

Mental Accounting and Sympathy Price* **

Sung Sup Rhee

rheess@ssu.ac.kr

Emeritus Professor at Soongsil University, Korea.

<http://nyxabartar.wixsite.com/sungsuprhee>

<Contents>

- . Introduction
- . Mental Arithmetic
- . Community Standards of Fairness
- . Sympathy Pricing
- . Concluding Remarks

Abstract

“Mental accounting” begins with cognitive biases and carries on with behavioral heuristics. Loss aversion is typical behavior that the prospect theory deciphers to human behavior. Encountering a transaction, a market participant would set reference transactions and claim entitlements. Kahneman *et al.*’s (1986) fairness study confirms that the conflict of interests among market participants is an unavoidable course of nature. How have human beings gotten through such a dilemma of exchange in the marketplace? It is a problem of sympathy process that David Hume (1739) and Adam Smith (1759) addressed on. Business models are what human beings have devised to deal with the dilemma and strike out deals successfully. Haggling, ask-bid, auction, markup, administered pricing are the modes of transaction by which business models interact each other to make deals. Sellers and buyers quote offer prices to draw out a transaction price. It is the “sympathy price” that strikes out a contract, which is different from the equilibrium price. Hence, we reached an understanding of why a market remains unclear, and prices remain sticky.

Key words: Mental accounting, Reference transaction, Entitlement, Sympathy price, Business model.

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

** This paper was presented at 2021 KASIO (Korea Academic Society of Industrial Organization) Summer On-line Conference, on 25 August, 2021 and also at KLEA (Korea Law & Economics Association) Monthly Workshop on 23 December, 2021.

I. Introduction

Does an offer of penny-low pricing strip competitors of their market shares and render a grip on the monopoly of the whole market? Despite the sternness of orthodox economics tenets, we all know such things never happen in the marketplace (Akerlof *et al.*, 2000). Besides, markets frequently do not clear out, especially in the short-run, not only in labor markets but also in customers markets (Kahneman *et al.*, 1986). Prices remain sticky when demands and supplies continue to stay apart.

... firms in the sports and entertainment industries offer their customers tickets at standard prices for events that clearly generate excess demand. Popular new models of automobiles may have waiting lists that extend for months. Similarly, manufactures in a number of industries operate with backlogs in booms and allocate shipments when they obviously could raise prices and reduces the queue. (Okun, 1981, p. 170).

Why does the price not change despite the sustaining chasm between demand and supply? Akerlof (1970) underscores the possibility of market failure by the lack of trust between sellers and buyers. Akerlof (1982) also suggests an alternative process such as gift exchange that makes up a transaction. The tenet of mental accounting is enlightening (Thaler, 1985, 1999; Kahneman *et al.*, 1986). The cognitive process of mental accounting may hint at the missing link between the human cognitive system and the alternative tenet of trust or gift exchange (Rhee, 2012b, 2018f).

This paper illustrates that it is essentially the sympathy process that carries out the exchange transaction (Rhee, 2020, 2021a, 2021b). The mental accounting unfolds the cognitive function that eventually leads to spelling out reference transactions and entitlement before drawing out the community standard of fairness. The paper compares the rules of fairness with the sympathy process, which allows us to understand why we should denote the price as sympathy price.

The prospect theory (Kahneman and Tversky, 1979) opens a gateway to

understanding the cognitive dimension built on the architecture made of heuristics and biases. Section 1 discusses how the reference transactions and entitlements combine to understand mental arithmetic. The paper highlights the importance of Kahneman *et al.*'s (1986) discussion on the rules of fairness in section 2 because it offers a hint illuminating the transaction process in an uncleared market. Finally, session 3 focuses on the dyadic relationship of a transaction between sellers and buyers and elaborates on the logic of how the reference transactions and entitlements combine to draw out business models to elicit an explanation of the sympathy process of a transaction.

II. Mental Arithmetic

The salience of the prospect theory (Kahneman and Tversky, 1979) highlights the difference of mental arithmetic from the calculus of utility theory. In the prospect theory, a hedonic value function gauges psychological pleasure and pain. Three features distinguish the prospect theory (Thaler, 1985). Firstly, perceived gains and losses relative to some natural reference point generate psychological pleasure and pain. Secondly, the value function is concave for gains (risk-averse) and convex for losses (risk-taking). Thirdly, the loss curve of the function is steeper than the gain curve.

