constitutes the exchange modality in the market(Hodgson 2015 section 5-2).

In this study, four phases are distinguished to configure the institutional modality of the market: market specificity, game rule, property rights, and exchange format.

Firstly, markets are separated from each other sometimes partially, sometime completely. Cell phone market is separated from orange market. Medical service market is separated from automobile market. The entity and functioning of one market is separated from those of other markets(Hodgson 2015 page 146). What divides each market from each other? It is the specific identity of the commodity. It is the specificity of fruit as a commodity, which is distinguished from apparel as another commodity. It is the same specificity as the asset specificity of Professor Williamson(1971, 1985). We will call it market specificity.

Secondly, the rule of game is another essential feature as the institutional modality of the market. It is the entrepreneurship that motivates human actions in the open/indeterminate system. With no rules of game, the state of nature is no more than a jungle where 'the war of all against all' prevails(Hobbes 1651). The rule of game draws out the competition from the anomie of the jungle. The market is the most developed mode of competition where the price works as the mediator to speed up the exchange transaction. The price is a part of the sympathy-consent process(Rhee 2018a).

Thirdly, property rights are the third essential feature as the modality of exchange in the market. There are overlaps between the rule of game and the property rights. In this paper, property rights are divided from the rule of game to underline the aspect of legal right, e.g. residual right to control, as distinguished from the aspect of game rule. The former connotes the ownership pertinence, whereas the latter connotes legal compliance.

Fourthly, exchange format should be put in place. The ICP feature

of the open/indeterminate system may unfold any development path of phenomena. Without the interruption of public policy, the exchange format may be the evolutionary outgrowth in the open/indeterminate system(Rhee 2016). Each market tends to choose a path of exchange format as the evolutionary outgrowth or by the public policy to the direction which reflects the market specificity. It could be haggling, auction, ask/bid, markup, administered pricing or any mix of either of them(Rhee 2018a).

3. Relation exchange

The RAM explains the relationship as an external condition to the exchange transaction. It affects, but does not determine the exchange transaction. The exchange transaction is determined by the market clearing system D(p)=S(p). The phenomena that the relationship affects the exchange transaction as external condition is connoted as relational exchange(Richardson 1972; Macneil 1978; Goldberg 1980; Dore 1983) or relational contracting(Williamson 1985).

In real life, the relationship or trust relation is a primitive content of sympathy and consent. It is more fundamental than the price mechanism(Akerlof 1970; Rhee 2012b, 2018a). In other words, it constitutes the exchange transaction as the proper determiner of exchange. The relationship is used as the instrument of sympathy and consent to attain the exchange(Rhee 2012b). The analytical ground for the tenet is supported by the experiments of the behavioral studies (Tversky and Kahneman 1981, 1983, 1986; Kahneman and Tversky 1979) and Humean empiricism(Hume 1739). In the bounded-rational dimension, the sympathy-consent process determines the exchange transaction(Rhee 2012b, 2018a). The price is a part of the sympathy-consent process.

The market is institutional conventions by which to rein in the human behaviors of relation exchange to speed up the exchange transactions. If the exchange is conceived as the value exchange only, we cannot explain the reason why we need the institutional conventions as the market. It supports the argument for the exchange being recognized as the relation exchange.

4. Commodity exchange

As a step forward to the illumination on the market as the institutional conventions, let's think about the commodity market firstly. The RAM approach don't have any instrument by which we can track down the steps leading to the study of commodity market in a row lining up the phases of development of the market. In the RAM approach, only the market clearing system D(p)=S(p) is available to explain the exchange. The market is presumed to be given from the outset. In the RAM approach, the barter exchange is unable to be distinguished from the exchange with money.

In the RXM approach, the market is what to build, not what is given. We already proposed a modal structure of the market, namely market specificity, rule of game, property rights, and exchange format. The commodity specificity is given as the natural disposition. The modal structure of agricultural products are naturally distinguished from that of intellectual properties. How to find the appropriate modal structure for each different market is the question of the empiricism, not the question of rational judgment. We learn from the history and experiences to arrive at the finding of appropriate modal structure for each different market.

5. Commodity exchange with money

The money makes a revolutionary change to the exchange. In the RAM approach, the money is taken for granted from the outset. It is not possible to explain the role of money in the RAM approach. The price determines the exchange, which is the outcome of the equilibrium in the market clearing system. Between money and price, there is only the distinction of nominal and real price in the RAM approach. The arbitrage is used as *deus ex machina* to explain the gap between the money as the index number of value and cost and the money as a medium of exchange. The law of one price sets out as a logical apparatus.

Most critical challenge to the RAM approach harbors from the interpretation of the exchange. In the RAM approach, the exchange is value exchange, which means to indicate the closed/determinate system. Hence, there is the choice action of either do or don't. However, in real life, most of economic states are in the open/indeterminate system(Rhee 2013b, 2018a). Wavering is the prevailing phenomena(Akerlof 1991). It

is the territory of bounded rationality. Moreover, assuming human cognitive system(Kahneman 2003), the two systems, closed/determinate and open/indeterminate systems, are complement sets(Rhee 2018c). In the territory of bounded rationality where wavering behavior is prevalent, the choice action of the closed/determinate system is not available(Rhee 2018c).

When we purchase an apparel, say suit, our decision is a choice of purchase or not purchase out of the wavering state. Even at the moment of decision, we still remain in the state of wavering. The state of wavering belongs to the sympathy-consent dimension, which settles in the open/indeterminate system. When we make decisions in the state of wavering, it means to indicate our cognizance belongs to the state of bounded rationality. In other words, we cannot run away from the state of wavering. The determinate decision of either do or don't is not available(Rhee 2018c). We assumed the bounded rationality of our intelligence.

Now, we understand why the introduction of money is the revolutionary change to the exchange. The money is the innovative device to serve as the medium of exchange, which dwindles the indeterminateness by providing a variety of business models of trading with the assistance of money, which facilitates the attainment of exchange transaction. It reduces the extent of wavering and increases the volume of trading immensely(Rhee 2018e).

By adding money to the transaction, the commodity specificity becomes refined. The rules of competition gets more sophisticated. The property rights gets strengthened. The exchange format gets extended from primitive haggling to more sophisticated auction, ask/bid, markup, and administered pricing. The appearance of money significantly extends the depth and coverage of the market.

6. Exchange with money: financial market

Exchange transaction accompanies two sides of flow; the flows of real goods on a side and money on the other. Likewise, the development of capitalism requires the parallel growth of financial market. However, financial market is built absolutely on the public confidence, which is the phenomena of sympathy-consent process.

Such phenomena of the sympathy-consent process as the public confidence is unable to be recognized in the tenet of the RAM approach.

The market is cleared by the interest rate as the price of loan. Price is determined by the market clearing system D(p)=S(p). It is a closed/determinate system, the analytics of which is unable to identify the phenomena of the open/indeterminate system like the public confidence(Rhee 2018c). The schism between theory and reality is mitigated by the efficient market hypothesis(Muth 1961; Fama 1965).

