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Influences of Reciprocity on a Consumer Boycott in an Experiment*

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Abstract By conducting a boycott experiment, this paper studied whether the reciprocity of consumers affects boycott decision. The boycott experiment is a two-stage post-offer market game, in which a seller first decides an asking price and then consumers decide to purchase goods after observing the asking price. To find the effect of reciprocity on consumer's purchase decision, the level of information provided to the consumers corresponding to the previous asking price and another consumer's boycott history, on average, was modified. Consequently, the sellers lowered the asking price with the belief that disclosing additional information about their previous profit fractions decreases the consumer's purchase frequency. Moreover, consumers' purchase frequency is affected by both the given value of the goods and the asking price, but not by the different levels of information provided. Therefore, the consumers appear to have no reciprocity preferences on a boycott.

Keywords Consumer Boycott, Reciprocity, Experiment, Instrumental Motive, Expressive Motive

JEL Classification D12, D90, C91

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1. INTRODUCTION

A consumer boycott occurs "when a number of people abstain from purchase of a product, at the same time, as a result of the same egregious act or behavior" (John and Klein, 2003), such as an unjustified price increase or political and social/ethical reasons like responsible employment and environmental considerations (Friedman, 1995; Sen et al., 2002; Hoffmann and Müller, 2009). In the literature on consumer boycott motivations, boycotts have been associated with either instrumental or expressive motives (Friedman, 2001; John and Klein, 2003; Hahn and Albert, 2017). Consumers with instrumental motives are willing to boycott a firm's products to induce firms to eschew egregious acts. However, such boycotts are subject to the social dilemmas of both small-agent and free-rider problems (Sen et al., 2002). The small-agent problem arises when one consumer believes that he/she has a negligible effect on a firm's behavior while incurring substantial costs in boycotting (Delacote, 2008). To exert meaningful influence on a firm, boycotts require an adequate number of consumers to take collective action. However, boycotts simultaneously increase consumers' willingness to free-ride (Kritikos and Boller, 2004). Therefore, the best strategy for a consumer with an instrumental motive is to not participate in boycotting based on the belief that other individuals will also participate in the boycott. In principle, participating in boycotts is not a game-theoretical equilibrium. However, many consumer boycotts are increasingly being conducted in practice (John and Klein, 2003).

By contrast, consumers with expressive motives may boycott a firm due to personal anger and frustration triggered by the firm's egregious acts. Unlike consumers with instrumental motives, consumers with expressive motives choose to boycott a firm for personal reasons, and doing so "gives them an opportunity to live an emotional experience, express their values, or display anger toward the contested practices of the target firm" (Hahn and Albert, 2017). In Tyran and Engelmann's (2005) experimental research, consumers chose to boycott because of an expressive motive. Moreover, consumers with expressive motives are less susceptible to the small-agent and free-rider problems because they participate in boycotts for their own emotional sake rather than to induce firms to act for the benefit of consumers (Friedman, 1991; Freestone and McGoldrick, 2008; Cissé-Depardon and N'Goala, 2009). Consequently, the satisfaction of these consumers is not significantly affected by the success or failure of a boycott.

Although instrumental and expressive motivations may fit better as the initial causes of an organization initiating a boycott, the motivation of an individ-

ual consumer tends to be more varied (Klein et al., 2002). Klein et al. (2002) state that consumers' boycott motivations can be a mix of instrumental, expressive, and clean-hand motives, in which consumers feel guilty for not participating in a boycott. According to Sen et al. (2002), based on experimental research, the motivation for an individual's boycott participation is associated with the boycott's likelihood of success, the individual's susceptibility to normative influence, and the cost incurred from the boycott participation decision. Notably, the likelihood of boycott success is related to consumers' beliefs regarding the overall participation and efficacy of boycotting, and the costs of boycotting increase as consumers' loyalty toward the targeted goods and the paucity of substitute goods increase. Klein et al. (2004) studied boycott motivations using the cost-benefit approach while considering socio-psychological variables. They found that the awareness of a firm's egregious acts increases the likelihood of consumers' boycott participation (the awareness-egregiousness-boycott (AEB) model). This tendency is modulated by the perceived likelihood of changing a firm's actions, constrained consumption as the cost of boycotting, and selfenhancement.