The mental arithmetic of psychological pleasure and pain reels off an entirely different story of decision theory from the traditional orthodox economics tenets. Mainly, how to stage the location of reference points marks the distinction of mental accounting. The gains curve is located at a reference point's front (positive) line, whereas the losses curve is at the back(negative) line.

How to locate reference points depends on persons and their cognitive records. A variety of differences in personal experiences render determining reference points so much variational among different persons. Once a reference point is set in place, their preference patterns line up. The following question is a case of experimental studies which Kahneman *et al.* (1986) conducted to elicit the effects of the reference points on decision makings.

Question 1: A hardware store has been selling snow shovels for \$15. The morning after a large snowstorm, the store raises the price to \$20. Please, rate this action as: Completely Fair, Acceptable, Unfair, Very Unfair.

Eighty-two percent of respondents (N=107) return unfair (and very unfair) for the hardware store's strategy to take advantage of the snowstorm for their benefit in its pricing policy (See Table 1).

What intrigues us is the counterpoint of positions among market participants. The hardware store has an interest in profit-making. Opportunity cost is their concern so that the realization of profits by taking opportunity becomes the reference point. It leads the store to make gains by raising the price by \$5.

On the other hand, the \$15 tag price before the snowstorm is the reference point to the customers. They consider the rise of price above \$15 as an opportunistic behavior. Hence, they think the hardware store is not entitled to the price rise and feel a welfare loss at the \$5 price rise.

Kahneman *et al.*'s (1986) experimental study is interesting in the following two senses. Firstly, they reinterpreted the prospect theory into the context of the price theory, thus illuminating the implicated relation from prospect theory to price theory. Secondly, their study explores a new price theory approach that may emerge due to the mismatch of reference points and entitlements between sellers and buyers. This latter study attracts our attention because it addresses the question raised at the beginning, *i.e.*, uncleared market.

III. Community Standards of Fairness

The prospect theory (Kahneman and Tversky, 1979) laid a theoretical ground for enabling a subjective evaluation of pain and pleasure, *i.e.*, a hedonic utility that leads us to understand systematic biases and behavioral heuristics. The afore-mentioned three features of the prospect theory highlight the systematic bias intimately linked to behavioral heuristics. Behavioral heuristics are an outgrowth of the mental accounting derived from the prospect theory. Reference

point and entitlement are the outcomes of behavioral heuristics. We tend to claim the reference transactions and entitlements at the instances of systematic biases of human cognizance.

Loss aversion is a symptom posterior to the setting of reference point. The claiming of entitlements appears as the outcome of setting reference points in place. Individuals' behavioral actions, claiming reference transactions and entitlements, may not acquire consent from counterparts of a transaction. The conflict of interests necessarily prompts the invocation of the fairness issue between transacting parties. The adjudication of the disputes surrounding fairness, either by independent evaluators or by the consent process of concerning parties, becomes unavoidable.

Kahneman *et al.*(1986) surveyed experimental questionnaires with independent evaluators to explore the fairness judgment in eighteen questions concerning the conflicts of entitlements. Ten out of eighteen questions are presented in Table 1 to meditate on the meaning of the study.

In each case of transactions, a firm (merchant, landlord, or employer) makes pricing or wage-setting decisions. Transactors (customers, tenants, or employees) are price takers in marketplaces. Firms and transactors are the counterparts of a transaction to each other. Their fairness notion is not the same because their reference points or previous trading parties' history are not the same. Consequently, the entitlements of two parties of a transaction do not dovetail. <Table 1> distinguishes firms' reference profits and entitlements from those of transactors. Whose claiming entitlements are appropriate? Kahneman *et al.*'s study (1986) uses a household survey to establish community standards of fairness respectively for different transactions.