Financial market is a conspicuous example of the maxim 'The market is what to build, not what is given.' The market modality of individual financial market shapes up according to the institutional design. Every financial assets are the brainchild of institutional architecting: money, CD(certificate of deposit), CP(commercial paper), RP(repurchase agreements), stock, bond, funds, ABS(asset-backed security), option, financial futures, swap and so on. They all belong to the sympathy-consent dimension. Also, financial institutions belong to the same empiricist territory: bank, central bank, trust and savings association, financial oversight, security company, insurance, credit rating, security trading system and so forth. Regulations and rules of operation also belong to the sympathy-consent dimension.

Interest rate is not the sole determiner of financial transaction, but only a partial of the sympathy-consent process. How the interest rate is determined? It is not the market clearing system D(p)=S(p), but the exchange format like offer/bid, markup pricing, administered pricing that determines the interest rate.

<Table 1> The modality of exchange and its evolutionary changes

	Relation exchange model(RXM)	Rational agent model(RAM)
The analytical ground of exchange modality	(1) Open/indeterminate system (2) Human cognitive system and the sympathy-consent process	(1) Closed/determinate system (2) Optimization-equilibrium algorithm and market clearing system D(p)=S(p)
The modality of exchange in the market	(1) The sympathy-consent process as the determiner of exchange (2) Market institution as the modality of the market	(1) The price as the unique determiner of exchange (2) Price determined by the market clearing:

	(3) Institutional modality: market specificity, game rule (competitive order), property right, exchange format	D(p)=S(p) (3) The law of one price
Relation exchange	(1) Relationship as the primitive contents of sympathy and consent (2) Institutional conventions as the instrument by which to rein in the human behaviors of relation exchange: morality, law, regulation (3) Relationship used as the instrument of sympathy and consent to attain the exchange(Rhee 2012b) (4) The price as a partial of the sympathy-consent process	(1) Relationship assumed as environmental condition to the market clearing system (2) Relational exchange (Richardson 1972, Macneil 1978, Goldberg 1980, Dore 1983)
Commodity exchange	(1) Commodity specificity given as natural disposition (2) From predatory monopoly to fair competition institutionalized as conventions (3) Property rights being established either as the natural turnout of evolution or as the fundamental human right (4) Haggling as a primitive mode of exchange format	(1) Nothing but relying on market clearing D(p)=S(p) for the attainment of exchange, which is unrealistic. (2) No distinction between barter exchange and the exchange with money

Commodity exchange with money	(1) The appearance of money significantly extends the depth and coverage of the market: commodity specificity, rules of game, property rights (2) Exchange format being extended from haggling to auction, ask/bid, markup, administered pricing	(1) The role of money taken for granted from the outset (2) Market being cleared by price (3) Price being determined by market clearing: D(p)=S(p) (4) The distinction between nominal and real price (5) The law of one price
Exchange with money: financial market	(1) The making and growing of financial market extend the depth and coverage of the market economy. (2) The financial market is built absolutely on public confidence, which is the phenomena of sympathy-consent process. (3) The market modality of individual financial market shaping up to the institutional design: market specificity, rule of game, property rights (4) interest rate as a partial of the sympathy-consent process to attain the exchange transaction (5) The exchange format mostly relying on offer/ bid, markup pricing, administered pricing	(1) Market being cleared by interest rate as the price of loan (2) Price being determined by market clearing: D(p)=S(p) (3) Efficient market hypothesis

III. Hume's Divide

The creation of market is conceived as the building of market modality. Is the legitimacy of such argument grounded on the analytical reasoning? It is not an easy question. In fact, the economics has not been successful in answering the question(Hodgson 2015: 130; Coase 1960; Williamson 1971, 1975). The sympathy-consent dimension(Rhee 2012b, 2013b, 2018a, 2018c) may be the first successful attempt to provide an analytical ground on which the argument can secure the foothold. In this paper, there is no intention to introduce a literature survey on this problem. Instead, we will move directly to the discourse on the argument and leave the literature survey to Rhee(2018b) and author's forthcoming book(Rhee 2019).

1. The fundamentality of the sympathy-consent dimension

The validity of the argument 'The creation of market is conceived as the building of market modality' relies on the establishment of the sympathy-consent dimension as the analytical dimension, the legitimacy of which should not be vulnerable despite the existence of the market clearing system(Rhee 2012b, 2018a). The first attempt was carried out in Rhee(2012b), in which the path dependency as the attribute of the sympathy-consent process was made use of to verify the fundamentality of the sympathy-consent process by revealing that the price determination becomes path dependent.

The fact that price determination becomes path dependent means to indicate the fundamentality of the sympathy-consent process in comparison with the market clearing system which determines the making of price.

We already discussed the ICP(indeterminate, coincidental, path dependent) attribute of real-life phenomena, which extend the attribute of path dependence to ICP phenomena. Then, what is the logical ground for the taking of ICP phenomena as the efficacious concept which mimicking the real life. In this regard, the human cognitive system should be put in order to illuminate on the empiricist world or sympathy-consent dimension(or bounded rationality dimension)(Rhee 2018a).

2. Human cognitive system

Are human beings rational? The experiments of behavioral studies consistently refuted the tenet of the RAM(rational agent model)(Tversky and Kahneman 1981, 1983, 1986; Kahneman and Tversky 1979). Human cognition begins with the perception, which leads to intuition and reasoning. According to Kahneman(2003), human beings have two cognitive systems, namely cognitive system 1 and cognitive system 2. The system 1 is the integrated system of perception and intuition. The integrated cognitive process of the system 1 works fast, in parallel, automatically, effortlessly, associatively, as a slow-learning system, and emotionally(Kahneman 2003). It is a more accessible cognitive system(Higgins 1996).

On the other hand, the cognitive system 2 works slowly, serially, in controlled manner, effortfully, as a rule-governed system, flexibly, and neutrally(Kahneman 2003). It is a less accessible cognitive system (Higgins 1996). The problem is that the RAM is built on the cognitive system 2, whereas human behavior is more influenced by the cognitive system1.

The RAM approach assumes the consistently measuring of the value-cost indices(CMVCI in short) as the premise of analyses. However, the experiments of behavioral studies consistently refutes the premise and supports the Untenable CMVCI(Rhee 2018a). The phenomena under the premise CMVCI is the complement set of the phenomena under the premise Untenable CMVCI(Rhee 2018c).

3. Sympathy-consent process and open/indeterminate system

In the RAM approach, the interaction between human beings carries out by the measure of value and cost. The price is determined by the market clearing system D(p)=S(p) in the market, which is the outcome of the optimization equilibrium algorithm. The RAM approach is a closed/determinate system.

However, under the premise Untenable CMVCI, the interaction between human beings cannot carry out by the measure of value and cost. The sympathy(Hume 1739; Smith 1759) and consent(Buchanan and Tullock 1962) are the sole conduit available for the interaction between individuals. It will be denoted as the sympathy-consent process(Rhee 2012b, 2018a). The fundamentality of sympathy-consent process

vindicates the legitimacy of the sympathy-consent dimension as an efficacious analytical dimension in economics(Rhee 2012b, 2018a).