Moreover, various investigations regarding other motivations, derived from behavioral and experimental economics, advanced our understanding of boycott motivation (Hahn and Albert, 2017). Hahn and Albert (2017) stated that boycott intentions comprise instrumental preferences and fairness concerns (or reciprocal concerns). Reciprocal concerns refer to the individual consumers' perception of a firm's egregious act on their selves and other consumers.¹ If a consumer perceives that a product with a higher asking price than the fair market price is a firm's unkind action (egregious action), he/she may withhold purchase to retaliate against this unkind action (Rabin, 1993; Dufwenberg et al., 2001). This motive differs from instrumental and expressive motives in that a consumer may boycott a firm's products even based on the awareness of a firm's egregious act toward another consumer. Reciprocity preferences are based on the social norm that an individual's utility lessens if he/she does not follow the reciprocity rule. Hence, reciprocity appears to be related to the clean-hand motive, that is, feeling guilt when disregarding social norms and that adhering to norms may lead to self-enhancement.

Consumers with indirect reciprocity concerns may boycott a firm's products despite the cost of boycotting if other consumers view the high price of the products as a firm's egregious action (Dufwenberg *et al.*, 2001; Seinen and Schram,

¹Even in a Cournot competition, reciprocity between firms is widely studied, which typically shows a stronger collusive equilibrium (Rabin, 1993; İriş, 2017).

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2006) or if the firm's misconduct negatively affects other stakeholders who are not associated with the consumer (Hahn and Albert, 2017)². Therefore, this type of boycott may be referred to as a social boycott because it is not intrinsically related to consumers' material interests but pursues social justice (Friedman, 1999). This implies that a consumer with reciprocal concerns may trigger a boycott when he/she becomes aware of a firm's egregious act toward his/her self and other individuals due to the firm's violation of expected fairness (social norms) in a society.

Therefore, consumers with indirect reciprocity concerns may boycott a firm that conducts an egregious act that worsens the life of another consumer. By contrast, a consumer with direct reciprocity concerns or who follows the cost-benefit approach will only boycott a firm when it affects his/her own utility in some material or hedonic way. Thus, consumer boycotts are partly a vehicle of moral selfexpression (Kozinets and Handelman, 1998). This assertion is similar to Hahn and Albert (2017) hypothesis³. Moreover, consumers with indirect reciprocity concerns are likely to punish consumers who do not boycott a firm involved in negative acts. By doing so, the stable solidarity of boycotting among consumers is likely to be established. In the "standing strategy," individuals help others either only when their own reputation is currently not in good standing or when they have a chance to help another person with a good reputation. This strategy is an evolutionarily stable strategy that has transformed the way individuals help society in terms of indirect reciprocity (Leimar and Hammerstein, 2001). Therefore, when some consumers do not participate in boycotting, other consumers may reduce their participation in boycotts to punish passive consumers, which supports Hahn and Albert (2017) second hypothesis.

In this study, a boycott experiment was designed to examine the existence and roles of direct and indirect reciprocity on the determinants of boycott participation. In other words, this study examines whether a consumer can become aware of a firm's egregious activities toward other consumers, unrelated to his/her own self, and subsequently participate in boycotting the firm. Therefore, this paper expands the notion of awareness discussed by Klein *et al.* (2004). The boycott experiment involved a post-offer market with one seller and two consumers in which different levels of information regarding the players' previous actions were provided to the consumers. The *No-Info* treatment was used

²For example, in South Korea, the humiliating and rigid training of staff conducted by the CEO of a flight company triggered a consumer boycott because the CEO's behavior was widely viewed as unacceptable and arrogant (Kim *et al.*, 2018).