<Table 1> Setting reference points and community rules of fairness

	Firms		Transactors		Fairness	
	Reference profit	Entitlements	Reference transaction	Entitlements	Acceptable	Unfair
Q1 ¹⁾	\$5 (=\$20 - \$15)	No	\$15 (normal transaction)	Yes		(N=107) 82%
Q2A ²⁾	\$2 (=\$9 - \$7)	No	\$9 (current wage)	Yes	17%	(N=125) 83%
Q2B ³⁾	\$2 (=\$9 - \$7)	Yes (Shop owner can claim the entitlements of market wage(\$7) to the replacement.)	\$9 (Reference transaction changes from \$9 to \$7)	No (Replacement cannot claim the entitlement of former employee's wage)	(N=125) 73%	27%
Q4A ⁴⁾			7% (nominal) wages and salaries cut	Yes (money illusion framing: resistance to a nominal wage cut)	38%	(N=125) 62%
Q4B ⁵⁾	A decrease of real wages and salaries 7%	Yes (money illusion framing: real wage cut 7% is not resisted because of a nominal increase 5%)		No (money illusion framing: real wage cut 7% is not resisted because of a nominal increase 5%)	(N=129) 78%	22%
Q9A ⁶⁾	Profits from lowering wages by 5% (a severe unemployment in the area, the company has been making money)	No (the company has to bear the opportunity cost)	Holding wages at current rate	Yes	23%	(N=195) 77%
Q9B ⁷⁾	Profits from	Yes	Holding	No	(N=19	32%

	reducing the wages by 5%. (, the company has been losing money)		wages at current rate		5) 68%	
Q12 ⁸⁾	Profits from raising RD(Red Delicious apples) price	No	Holding RD price at a regular level	Yes	37%	(N=10 2) 63%
Q17A ⁹⁾	Local		Willing to bear a loss to enforce the feeling of fairness		(N=12 2) Mean response: \$1.28	
Q17B ¹⁰⁾	Away (visiting)		Willing to bear a loss to enforce the feeling of fairness		(N=12 4) Mean response: \$1.27	

Note:

- (1) Q1 = A hardware store has been selling snow shovels for \$15. The morning after a large snowstorm, the store raises the price to \$20.
- (2) Q2A = A small photocopying shop has one employee who has worked in the shop for six months and earns \$9 per hour. Business continues to be satisfactory, but a factory in the area has closed and unemployment has increased. Other small shops have now hired reliable workers at \$7 an hour to perform jobs similar to those done by the photocopy shop employee. The owner of the photocopying shop reduces the employee's wage to \$7.
- (3) Q2B = A small photocopying shop has one employee [as in Q2A] ...The current employee leaves, and the owner decides to pay a replacement \$7 an hour.
- (4) Q4A = A company is making a small profit. It is located in a community experiencing a recession with substantial unemployment but no inflation. There are many workers anxious to work at the company. The company decides to decrease wages and salaries 7% this year.
- (5) Q4B = With substantial unemployment and inflation of 12%, the company decides to increase salaries by only 5% this year.
- (6) Q9A = A small company employs several workers and has been paying them average wages. There is severe unemployment in the area and the company could easily replace its current employees with good workers at a lower wage. The company has been making money. The owners reduce the current workers' wages by 5 percent.
- (7) Q9B = The company has been losing money. The owners reduce the current workers' wages by 5 percent.
- (8) Q12 = A severe shortage of Red Delicious apples has developed in a community and none of the grocery stores or produce markets have any of this type of apple on their shelves. Other varieties of apples are plentiful in all of the stores. One grocer receives a single shipment of Red Delicious apples at the regular wholesale cost and raises the retail price of these Red Delicious apples by 25% over the regular price.
- (9) Q17A = If the service is satisfactory, how much of a tip do you think most people leave after ordering a meal costing \$10 in a restaurant that they visit frequently?
- (10) Q17B = How much .. in a restaurant on a trip to another city that they do not expect to visit again?

Source: Kahneman *et al.* (1986), *American Economic Review*, 76(4), pp. 728-741.

1. *Reference Transactions*

Previous transactions between a firm and a transactor may be references for a current transaction. A record of prices in previous transactions makes an anchor that helps transactors set a notion of fairness. The case Q2A reveals a disparity of reference transactions between a small photocopy shop owner and an employee. The shop has one employee who has worked for six months and earned \$9 per hour. However, due to the availability of newly added job seekers due to the unemployment after the shutdown of a factory in the area, other small shops have now hire reliable workers at \$7 an hour for a similar job.

The photocopy shop owner draws a reference transaction from the practices of other small shops paying \$7 an hour. The owner considers he/she is entitled to the benefits of a wage cut of \$2 ($= \$9 - \7). On the other hand, the transactor considers the previous practices of a wage contract for \$9 as the reference transaction. Hence, the shop owner has to bear the opportunity cost of \$2.

What are the community standards of fairness? The survey with 98 respondents considers the wage cut to \$7 as unfair action with an 83% support rate. 17% of the respondents consider it acceptable.