As compared with the closed/determinate system of the RAM, the sympathy-consent dimension is the open/indeterminate system(Rhee 2018a). It is in this open/indeterminate system that the ICP(indeterminate/coincidental/path-dependent) attribute holds as the idiosyncratic feature of the sympathy-consent dimension. The sympathy-consent process is an indeterminate, coincidental, and path-dependent process, which is apparently different from the closed, determinate process of the market clearing system of the RAM approach. It is the territory of the empiricism, also of the bounded rationality. We also confirmed that the phenomena under the premise CMVCI is the complement set of the phenomena under the premise Untenable CMVCI(Rhee 2018c).

4. Hume's divide

Rhee(2018a) is not the first attempt to recognize the premise CMVCI. It is David Hume(1739) who introduced the principle of the uniformity of nature(PUN in short) as the requirement condition for the efficacy of the rationalism. He said, "…*that instances, of which we have had no experience, must resemble those of which we had experience, and that the course of nature continues always uniformly the same.*"(T: 1, 3, 6, 5)[4] This PUN of Hume's epistemology is precisely the same as the premise CMVCI of the RAM approach.

The significance of the PUN is in its capacity to separate the domain of rationalism from the phenomena of empiricism(Rhee 2018c, 2018d). By the jargon of economics, the domain of the premise CMVCI of the RAM approach(the value-cost rationalism) is separated from the phenomena of the premise Untenable CMVCI of the RXM approach(the bounded rationalism or the empiricism). Rhee(2018c) confirms the relationship of complement set between the domain of the premise CMVCI and the phenomena of the premise Untenable CMVCI.

Rhee(2018c) proves that the optimization-equilibrium algorithm(OEA in short) mapping in the set, which is made of the domain of the premise CMVCI, is completely divided from the SCP(sympathy-consent process)

4) T denotes *Treatise of human nature* (Hume 1739) and numbers indicate Book, Part, Section, paragraph each in serial order.

mapping in the set, which is made of the phenomena of the premise Untenable CMVCI. This division between OEA mapping and SCP mapping comes essentially from the complement set relationship between the domain of the premise CMVCI and the phenomena of the premise Untenable CMVCI.

This division, which should be appropriately reminiscent of David Hume, will be named as 'Hume's divide' in this paper. The analytical significance of this finding is immense. The phenomenal attributes of the SCP mapping is well represented by the ICP property. The significance of Hume's divide is in its capacity to uphold that the ICP properties cannot be explained by the OEA mapping(Rhee 2018d). In other words, the phenomena in the sympathy-consent dimension cannot be explained by the reasoning of the value-cost rationality dimension. It is precisely the analytical backdrop which leads to the legitimacy for the emergence of the empiricism.

The upshot of the discussion is that the phenomena of the sympathy-consent dimension, including institution, can be conceived only by the tenet of empiricism. That is, the institution can be explained only by the experiences. Likewise, the market modality can be explained by the experiences only.

IV. The Efficacy of Market institutions on Trading Conditions

Hume's divide opens the gateway to the territory of empiricism approach in economics. It is the territory where the state of phenomena carries the ICP attributes. How can we build the institutional modality of the market in the territory of empiricism? We can rely on the experiences only, which carry the ICP attributes by themselves.

The institutional modality of market is a quite unknown concept to economists. It is because we are so accustomed to the tradition of considering the market as given conditions. Economists are not accustomed to the tradition of considering the market as what to build. We have to learn from experiences and build the market modality according to the direction which is put forward by the experiences. It is the inductive reasoning of Hume's epistemology as compared with the deductive reasoning of the value-cost rationalism approach(Hume 1739). In the long run, the institutional modality of the market develops

according to the path of evolutionary process

1. The evolving modes of competition

How the market develops as the outgrowth of evolution? To answer the question, we have to put in place the contrasting concept as the counterpoint of the market. Perhaps, it is the primitive jungle(the natural state in North et al 2012) because market is the most developed mode in steps of the evolution.

The perspective according to which we understand the question of how to compare the market and primitive jungle is the critical step in the understanding of the modality of market. The problem was the lack of analytical architecture, which led to the failure to understand the market and primitive jungle as a combined process in the integrated reasoning of analyses. Such a failure stranded even the innovative minds of precursors in economics(transaction cost in Coase 1960; spontaneous order in Hayek 1973). What was lacking is the sympathy-consent dimension.

In the sympathy-consent dimension, the actions of relation exchange, which is the outcome of the sympathy-consent process, are the fundamental human behavior(Rhee 2012b). Market as well as jungle may be recognized as the different behavioral modes of relation exchange. Relation exchange forms the common ground which shoots out the actions of exchange in the market as well as the actions in the jungle(Rhee 2016).

The primitive jungle is the natural state (North et al 2012) where no men-made order, a bit unlike from the sense of Hayek(1973), is put in place. In this regard, it is the conjunction where the opportunistic actions (moral hazard, adverse selection, information asymmetry, shirking, principal-agent problem, etc.) of human behavior or of relation exchange remain at large. Market is the case where the opportunistic actions of relation exchange are reined in by the institutional modality of the market.

The first step we need to put forward before we compare the market and primitive jungle is to distinguish the competition. Strictly speaking, there is no competition in the primitive jungle. There is only Hobbesian rivalry among individuals(Hobbes 1651). It is anomie. The competition does not function in the anomie. The competition comes with rules. The steps to determine the rules in order to define the mode of the game

pertain to the domain of the sympathy-consent dimension because rules work to rein in the behavior of relation exchange.

<Figure 1> The evolving modes of competition

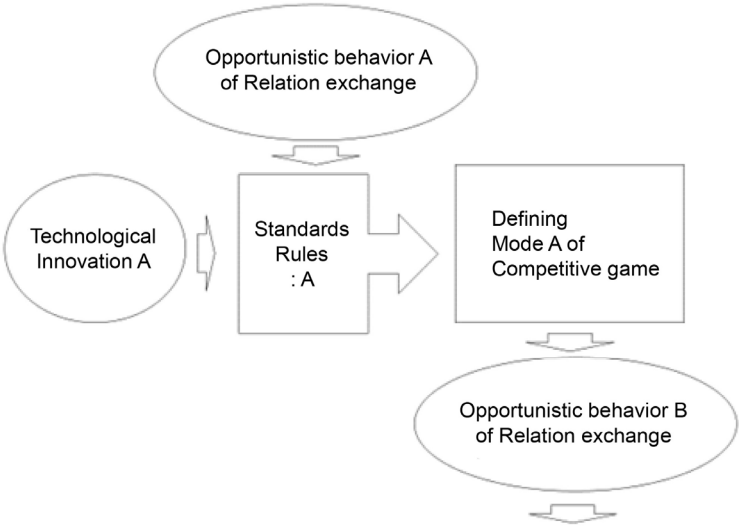


Figure 1 draws the image of the evolving modes of competition. The conceptual ideas which are implicated in the figure are manifolds. Firstly, all the opportunistic behaviors (moral hazard, adverse selection, hold-up, problems of information asymmetry, shirking, principal-agent problem, problems of asset specificity, etc.) are the actions of relation exchange. Value exchanges have nothing to do with the opportunistic behavior.