³In their paper, they used the term "strong reciprocity," referring to indirect reciprocity without categorizing reciprocity as direct and indirect reciprocity.

as the baseline, in which no additional information was provided to the consumers. In the *Half-Info* treatment, the previous average profit ratio information of the seller was provided to the consumers. In the *Full-Info* treatment, the boycott record of another consumer along with the average price ratio was provided. The main finding was that the sellers tended to overestimate the likelihood of the consumers boycotting their products, and thus, they lowered their selling prices in the *Half-Info* treatment, where the sellers' previous profit information was revealed. Moreover, the buyers' boycott decisions depended on their given value of the goods and sellers' asking prices; however, the buyers' decisions were not related to the information provided to the buyers. This implies that the consumers did not show any evidence of indirect reciprocity. Rather, they showed a degree of instrumental motive.

The remainder of the paper is structured as follows. Section 2 introduces the experimental design. Section 3 analyzes the experimental results. Section 4 presents the robustness check, and Section 5 concludes this paper.

2. EXPERIMENTAL DESIGN

The boycott game describes a post-offer market with one monopolistic seller and two consumers. When the number of consumers is low, the small-agent problem is mitigated. Also, if consumers are willing to boycott, deviating from boycotting (a free-riding) becomes harder. This experiment highlights identifying reciprocity's role; hence, the current environment with two consumers is employed to encourage boycotting.

At the beginning of the game, the seller decides the asking price of goods, p, which is higher than the production cost of the goods, c; $p \in [c, 10]$. The cost is randomly drawn from a uniform distribution. Then, after observing p, two consumers simultaneously choose to either purchase or boycott the goods. Conceptually, individual purchase-withholding differs from a boycott in terms of a collective purchase-withholding organized by a voluntary group, such as an NGO (Sen *et al.*, 2002). Tyran and Engelmann (2005) show that the majority voting mechanism to organize a boycott does not affect the boycott participation in the experiment. They also conclude that individual purchase-withholding and a boycott are substitute goods. Following Tyran and Engelmann (2005), this study uses two terms interchangeably.

Let a_i be the consumer i's action: $a_i = \{0, 1\}$, where 1 denotes the consumer i's purchasing, whereas 0 represents boycotting. Also, let *a* be the total number of consumers purchasing; $a = \sum_{\forall j} a_j$. Consumer *i* has the willingness-to-pay

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(WTP) price for the good or conceptually a subjective value v_i . The value v_i is drawn from a uniform distribution. The cost and value are private information. Moreover, the payoff of the firm, π_f , is $a \cdot (p - c)$, whereas that of the consumer i, π_i , is $a_i \cdot (v_i - p)$. As an equilibrium analysis, Proposition 1 states that the seller chooses the selling price p based on the realized c, whereas the consumer purchases the good if the asking price is less than and equal to the value v_i .

Proposition 1. The subgame perfect Nash equilibrium shows that the consumers purchase the good if the value is greater and equal to the asking price; otherwise, they boycott. Moreover, the seller chooses the asking price p as follows:

$$p(c) = 5 + \frac{c}{2}$$

Proof. The proof is in the appendix.

The boycott game repeated 30 rounds. The values and costs are integers drawn from the same uniform distribution across rounds. In the first 15 rounds, $c_i \sim uni[0,6]$ and $v_i \sim uni[4,10]$ are used for the sellers and consumers, respectively. After 15 rounds, the cost increased by two units to induce the consumer's boycott, which is exactly known as a tax increase⁴ for the consumers, following several experimental studies (Franciosi *et al.*, 1995; Tyran and Engelmann, 2005). The cost in the second 15 rounds is drawn from the uniform distribution: $c_i \sim uni[2,8]$. Although the roles in the market are fixed across the rounds, the group members are randomly re-matched across rounds. The seller is assumed to have enough capacity to provide the good, implying that the maximum amount of goods the seller sells is greater than two units. Moreover, no increase in the production cost with the quantity supplied is assumed; therefore, the more the seller sells, the more profitable it is. Subsequently, after the consumers observe the asking price, they simultaneously choose whether to purchase or boycott the goods.