Case Q2B is a variation of case Q2A. In the new set-up of the scenario, the current employee leaves. The owner decides to pay a replacement \$7 an hour. Does the replacement of employees influence the survey outcome? Yes, 73% of 125 respondents consider it acceptable. Only 27 % of respondents rate it unfair. Since the employee is not the same person, the reference transaction relevant to the community standards changes to the wage contract of other small shops paying \$7 an hour.

2. *Framing Effects*

How to fix upon reference points is not always clarifying. People are “more sensitive to out-of-pocket costs rather than opportunity costs... Judgment of fairness is more susceptible to framing effects, in which form appear to overwhelm substance.”(Kahneman *et al.*, 1986, 731) Framing effects affect the determination of reference points. Against the tenets of normative economics,

decision-making becomes more vulnerable to money illusion.

Case Q4A narrates a story of a company located in a community experiencing a recession with substantial unemployment but no inflation. However, the company is making a small profit. There are many workers anxious to get an employment chance in the company. The company decides to reduce wages and salaries by 7% this year.

The company fixes upon reference points taking advantage of unemployment conditions in the community, which leads it to claim the entitlement to the benefits accruing from wages and salaries decrease. On the other hand, the company employees set reference points at current rates of wages and salaries. Both claim the entitlements to different sides of the status quo as being interpreted according to respective advantages. The survey of 125 respondents reveals that 62% of respondents consider the company's decision to decrease wages and salaries 7% unfair. Only 38% believe it acceptable.

Q4B is a variation of the story Q4A. Here, the scenario changes the states of inflation to 12% from inflation-free. The company decides to increase salaries by only 5% this year. In real terms, the wages and salaries decrease 7%, just as in Q4A. However, 78% of 129 respondents consider the company's decision as acceptable. Only 22% responded it was unfair.

They pay more attention to the money-wage-and-salary loss than the loss in real terms. What matters to the people is the out-of-pocket costs rather than the loss in real wages and salaries. The cognitive framing to focus on money income rather than real terms locks us into the money illusion.

3. Protecting Profit

The prospect theory lays a firm foundation that explains the systematic bias in human cognizance, leading to human actions' heuristics. The rules of fairness are one outcome of such heuristics. How far can we stretch to understand human actions with such heuristics? Out of the cases in Kahneman *et al.* (1986), protecting profit action is the cases Q9A and Q9B.

Most respondents of Kahneman *et al.* (1986)'s survey seem to endorse a firm's entitlement to their reference profit. If reducing its profit below a positive

reference level threatens the firm's financial stability, its action to pass on the entire loss to its transactors got approved.

The case Q9A unfolds a story of a small company currently hiring several workers. There is severe unemployment in the area. The company can easily replace its current employees with good workers at a lower wage. The company has been making money. The company lowers workers' wages by 5 percent. 77 percent of 195 respondents consider reducing workers' wages by 5 percent unfair. Only 23 percent approve the decision.

The only change in the story in Q9B is the company's business condition. The scenario assumes the company's losing money in Q9B. The difference in respondents' judgments is remarkable. 68 percent of 195 respondents approve the company's decision to reduce workers' wages by 5 percent. The survey outcome confirms that the community rules of fairness endorse the firm's entitlement to its reference profit. The entitlement to reference profits overwhelms the norms of charity or distributional concern.

4. Exploitation of Increased Market Power

The community rules of fairness condemn firms' (shops') claim of the entitlements to the surplus accruing from the change of monopoly condition as the exploitation of increased market power. They endorse employees' (transactors') entitlements to the current wages (prices), similarly as the case Q1 unfolds in the story of a snowstorm and the snow shovel sales. Case Q12 presents a tale of a grocery shop selling Red Delicious apples.

A severe shortage has developed for the supply of Red Delicious apples in a community. None of the grocery stores or produce markets have any of this type of apple on their shelves. One grocer receives a single shipment of Red Delicious apples at the regular wholesale cost. The grocer raises the retail price of these Red Delicious apples by 25% over the regular price.

63 percent of 102 respondents consider the grocer's raising of Red Delicious apple price as unfair.

5. Enforcement

If individuals encounter an unfair action, how do they react to it? Can we expect any willingness to resist or punish? Do human beings have a desire to act fairly? These questions amount to vindicating the efficacy of the prospect theory claiming the candidacy as a tenet mapping human behavior. Likewise, we can conceive any establishment of the will as unenforced compliance with the rules of fairness.