Secondly, once being challenged by opportunistic behaviors of relation exchange and also by technological innovations, human society responds by developing the new standards and rules, which defines new modes of competitive games. It is the institutionalization process of standards and rules, which belongs to the sympathy-consent dimension. Standards and rules are accepted by related individuals. It requires the sympathy and consent. It is a time-dragging process in which coincidence may often have efficacy. It pertains to the open/indeterminate system.

Thirdly, no standards and rules are perfect in the open/indeterminate system. Not any mode of competitive games is free from being vulnerable to new possible opportunistic behaviors of relation exchange.

Then, the introduction of new standards and rules is required. The evolutionary changes in the modes of competition repeat endlessly.

Fourthly, market is one of evolving modes of competition. The only distinction is the money as the innovative device which is technically useful and efficient for the exchange. The establishment of money belongs to the sympathy-consent dimension, the process of which required hundreds or even thousands of years. It had to acquire the sympathy and consent from the constituents of the community before being recognized as the medium of exchange.

2. *The institutionalization of standards*

The natural state (North et al 2012) is nothing but a primitive jungle, where the opportunistic behaviors of relation exchange remain at large and unfettered. It is the state of anomie. There is no competition in the state of anomie. Competition comes with the rules, which shape up the orderly mode of competitive system.

Table 2 highlights the institutionalization of standards as the determiner of competitive system. Rules-setting essentially stems from the standards in broad sense. The institutionalization of standards is time-dragging processes which require tens of thousands years. Upon confining the focus only on the rules which are pertinent to each of specific competitive systems, the institutionalization of standards may be classified into 1) asset specificity, 2) rules of competition, 3) property rights. All of these, from the setting of standards to the rules of game, pertain to the territory of the sympathy-consent dimension.

<Table 2> The institutionalization of standards

	Market	Competition	Primitive jungle
Behavioral modes of relation exchange	Orderly competitive system with money	Orderly competitive system	Hobbesian rivalry: opportunistic behaviors only
Institutionalization of standards	Price setting schemes: haggling, bid/ask, auction, mark-up, administered pricing	Rules of game: 1) asset specificity 2) rules of competition, 3) property rights	Anomie

Firstly, to set out an orderly mode of competitive system, we have to classify asset specificities. Why markets have to be distinguished by asset specificity? Because market or competition is not the universal concept. They belong to the domain of sympathy-consent dimension. In the open/indeterminate system of the sympathy-consent dimension, the market or competition requires the institutional modality which has to be built on the territory that is divided by according to the asset specificity.

For instance, succor has to be distinguished from baseball or basketball. Likewise, bond has to be distinguished from stock, ABS(assets-backed securities) or financial derivatives. The difference of asset specificity defines the difference of competitive system. How did we get the knowledge and knowhow that uphold the classification of asset specificities? From experiences and inductive reasoning, all of which belongs to the territory of the sympathy-consent dimension.

Secondly, the rules of competition have to be put in place to operate the competitive system. If we look closely to the competitive system, we become amazed at the magnitude of details which is required to operate the system. Rule books are required to stipulate on the game rules of succor play. Rule books become more voluminous to stipulate on the statutes of laws, administrative ordinances, organizational bylaws when being required to adjudicate in order to manage the bond issuance or bond transaction markets. Stories are not different for the financial markets of stock, ABS or financial derivatives. Again, the finding of the rules of competition pertains to the territory of the sympathy-consent dimension.

Thirdly, the property right is another institutional modality proper which is distinguished from asset specificity and rules of competition. The three are combined together to constitute the institutional modality of market, which progresses by innovative steps of institutionalization, for instance institutionalized standards. The institutional modality as such was devised to make up for the intellectual cavity which stems from the bounded rationality. The rules of property rights were established from the historical backdrop of institutional evolution for tens of thousands years. Still, they are far from perfection when being applied to the specific cases of controversy. Essentially, the problem of property rights pertains to the territory of the sympathy-consent dimension.

3. Price-setting schemes and inductive price

One essential factor which distinguishes the market from other modes of competitive system is money. However, the establishment of money, either in the form of precious metal like gold or as a legal tender, took a long time and history in the backdrop, which pertains to the territory of the sympathy-consent dimension. The establishment of money requires the sympathy and consent of the constituency. [5)]

By the assistance of money, the exchange in the market takes place by means of price, which detonated the explosion of the volumes of exchange transactions. In other words, market is what to build. By an innovative devise such as money, new exchange transactions may be created.[6)] Market operates in the sympathy-consent dimension.

In the sympathy-consent dimension, the price becomes a part of the sympathy-consent process. Unlike the textbook story, the price is not determined by the market clearing system D(p)=S(p) in real life or in the sympathy-consent dimension. It is determined by the processes of either of following schemes; haggling, bid/ask, auction, mark-up or administered pricing. The price setting schemes are themselves a sympathy-consent process. The life pertains to the sympathy-consent dimension.

It is noteworthy that the price as a part of the sympathy-consent process holds the property of path dependence(Rhee 2012b, 2018a). The evidences of price path dependency are overflowing. The starting price begins with the closing price of previous day.[7)]

The price which is determined by the price setting schemes needs to be distinguished from the price which is determined by the market clearing system D(p)=S(p). The former will be called inductive price, while the latter deductive price. Then, the price setting schemes become

---

5) It is remarkable to witness that recent public fever on the crypto-currency by means of block chain technology, which seems to vindicate the possibility of lessened requirement of time. Nevertheless, we should note it doesn't repudiate the fact that the problem to establish the crypto-currency as money requires the sympathy and consent from the public.

6) The creation of exchange transaction may come from the dwindling of wavering behavior due to the role of money as the medium of exchange.

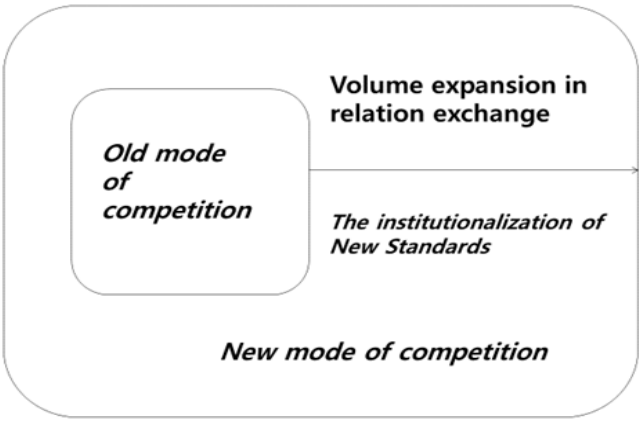
7) It is worthwhile to note that the strong version of the EMH(efficient market hypothesis) and the random walk theory of rational expectation is like assuming the immediate and frictionless fulfillment of the sympathy and consent process, which sounds surreal (Fama1965, Muth1961).

the inductive-price setting schemes.

4. Akerlof's lemon market

What are the implications on the exchange activities from the discussion heretofore on the modes of competition and institutionalization of standards? We should recollect that the exchange is essentially relation exchange in the sympathy-consent dimension. The exchange in the market is also another mode of relation exchange. It is precisely this question that the Akerlof's lemon market problem addresses on(Akerlof 1970).

<Figure 2> Expanding volumes of exchange due to the institutionalization of standards



Used car market fails to work due to buyers' suspicion on the sellers' integrity. Akerlof(1970) explained the market failure with the information asymmetry as root cause. In fact, it is the problem that pertains to the sympathy-consent dimension. The exchanges of used cars between buyers and sellers are the relation exchanges in the sympathy-consent dimension.[8] The opportunistic behavior of relation exchanges between buyers and sellers deters the emergence of the market.

8) Price is a part of the sympathy-consent process. The price catalyzes the exchange transaction. Also, the works of price are enabled by the appearance of money as the medium of exchange. All of which are the phenomena of the sympathy-consent dimension.

Figure 2 presents the conceptual image of the effects of the institutionalized standards on the volume expansion of exchange. The introduction of effective standards tends to rein in the opportunistic behaviors of relation exchange, which soothes buyers' suspicion and rescues the market transaction. Akerlof's lemon market failure essentially is the problem which pertains to the territory of the sympathy-consent dimension.

Proposition: The relevance of the price-setting scheme to Akerlof's lemon market failure: Market-clearing system D(p)=S(p) is unable to explain the possibility of Akerlof's lemon market failure, whereas the price-setting schemes are able to track down it into the analytics.

Proof:
Akerlof's lemon market failure is in fact the wavering behavior of economic agents, which pertains to the territory of the open/ indeterminate system. Market-clearing system is the mapping in the closed/determinate system, which is disjoint with the open/ indeterminate system(Rhee 2018c). The price-setting schemes are the mapping in the open/indeterminate system. Since wavering behavior belongs to the open/indeterminate system, the market-clearing system is unable to explain the wavering behavior, whereas the price-setting schemes can catch it in its analytics.□[9)]

The significance of 'Proposition The relevance of the price-setting scheme to Akerlof's lemon market failure' is colossal. Whether the trading takes place or not is not the matter of the demand and supply schedules. Wavering behavior takes part in the trading decisions. Wavering behavior is linked to opportunistic actions. Opportunistic actions lead to the rise of wavering behavior, which presses on trading decisions. Technological innovations and the institutionalization of standards as well have been found to have the efficacy to wither the vigor of wavering behavior and enhance the trading condition. Money is a typical example of technological innovation, as well as the institutionalization of standard, the introduction of which enhanced the trading condition and increased the trading volume tremendously.

9) The full proof is provided in Rhee (2018a).

Remark: The efficacy of market institutions on trading conditions: Every market institution has efficacy on the trading conditions of the market through its effects on wavering behavior.

Proof:
Opportunistic behavior is the actions of relation exchange in the sympathy-consent dimension, which belongs to the open/indeterminate system. The Akerlof's lemon market failure or wavering behavior stems essentially from the opportunistic behavior which is really the action of relation exchange. Every market institution such as standards has efficacy on the behavior of relation exchanges. Hence, it has efficacy on trading conditions.□

Now, it has become clear how the establishment of market institutions contributed to the expansion of trading activities.

V. Institutional Modality of the Markets for Financial Assets

Financial assets are the evidences for technical innovation and institutionalized standards, each of which forms the basis of respective markets. Examples are call-loan market, RP (repurchase agreements), CD (certificate of deposit), CP (corporate paper), bond, stocks, ABS (asset-backed securities), fund, forwards, futures and swaps. Every market is propped up by technological innovations and institutionalized standards, which vindicate the legitimacy of 'Remark The efficacy of market institutions on trading conditions'.

Out of the above-listed illustration, the markets of bond, ABS (asset-backed securities), and futures will be taken arbitrarily for elucidating case examples. Institutional modality has to incorporate the idiosyncratic property of the sympathy-consent dimension into its casting. Here, four divisions are adopted: asset specificity, game rules, property rights, and pricing schemes.

Asset specificity connotes the specification of asset identity which is the outcome of financial innovation. It distinguishes one market from another. Market is one mode of competition which uses money as the means of payment. It has the rule of competition as the attribute proper. Property right is anther attribute proper of institutional modality. Price

is determined by the price setting schemes, which are distinguished from the market clearing system D(p)=S(p): haggling, ask/bid, auction, mark-up, administered pricing. The pricing schemes have the merit which is able to present Akerlof's lemon market failure in the analytics, as is discussed in 'Proposition The relevance of the price-setting scheme to Akerlof's lemon market failure.'

1. Bond market

(1) Asset specificity

Bond is IOU's. What makes the bond distinctive is its property as the financial assets which can be traded in the market. IOU's are the financial matters between two related parties; borrower and lender. Once the IOU's become bond, it becomes financial assets, which are the business matters of national economy, not just of borrower and lender. The bond becomes one of two pillars which sustain the capital market. The change of status from IOU to bond vindicates the efficacy of the argument that the market is what to build, not what is given.

<Table 3> Institutional modality of bond market

Asset specificity	Rules of competition	Property rights	Pricing scheme
1) bond as IOU 2) fixed income security 3) gov't bond/corporate bond, discount/coupon bond	1) payments and settlements 2) securities trading system 3) securities depository service 4) delivery versus payment 5) primary/ secondary market 6) credit rating assessment 7) inter-dealer brokerage 8) primary dealer system of gov't bond 9) fungible issuance of gov't bond 10) separate trading of interest and principal of securities 11) 50 year-maturity gov't bond	1) mandatory approval from the legislature for the bond issuance by government 2) BOD (board of directors) approval for corporate bond issuance 3) registration requirement at the FSC (financial supervisory commission) for the issuance of corporate bond	1) credit rating assessment 2) interest rate at primary(issuing) market: IBOR + credit rating 3) interest rate at secondary(trading) market: ask/bid

Bond is the useful vehicle of financing for the corporate firms as well as for the government. To make it as attractive financial assets for the investors, they exerted innovative endeavors to present it as fixed income security. Coupon payment is an example. By means of this device, the government could establish government bond as fixed income security and mobilize more of financial resources from the investors. Market is what to build. How to build the market? It belongs to the sympathy-consent dimension.

(2) Rules of competition

We already noted that there is no competition in the primitive jungle. Rules make the competition and determine its modal attributes. Market is a mode, but very advanced mode, of competition. The second column of Table 3 illustrates the technological innovations and institutional modalities which constitute the rules of competition in bond market. Although rules of competition and property rights are two institutional modalities proper, their distinction is not radical enough to distinguish every market institution. Hence, the second and third columns of Table 3 are the exemplary illustrations.

The payments and settlements system is an essential base ground which props up modern financial markets. Combined with digital technology and online networks, the system empowers financial markets and enables online financial trading to work. The tremendous volume of financial transactions is attained by the operation of this system, which in turn upholds the modern capitalism. The payments and settlements system, which pertains to the territory of the sympathy-consent dimension, is one of many successful examples of technological innovation and institutionalized standards. It was a human devise to respond to the challenge of the anomie which was created by the opportunistic behaviors. Either anomie or order is the concept which belongs to the domain of the sympathy-consent dimension.