About three-quarters of the undergraduate participants in this experiment elected to share \$10 evenly with a stranger who had been fair to someone else when the alternative was to share \$12 evenly with an unfair allocator...The threat of future punishment when competitors enter may also deter a temporary monopolist from fully exploiting short-term profit opportunities...It is a mild embarrassment to the standard model that experimental studies often produce fair behavior even in the absence of enforcement...Survey results indicate a belief that unenforced compliance to the rules of fairness is common.(Kahneman et al., 1986, 736-7)

The cases Q17A, Q17B are another example revealing that the threat may not be a necessary condition for the compliance with the rules of fairness. The survey shows that the amounts of tipping paying for a similar satisfactory service for a meal are not significantly different in a restaurant at the home village from one in an away restaurant, which you don't expect to revisit. One hundred twenty-two respondents express their willingness to pay \$1.28 as tipping for a \$10 meal when they visit a restaurant at the home village, which they expect to return frequently. One hundred twenty-four respondents expressed their willingness to pay \$1.27 for the same meal at a restaurant in the away area, which they don't expect to return.

IV. Sympathy Pricing

The prospect theory lays the groundwork for treading on the steps of mental accounting. Reference transaction begins to matter when we make decisions to sell or purchase. As afore-mentioned, sellers' reference transactions are not the same as buyers'. Since reference transactions determine entitlements, sellers' claiming of entitlements may not dovetail with buyers' claiming. Kahneman *et al.* (1986) conducted telephone surveys to elicit the community standards of fairness from the conflict of interests for sellers and buyers in eighteen different transactions cases.

<Table 2> compares Kahneman *et al.* (1986) and Akerlof (1970) as preparatory steps before alleging Rhee (2018a)'s argument for sympathy pricing.

<Table 2> Three steps leading to alleging the sympathy price

	Kahneman <i>et al.</i> (1986)	Akerlof (1970)	Rhee (2018a)	
A's mental accounting (reference transactions, entitlements)	Community rules of fairness as an influencer of the offer price	Trust as a fundamental determinant of an exchange transaction	A's business model	Sympathy process (haggling, auction, ask-bid, markup, administered pricing) as the interface of market participants' (A, B) business models
B's mental accounting (reference transactions, entitlements)	Community rules of fairness as an influencer of the offer price		B's business model	

The fairness study (Kahneman *et al.*, 1986) confirms that not the price alone accomplishes the transaction. The consideration of fairness eclipses the role of price as the sole determinant of the trade. Community rules of fairness seem to work as an influencer on the offer price of market participants (sellers and buyers). However, Kahneman *et al.* (1986)'s thesis stopped short of discussing the steps of striking deals.

In this regard, Akerlof's (1970) lemon market argument serves as a stepping

stone leading to the rise of sympathy price. Akerlof (1970) argues that trust overwhelms the price as a fundamental determinant of an exchange transaction. In other papers (Akerlof, 1982, 1991), he offers gift exchange (Akerlof, 1982) and procrastination (Akerlof, 1991) as alternative processes to make through before striking a deal.

Akerlof's arguments (Akerlof, 1970, 1982, 1991) alleges a chasm between the market-clearing view of a transaction and an actual transaction in the marketplace. The explanation of this chasm may offer a key to understanding the phenomena on the uncleared market. The hints we draw from Kahneman *et al.*'s (1986) study are the human cognitive system as presented in the discussion of mental accounting. Our cognitive biases work on setting reference transactions and claiming entitlements (Tversky and Kahneman, 1974, 1981, 1986, 1991, 1992).

Since human beings have cognitive biases, their behaviors according to the heuristics, *i.e.*, the setting of reference transactions and claiming of entitlements, are bound to conflict with each other in the marketplace. Let us denote such behavioral conflicts arising from cognitive biases as the interpersonal disparity of mental accounting. Kahneman *et al.*'s (1986) study of fairness confirms the legitimacy of such an argument.

Proposition 1 (IPDMA: Interpersonal Disparity of Mental Accounting): Human cognitive biases and behaviors according to the heuristics necessarily lead to conflicts of interests between market participants regarding the setting of reference transactions and claiming entitlements.