The stories are similar in the case of securities trading system. Without the infra-structure of technological innovation nor the superstructure of institutional modalities, the tremendous volume of securities trading is unthinkable. Similar stories repeat in cases of securities depository service and delivery versus payment system. They are all phenomena in the open/indeterminate system and belong to the territory of the

sympathy-consent dimension. We cannot neglect the practical utility of distinguishing primary (issuing) market from secondary (trading) market, which contributes to the deepening specialization of practical expertise in the bond market.

Credit rating system needs particular explanation. When financing business is carried out personally between individuals, it doesn't require the credit rating system. Personal credit assessments suffice to deal with loan and borrowing businesses among individuals. However, in the mass financing environment of modern capitalism where indefinite number of corporate firms have to seek financing from the investments of mass public, the credit rating system became *sine qua non* of the modern capital market. It is the typical example of the sympathy-consent process. It is not a perfect system, but became an indispensible apparatus of financial markets. The fact that modern financial markets are built on the credit rating system means to indicate that modern financial markets can be understood only in the sympathy-consent dimension.

Other devices in the listing, all the functions of which belong to the sympathy-consent dimension, contributed to the development of bond financial market.

(3) Property rights

Property rights are another scheme of institutional modality. Market institutions, which are related to property rights, contribute to the laying of institutional ground for the claim of property rights in the open/indeterminate system, which is necessary to build the bond financial market. It is the kernel works of life in the sympathy-consent dimension.

To issue government bond, the approval from the legislature is mandatory. Likewise, to issue corporate bond, the approval from the board of directors is a necessary step. Also, in Korea, the registration at the FSC (financial supervisory commission) is a necessary step before issuing bond. Of course, these institutions are not perfect. Nothing is perfect in the sympathy-consent dimension or in the open/indeterminate system. In the world of empiricism, we cannot but rely on experiences. Historical evidences indicate that the market institutions as such are necessary steps to build modern property rights system.

(4) Price setting scheme

Price setting scheme demonstrates the extreme contrasts between open/indeterminate system and closed/determinate system in the analytics of determining price. In the closed/determinate system, it is the market clearing system D(p)=S(p) that determines the price. However, in the open/indeterminate system, it is the sympathy-consent process that determines the exchange transaction. Price is determined as a part of the sympathy-consent process. The analytical dimension for Akerlof's lemon market failure is contained in the open/indeterminate system. Hence, wavering behavior is included in the decisions of exchange transaction. The market clearing system is unable to contain the wavering feature of Akerlof's lemon market failure in the analytics. The logic of the story was well paraphrased in 'Proposition The relevance of the price-setting scheme to Akerlof's lemon market failure.'

The price in bond market is interest rate. The interest rate of issuing bond is determined under the influence of credit rating assessment, which is nothing but the sympathy-consent process. Things are not different in case of IBOR (inter-bank offered rates) determination, the process of which essentially pertains to the territory of the sympathy-consent dimension.

Things are not different in the secondary (trading) market. They are traded in the securities exchange market. It is the KRX (Korea Exchange) in Korea. It is ask/bid system that determines the price, which is different from the market clearing system as was illustrated in 'Proposition The relevance of the price-setting scheme to Akerlof's lemon market failure.'

2. *ABS (asset-backed securities) market*

(1) Asset specificity

The ABS market is absolutely the brainchild of financial innovation. The idea is how to draw out a highly liquid asset (ABS) from the flow of earnings revenue from the original assets of low liquidity. This idea becomes implemented into practice due to the legal empowerment of the ABS Act and the credit enhancement process.

<Table 4> Institutional modality of ABS market

Asset specificity	Rules of competition	Property rights	Pricing scheme
1) the creation of new financial assets from the flow of earnings revenue from the original assets of low liquidity 2) ABS, ABCP(asset-backed commercial paper), MBS(mortgage-based securities), CDO (collateralized debt obligations), CBO (collateralized bond obligations), CLO (collateralized loan obligations), CARD (certificates of amortizing revolving debts), Auto-loan ABS	1) payments and settlements 2) securities trading system 3) securities depository service 4) delivery versus payment 5) steps of procedure: a) The ownership of original assets shifts to the SPV (special purpose vehicle), which is the paper company set up to issue ABS. b) enhancing the credit rating of transferred assets by distinguishing senior tranche from subordinate tranche c) enhancing the credit of senior tranche by credit rating assessment d) issuing ABS from the basis of original assets	1) The legal authority for the right to issue the ABS is granted by the ABS Act. 2) The SPC (special purpose company) has to prepare ABS plan and register at the FSC (financial supervisory commission). The FSC may accept or reject the ABS plan. 3) credit enhancement process (subordination, excess spread, owner-collateralization, put-back option, originator's guarantee)	IBOR basic scheme: a) Interest rate reporting banks are selected by their weights in the market. b) Lowest/ highest margin rates are deleted from the calculation. c) The rest reported rates are averaged or the median is taken therefrom.

(2) Rules of competition

The introduction of ABS extended the scope and volume of financial markets extensively. It vindicates the efficacy of 'Remark The efficacy of market institutions on trading conditions.' Payments and settlements, securities trading system, securities depository service and delivery versus payment are the common financial infra-systems which are shared by other financial markets. The idiosyncratic feature of ABS market is the ABS issuing procedures, as illustrated in Table 4.

The legal authority for the right to issue the ABS is granted only to selected financial institutions in Korea. The steps to issue the ABS begin with the shift of ownership of original assets to the SPV (special purpose

vehicle), which is the paper company being set up to issue ABS. In order to enhance the credit rating of transferred assets, senior tranche is distinguished from subordinate tranche. The credit of senior tranche is upgraded by the credit enhancement process (subordination, excess spread, owner-collateralization, put-back option, originator's guarantee), particularly by credit rating assessment.

(3) Property rights

The relevance of 'Remark The efficacy of market institutions on trading conditions' is confirmed by the market institutions which is related to property rights. The legal authority for the right to issue the ABS is granted by the ABS Act. The SPC (special purpose company) has to prepare ABS plan and register it at the FSC (financial supervisory commission). The FSC may accept or reject the ABS plan.

The credit enhancement process (subordination, excess spread, owner-collateralization, put-back option, originator's guarantee) is the critical part of this financial innovation. Each of these steps contributes to the creation of new trading in the ABS market, which again reaffirms the validity of 'Remark The efficacy of market institutions on trading conditions.'

(4) Price setting schemes

When interest rate is determined at the issuance of the ABS, two factors work to set the rate. One is the credit rating assessment. The other is IBOR rate. As mentioned before, the credit rating process is nothing but the sympathy-consent process. The basic scheme to determine IBOR rate is as the following: a) Interest rate reporting banks are selected by their weights in the market. b) Lowest/highest margin rates are deleted from the calculation. c) The rest reported rates are averaged or the median is taken therefrom. These procedures again confirm the validity of 'Remark The efficacy of market institutions on trading conditions.'

3. The market for the financial futures

(1) Asset specificity

Financial futures are also a brainchild of financial market innovation. By the standardization of contracts, forward contracts are able to turn to the financial futures in the futures market. Options, futures and swaps are three different kinds of the derivatives market. It confirms the validity of 'Remark The efficacy of market institutions on trading conditions.'

<Table 5> Institutional modality of futures market

Asset specificity	Rules of competition	Property rights	Pricing scheme
1) turning forward contracts to financial futures by the standardization of contracts 2) forward, option, futures, swap markets	1) payments and settlements 2) securities trading system 3) securities depository service 4) delivery versus payment 5) call/put options 6) long/short positions of financial futures 7) marking to market: a) initial required margin (10-15%), b) maintenance margin/margin call 8) other market operating institutional engines: opening/closing hours	1) marking to market: a) initial required margin (10-15%) b) maintenance margin/margin call	1) ask/bid

(2) Rules of competition, property rights and pricing schemes

Payments and settlements, securities trading system, securities depository service and delivery versus payment are the common financial infra-systems which are shared also by the markets of financial futures. The call/put options and long/short positions of financial futures are the examples of institutionalized standards which distinguish the market of financial futures (Table 5).

Marking to market is the idiosyncratic system in the markets of financial futures: a) initial required margin (10-15%), b) maintenance

margin/margin call, which may be considered as either the rules of competition or rules of property rights.

Ask/bid scheme is used as the price-setting method, which is common to other securities trading. 'Proposition The relevance of the price-setting scheme to Akerlof's lemon market failure' confirms that the markets for financial futures belong to the domain of the sympathy-consent dimension.

VI. Concluding Remarks

Why economists spend most of time to discuss how the market works and fail to address the question of what the market is? More often than not, the market has been conceived as the market clearing system D(p)=S(p). Why the market has not been conceived as the institutional modality? It's because of the absence of the sympathy-consent dimension in economics. In economics, we have the value-cost measure and rational agent which combine to constitute the value-cost rationality dimension. We don't have bounded rational agents and interpersonal relations between and among individuals. In fact, institutions come out to address the problems arising from the interpersonal relations between and among bounded rational agents.

It is the sympathy-consent dimension that is lacking in economics. The sympathy-consent dimension provides the analytics which is able to explain the economic problems that may arise from the interpersonal relations between and among bound rational agents. It is the open/indeterminate system which contrasts with the closed/determinate system of the value-cost rationality dimension. What difference does this dichotomy in analytics make in economic phenomena? One clear example is the wavering behavior which means to indicate the shying actions away from the exchange. Akerlof's lemon market failure (1970) is a typical example of wavering behavior. In the market clearing system D(p)=S(p), the possibility of such shying-action is unable to be recognized because the rational agent model belongs to the domain of the closed/determinate system.[10] The wavering

10) Akerlof (1970) explained the lemon market failure as the market failure due to information asymmetry, not as the exchange failure due to the shying away (or wavering) behavior. The difference is that the latter approach allows the possibility to

behavior belongs to the open/indeterminate system.

Economists have failed to think on how to build the market. To do it, we need the open/indeterminate system. In the (bounded-rational) real life, which belongs to the domain of empiricism, people learn from the experiences. Institutional modalities of the market are learned from the experiences as the way to rein in the opportunistic behaviors of relation exchanges, which are the outcomes of the sympathy-consent process. When human beings were born to the primitive jungle, it was the anomie state of opportunistic behaviors of relation exchange. By developing technological innovations and institutionalized standards, human beings succeeded in building the modes of competition from the anomie, which enabled the calming the wavering behavior and triggered a tremendous increase in exchange transactions.

In the sympathy-consent dimension, it is the price-setting schemes, not market clearing system that determines the price. The difference between two approaches is the wavering behavior. In other words, the making of market by developing the institutional modality of the market leads to the expansion of the scope and volume of the market. In this paper the cases of financial assets (bond, ABS, financial futures) are explored to confirm the validity of the argument.

create the market by reining in the opportunistic behavior with competition rules (institutions). But the former approach cannot explain the possibility of market creation. In the former approach, the sympathy-consent dimension is lacking.

References

Bank of Korea(2016), *Financial market in Korea* (version in Korean), digital file.

Akerlof, G. A. (1970), "The market for 'lemons': quality uncertainty and the market mechanism," *Quarterly journal of economics*, 84(3): 488-500.

Arrow, Kenneth (1951), *Social choice and individual values*, John Wiley & Sons.

_____ (1991), "Procrastination and obedience," *American Economic Review*, 81(2), 1-19.

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

Zvi Bodie, A. Kane, and A J. Marcus (2013), *Essentials of Investments*, 9th edition, McGraw-Hill and Irwin.

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

Hobbes, Thomas (1651), *Leviathan*, edited by C.B. Macpherson and reprinted as Penguin Classics in 1968, Penguin Books.

Coase, R. (1937), 'The Nature of the Firm,' *Economica* n.s. 4, reprinted from R. Coase (1988), *The Firm, the Market, and the Law*, 33-55.

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

_____ (2006), 'The Conduct of Economics: The Example of Fisher Body and General Motors,' *Journal of Economics and Management Strategy*, Vol.15, No.2, 255-278.

Fama, Eugene (1965), "The behavior of stock market prices," *Journal of business*, 38, 34-105.

_____ (1970), "Efficient capital markets: a review of theory and empirical work," *Journal of finance* 25(2), 383-417.

Greif, Avner, Paul Milgrom, Barry R. Weingast (1994), "Coordination, commitment, and enforcement: the case of the merchant guild," *The journal of political economy*, 102(4), 745-776.

Hayek, F. A. (1945), "The use of knowledge in society," *American economic review*, 35(4), 519-530.

_____(1973), Law, *legislation and liberty*, Routledge & Kegan Paul. London, Melbourne and Henley.

Higgins, E. Tory(1996), "Knowledge activation: accessibility, applicability, and salience" in E. Tory Higgins and Arie W. Kruglanski, eds., *Social psychology: handbook of basin principles*, New York: Guilford Press, 1996, pp. 133-68.

Thomas Hobbes (1651), *Leviathan*, Critical edition by Noel Malcolm in three volumes: 1. Editorial Introduction; 2 and 3. The English and Latin Texts, Oxford University Press, 2012.

Hodgson, Geoffrey M. (1988), *Economics and institution*s, Polity Press.

_____ (2015), *Conceptualizing capitalism: institutions, evolution, future*, The University of Chicago Press.

Chew Soo Hong, Mao, Jennifer, Nishimura, Naoko (2005), "Preference for longshot: An Experimental Study of Demand for Sweepstakes", mimeo.

Hoopes, D.G.; Madson, T.L.; Walker, G. (2003), "Guest Editors' Introduction to the Special Issue: Why is There a Resource-Based View Toward a Theory of Competitive Heterogeneity?" *Strategic Management Journal*; 24, pp. 889-902.

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.

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

Kendall, Maurice (1953), "The analysis of economic time series, part I: prices." *Journal of the royal statistical society*, 96, 11-25.