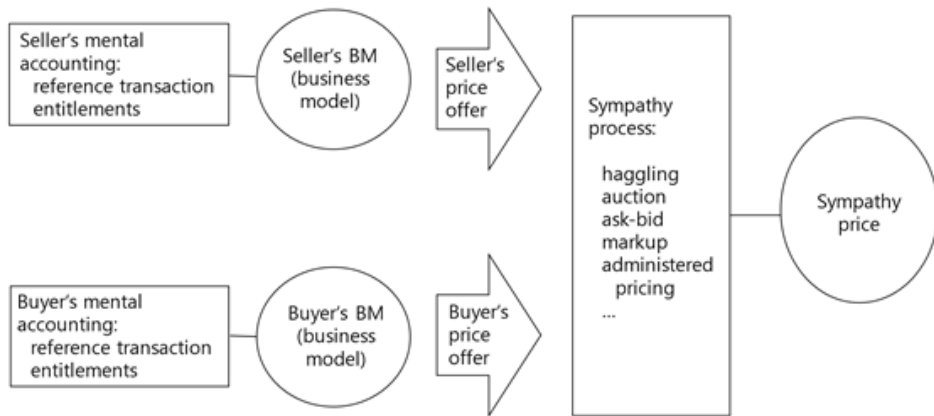
Proof:

Kahneman *et al.*'s (1986) study of fairness vindicates the legitimacy of the problem.□

Proposition 1(IPDMA) is the causal factor that proves the eligibility of the problem of the community rules of fairness. When there exists a possible conflict of interests between sellers and buyers that may arise due to the systematic bias in the human cognitive system, how could we manage to lay

a transaction out? <Figure 1> depicts the sympathy process through which we can draw out a trade.

Figure 1: From mental accounting to sympathy pricing



In the marketplace, we translate the setting of reference points and entitlements into the shaping-up of individuals' business models. Sellers and buyers explore their business models and tender respective offering prices at the negotiation steps of a transaction. The sympathy process denotes the negotiating steps of transaction: haggling, auction, ask-bid, markup, administered pricing, etc. At each different mode of transaction, price offers change. If the mode of transaction changes, the outcome of pricing is not necessarily the same (Kahneman *et al.*, 1986; Milgrom, 2004). Hence, the price determined from the negotiation processes is nothing to do with the market clearing, i.e., $D(p) = S(p)$, nor with the equilibrium price.

Proposition 2 (SP: Sympathy Pricing): The negotiation processes strike out the deal of a transaction. Hence, the price determined in a transaction is the sympathy price.

Proof:

Negotiation processes: haggling, ask-bid, auction, markup, administered pricing,

etc., strike out the price of a transaction. Hence, it is a sympathy price.□

Corollary 1(UM: Uncleared Market): The sympathy price is not the same as the equilibrium price. The market remains uncleared.

Proof:

Negotiation processes stem from the systematic biases in the human cognitive system and are not the same as market-clearing $D(p) = S(p)$. Sympathy price differs from equilibrium price. Hence, the market does not clear out at sympathy prices.□

We combine mental accounting with haggling or auction, ask-bid, markup, administered pricing. Hence, it is not a market clearing system. These steps of drawing consent from sellers and buyers engaging in mental accounting resemble precisely the sympathy process that David Hume (1739) and Adam Smith (1759) discoursed on. We may call it sympathy price. Now, we understand why the market does not clear out while transactions take place.

V. Concluding Remarks

Cognitive bias and decision heuristics may yield a cognitive framing that is submissive to an individual's perception of fairness in a transaction. Such cognitive processes are occasional and represent *ad hoc* experiences of individuals. The cognitive percepts of fairness draw out reference transactions and elicit the allegation of entitlements in trading. It is the mental accounting of a trading party in a trade. The deal of trading denotes the interface of mental accountings of trading parties.

Price offers of trading parties differ due to their difference in mental accounting. In the marketplace, they tend to persuade the other party with their innovative business models, the sympathy process. Hence, every trading necessarily makes through sympathy process. In other words, an individual's perception of fairness is an influencer of trading. Fundamentally, the sympathy

process brings up trading, not the market-clearing $D(p) = S(p)$. Every price is a sympathy price. Sympathy pricing outshines equilibrium pricing.

Reference

- Akerlof, George A. (1970), "The market for 'lemons': quality uncertainty and the market mechanism," *Quarterly Journal of Economics*, 84(3), 488-500.
- _____ (1982), "Labor contracts as partial gift exchange," *Quarterly Journal of Economics*, 97(4), 543-69.
- _____ (1991), "Procrastination and obedience," *American Economic Review*, 81(2), 1-19.
- _____ (2002), "Behavioral macroeconomics and macroeconomic behavior," *American Economic Review*, 92(3), 411-433.
- Akerlof, George A., William T. Dickens, and George L. Perry (2000), "Near-rational wage and price setting and the long-run Phillips curve," *Brookings Papers on Economic Activity*, 2000(1), 1-44.
- Benartzi, Shlomo and Richard Thaler (1995), "Myopic loss aversion and the equity premium puzzle," *Quarterly Journal of Economics*, 110(1), 73-92.
- David Hume (1739), *A treatise of human nature*, printed in 1992 by Prometheus Books.
- _____ (1748), *The enquiries concerning human understanding*, printed 2015 by Amazon.
- Kahneman, Daniel (1992), "Reference points, anchors, norms, and mixed feelings," *Organizational Behavior and Human Decision Processes*, 51, 296-312.
- _____ (1994), "New challenges to the rationality assumption," *Journal of Institutional and Theoretical Economics*, 150(1); Symposium on the new institutional economics, bounded rationality and the analysis of state and society, 18-36.
- Kahneman, Daniel (2003), "A psychological perspective on economics," *American Economic Review*, 93(2), Papers and Proceedings, 162-168.
- Kahneman, Daniel and Amos Tversky (1979), "Prospect theory: an analysis of decision under risk," *Econometrica*, 47(March), 263-291.
- Kahneman, Daniel, Jack L. Knetsch, and Richard Thaler (1986), "Fairness as a constraint on profit-seeking: entitlements in the market," *American Economic Review*, 76(4), 728-741.
- Kahneman, Daniel and Jackie Snell (1992), "Predicting a changing taste: do people know what they will like?", *Journal of Behavioral Decision Making*, 5, 187-200.
- Kahneman, Daniel and Amos Tversky (1984), "Choices, values, and frames," *American Psychologist*, 39(4), 341-350.
- Milgrom, Paul R. (2004), *Putting auction theory to work*, Cambridge, UK: Cambridge

University Press.

- Okun, Arthur (1981), *Prices and quantities: a macro-economic analysis*, Washington: The Brookings Institution.
- Read, Daniel, George Loewenstein, Matthew Rabin (1999), "Choice bracketing," *Journal of Risk and Uncertainty*, 19:1-3, 171-197.
- Rhee, Sung Sup (2012b), "KwankaeKyohwanKyongjaehak (Relation Exchange Economics)," *Jaedo wa Kyongjae (Review of Institution and Economics)*, 6(2), 123-151.
- _____ (2013b), "YulrinKyongjaehak qua DatchinKyongjaehak (Open system of economics vs. closed system of economics)," *Jaedo wa Kyongjae (Review of Institution and Economics)*, 7(2), 13-43.
- _____ (2018a), "The economics of empiricism and relation exchange," *Review of Institution and Economics*, 12(1), 51-90.
- _____ (2018b), "Empiricist approach to incomplete contract theory," *Jaedo wa Kyongjae (Review of Institution and Economics)*, 12(2), 15-39.
- _____ (2018e), "The indeterminateness of the sympathy-consent dimension and the entrepreneurship (in Korean)," *Jaedo wa Kyongjae (Review of Institution and Economics)*, 12(3), 1-18.
- _____ (2018f), "Opportunism fails the price mechanism, not the market," presented at 2018 WINIR Conference at Hong Kong, China, September 15, 2018.
- _____ (2019a), "Institutional modality of the market with an application to financial assets," *Review of Institution and Economics*, 13(1), 31-68.
- _____ (2019b), "From the market-clearing to sympathy-consent process: the micro foundation of macroeconomics," presented at 2019 WINIR Conference at Lund, Sweden, 19-22 September, 2019.
- _____ (2020), "Why are we not allowed to use rational agent models as the instrument to recount the behavior in preference space?," presented at (Virtual) KER International Conference, Seoul, Korea, 13-14 August, 2020.
- _____ (2021a), "The value-cost rationality mapping impertinent to the bounded rationality space," *Review of Institution and Economics*, 15(1), 65-81.
- _____ (2021b), "The metrizableability of human behavior as the fundamental problem of bounded rationality," presented at (Virtual) 2021 KEA Conference, KASIO session, February 4-5, 2021.
- Shafir, Eldar, Peter Diamond and Amos Tversky (1997), "Money illusion," *Quarterly Journal of Economics*, 112(2), 341-374.