Klein, Benjamin, Robert G. Crawford and Armen A. Alchian (1978), 'Vertical Integration, Appropriable Rents, and the Competitive Contracting Process,' *Journal of Law and Economics*, Vol.21, No.2, 297-326.

Kahneman D., Tversky A. (1979), "Prospect theory: an analysis of decision-making under risk," *Econometrica* 47:263-91.

Macneil, Ian R. (1978), "Contracts: adjustment of long-term economic relations under classical, neoclassical, and relational contract law," *Northwestern university law review*, 72: 854-905.

Modigliani, Franco and M. Miller (1958), "The cost of capital, corporation finance, and the theory of investment, *American economic review*, 48(3), 261-297.

_____ (1961), "Dividend policy, growth, and the valuation of shares," *Journal of business*, 34(4), 411-433.

North, D. C., J. J. Wallis, B. R. Weingast(2012), *Violence and social order: a conceptual framework for interpreting recorded human history*, Cambrige University Press.

Karl Gunnar Persson (1998), *Grain markets in Europe, 1500-1900: integration and deregulation*, Cambridge: Cambridge University Press.

_____ (2018), "The law of one price," EH.net http://eh.net/ encyclopedia/ the-law-of-one-price/

Rhee, Sung Sup (2009), "Institutions and entrepreneurship (in Korean)," *Jaedowakyongjae (Review of Institution and Economics)*, 3(2), 37-60.

_____ (2012b), "Relation exchange economics (in Korean),"

Jaedowakyongjae (Review of Institution and Economics, 6(2), 123-151.
_____ (2013b), "YulrinKyongjaehak qua DatchinKyongjaehak (Open system of economics vs. closed system of economics) (in Korean)", *Jaedo wa Kyongjae (Review of Institution and Economics)*, 7(2), 13-43.
_____ (2016), "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.
_____ (2016b), "Economics of empiricism and relation exchange," presented at 2016 WINIR Conference in Boston, U.S.A.
_____ (2016c), "Reinterpretation of finance as relation exchange in the sympathy-consent dimension: market modalities and inductive price," presented at 2016 KEA-KAEA conference in Seoul, Korea, August 8-9, 2016.
_____ (2017), "Relation exchange as the model of bounded rationality," paper presented at 2017 KEA-APEA conference, July 7-8, 2017.
_____ (2018a), "The economics of empiricism and relation exchange," *Review of institution and economics (Jaedo wa Kyongjae)* 12(1), 51-89.
_____ (2018b), "Empiricist approach to incomplete contract theory," *Jaedo wa Kyongjae (Review of institution and economics)* 12(2), 15-39.
_____ (2018c), "Sympathy-consent process mapping as the model of bounded rationality," presented at 2018 Annual Conference of The Korea Econometric Society, February 1, 2018, revised version of the paper presented at 2017 WINIR conference in Utrecht, Netherland, September 14-17, 2017.
_____ (2018d), "Opportunism fails the price mechanism, not the market," presented at 2018 WINIR Conference in Hong Kong, September 14-17, 2018.
_____ (2018e), "공감-동의 차원의 비결정성과 사업심," *『제도와 경제』* 12(3), 1-18.
_____ (2018f), "Institutional modality of the market with the application to financial assets," presented at 2018 Annual conference of the Korea Law & Economics Association in Choonchun, February 1, 2018.
_____ (2019), *시장제도경제학과 금융시장(The economics of market institution and the financial market)*. Forthcoming.
Roth, Alvin E.(2002), "The economist as engineer: game theory, experimentation, and computation as tools for design economics," *Econometrica*, 70(4), 1341-1378.
Sargent, Thomas J. (1986), *Rational expectations and inflation*, New York: Harper and Row, 1986.
Shiller, Robert (2003), "From efficient markets theory to behavioral finance," *Journal of economic perspective*, 17(1), 83-104.
_____ (2005), *Irrational Exuberance*, (2nd ed.) Princeton University Press.

Herbert Simon (1955), "A behavioral model of rational choice," *Quarterly journal of economics*, 69(1), 99-118.

_____ (1957a), *Administrative behavior*, 2nd edition, New York: Macmillan.

_____ (1957b), *Models of Man*, New York: John Wiley & Sons.

_____ (1979), "Information processing models of cognition," *Annual review of psychology*, 30, 363-96.

_____ (1984), "On the behavioral and rational foundations of economic dynamics," *Journal of economic behavior and organization*, 5(1), 35-56.

_____ (1991), *Models of my life*, New York: Basic Books.

Adam Smith (1759), *The theory of moral sentiments*, reprinted edition by D. D. Raphael and A. L. Macfie Classics (1976), Oxford: Oxford University Press.

_____ (1776), *An inquiry into the nature and causes of the wealth of nations*, edited by Edwin Cannan, The Modern Library (1937), New York: Random House.

Tversky, Amos and Daniel Kahneman (1981), "The framing of decision and the psychology of choice," *Science*, 211(4481), 453-458.

_____ (1983), "Extensional versus intuitive reasoning: the conjunction fallacy in probability judgment," *Psychological review*, 90(4), 293-315.

_____ (1986), "Rational choice and the framing of decisions," *Journal of Business*, 59(4), S251-78.

Williamson, Oliver E. (1971), "The vertical integration of production: market failure considerations," *American economics review*, 61(2), 112-123.

_____ (1975), *Markets and hierarchies: analysis and antitrust implications*, New York: Free Press.

_____ (1985), *The economic institutions of capitalism: firms, markets, relational contracting*, New York: Free Press.

En.m.wikipedia.org, "efficient market hypothesis."

〈한글초록〉

시장의 제도형식에 대한 분석적 구명과 금융자산 사례에 적용

이성섭
(숭실대 경제통상대학 명예교수)

공감-동의 차원의 이해는 제한적 합리성을 가진 경제주체들 간의 교류를 분석적으로 설명하는 것을 가능하게 한다. 그것은 가치-비용 합리성 차원의 닫힌/결정적 시스템과 구분되는 열린/비결정적 시스템이다. 이 이분법(흄의 분할)이 가지는 의미는 무엇인가? 분명한 사례는 망설임(wavering) 행동으로 발생하는 시장에서 교환활동에 대한 회피행동이다. 실상 이 망설임이 애커로프 교수의 레몬시장 실패(1970)에 이르는 원인-근원적 이유이다. 경험으로 배운 제도적 형식을 도입함으로써 관계교환의 기회주의적 행동을 억제하고 망설임을 제어할 수 있다. 인간은 원시적 정글에서 태어났다. 이것은 기회주의적 행동의 판을 치는 무질서의 세계이다. 기술발전과 기준의 제도화를 통해서 인간은 무질서로부터 경쟁의 틀을 구축하는데 성공해왔다. 그로 인해서 망설임을 통제하고 폭발적 교환거래를 촉발할 수 있었다. 시장은 경쟁의 가장 발전된 유형이다.

주제어(key words): 공감-동의 차원, 제도형식, 기회주의 행동, 망설임, 가격결정 구도, 귀납적 가격.

【2018. 12. 14. 접수】【2019. 2. 26. 수정】【2019. 2. 28. 게재확정】