- Smith, Adam (1759), *The Theory of Moral Sentiments*, reprinted edition by D. D. Raphael and A. L. Macfie Classics (1976), Oxford: Oxford University Press.
- Thaler, Richard (1980), "Toward a positive theory of consumer choice," *Journal of Economic Behavior and Organization*, 1, 39-60.
- _____ (1985), "Mental accounting and consumer choice," *Marketing Science*, 4(3), 199-214.
- _____ (1999), "Mental accounting matters," *Journal of Behavioral Decision Making*, 12, 183-206.
- _____ (2016), "Behavioral economics: past, present, and future," *American Economic Review*, 106(7), 1577-1600.
- Thaler, Richard and Eric J. Johnson (1990), "Gambling with the house money and trying to break even: the effects of prior outcomes on risky choice," *Management Science*, 36(6), 643-660.
- Thaler, Richard and H. M. Shefrin (1981), "An economic theory of self-control," *Journal of Political Economy*, 89(2), 392-406.
- Thaler, Richard, Amos Tversky, Daniel Kahneman and Alan Schwartz (1997), "The effects of myopia and loss aversion on risk taking an experimental test." *Quarterly Journal of Economics*, 112(2), 341-374.
- Tversky, Amos and Daniel Kahneman (1974), "Judgment under uncertainty: heuristics and biases," *Science*, 185, 1124-1131.
- _____ (1981), "The framing of decisions and the psychology of choice," *Science*, New Series 211(4481), 453-458.
- _____ (1986), "Rational choice and the framing of decisions," *The Journal of Business*, 59(4), S251-S278.
- _____ (1991), "Loss aversion in riskless choice: a reference-dependent model," *Quarterly Journal of Economics*, 106(4), 1039-1061.
- _____ (1992), "Advances in prospect theory: cumulative representation of uncertainty," *Journal of Risk and Uncertainty*, 5, 297-323.
- Varey, Carol and Daniel Kahneman (1992), "Experiences extended across time: evaluation of moments an episodes," *Journal of Behavioral Decision Making*, 5, 169-185.
- Wakker, Peter (1988), "The algebraic versus the topological approach to additive representations," *Journal of Mathematical Psychology*, 32, 421-435.

〈한글초록〉

심리적 계산법과 공감 가격

이성섭
(송실대 명예교수)

인지적 편향(cognitive bias)과 판단학습(heuristics)은 심리적 프레이밍(framing)을 만들어내고 그것은 거래에 있어서 공정성에 대한 개인적 잣대를 결정하게 된다. 그러한 인지과정은 (인과적이지 않고) 간헐적으로 일어나는 것이고 개인의 우연적(*ad hoc*) 경험을 반영하는 것이다. 공정성(fairness)에 대한 인지적 감각은 그 사람의 참고거래(reference transaction)로 연결되고 거래과정에서 권리주장(entitlements)으로 귀착된다. 이것이 시장거래에 참가하는 시장참가자의 “심리적 계산법”(mental accounting)이다. 시장거래란 시장 참가자들의 심리적 계산법 간의 접촉(interface)를 의미한다.

시장거래 참가자들은 그들의 심리적 계산법이 서로 다르기 때문에 가격제시(price offer)의 접근방식이 서로 다를 수밖에 없다. 시장에서 그들은 그들의 혁신적 비즈니스 모델을 가지고 서로를 설득하게 된다. 그것이 공감과정(sympathy process)이다. 모든 거래는 반드시 공감과정을 거쳐서 이루어지게 된다. 즉, 인지시스템에서 출발하는 개인의 공정성에 대한 감각이 거래에 영향요소로 작동하게 된다는 말이 된다. 근본적으로 거래를 만들어내는 것은, 시장 청산(market-clearing) $D(p) = S(p)$ 이 아니라, 공감과정이란 말이 된다. 따라서 모든 가격은 “공감 가격”(sympathy price)이 된다. 교환거래를 만들어내는 기제에 있어서 공감가격 방식이 균형가격 방식을 대체하게 된다.

주제어(key words): 심리적 계산법, 참고거래, 권리주장, 공감가격, 비즈니스 모델.

【2022. 1. 13. 접수】 【2022. 2. 20. 수정】 【2022. 2. 22. 게재확정】

【First received: 2022. 1. 13.】 【Revised: 2022. 2. 20.】 【Accepted: 2022. 2. 22.】