To find the effect of reciprocity on the boycott decision-making, the information provided to the consumers varies across the treatment. As a baseline treatment, no additional information is provided to the consumers, also known as the *No-Info* treatment. In *Half-Info* treatment, consumers receive the information on the average profit ratio (henceforth APR) of the current seller in the previous five rounds. The profit ratio is $1 - \frac{c}{p}$. The previous five-round record is used to reflect

⁴In the experimental guide for players shown in the appendix, players are notified about an increase in cost after 15 rounds. Additionally, the notification about the two-unit cost increase pops up after 15 rounds.

that people's memory is bounded to recent events (Seinen and Schram, 2006). If the number of previous rounds is shorter than five rounds, all previous rounds were used to calculate the APR. If the purchase ratio of consumers who profit when purchasing the good in *No-Info* treatment differs from that in *Half-Info* treatment, the effect of indirect reciprocity on boycotting is confirmed because the APR reflects the seller's previous actions toward the previous consumers.

In *Full-Info* treatment, along with the APR, the boycott record of another consumer who belongs to the same group is additionally provided. The boycott record comprises the total number of boycotting and the average price given to the consumer in the previous five rounds. Like the APR, if the rounds are shorter than five rounds, all previous rounds were used. Therefore, a consumer can guess the tendency of another consumer's boycotting for the given average price. The comparison of the purchase ratio in *Half-Info* treatment with that in the *Full-Info* treatment identifies whether a consumer's boycott decision is modulated by another consumer's boycotting in terms of a consumer's indirect reciprocity to another consumer. The treatments are summarized in Table 1.

Table 1: The treatments					
Treatments	Explanation				
No-Info	No additional information				
Half-Info	Average profit ratio (APR)				
Full-Info	APR, the number of another consumer's boycotting				
	and the average asking price that another consumer faces				

The reward money is the sum of 5,000 KRW, which is the participation reward, plus the product of 200 KRW and the points incurred by the player in all rounds (reward money = 5,000 KRW + (200 KRW \times points)). The reward money was sent to the subjects through wire transfer approximately two weeks after the experiment, mainly due to the university policy. At the beginning of the experiment, the subjects were sufficiently informed of the expected weeks when the reward will be sent.

3. RESULTS

The experiment was conducted at the University of Ulsan, South Korea, in October 2019.⁵ As shown in Table 2, 81 subjects were notified through public on-

⁵This experiment was approved by the Institutional Review Board (IRB) of the University of Ulsan (#1040968-A-2019-005).

line and offline notifications. A total of 51 subjects (63.0%) are male, whereas the remaining 30 subjects (37%) are female. The 72 subjects (88.9%) are students at the University of Ulsan, 6 subjects (7.4%) are university staff who are not associated with the experiment, and 3 subjects (3.7%) are ordinary people. In addition, these three ordinary persons reported that they graduated from the University of Ulsan and that they are young; thus, their demographics were concluded to be similar to other subjects. Although the non-students, including university staff and ordinary persons, are 3 years older and more likely females than the students, the ANOVA test did not show any differences in age and gender across the treatment groups because they are well-assigned in each treatment group. Also, 14 subjects (17.3%) have an electronic engineering major. Their average age is 22.83 years.

	Tuble 2. The uge and gender of the subjects						
Treatment	Age			Gender			
	Students	Non-stu.	Pooled	Students	Non-stu.	Pooled	
No-Info	22.58	26.25	23.22	1.40	1.75	1.46	
	(19) ^a	(4)	(23)	(20)	(4)	(24)	
Half-Info	22.48	26.67	22.90	1.33	1.67	1.37	
	(27)	(3)	(30)	(27)	(3)	(30)	
Full-Info	22.28	24.00	22.41	1.24	2.00	1.30	
	(25)	(2)	(27)	(25)	(2)	(27)	
Pooled	22.44	25.89	22.83	1.32	1.78	1.37	
	(71)	(9)	(80)	(72)	(9)	(81)	
F-value	-	-	0.76	-	-	0.7	
P-value	-	-	0.47	-	-	0.5	

Table 2: The age and gender of the subjects

Notes: The number in the parenthesis is the observation number. In gender, the number 1 refers to male while the number 2 refers to female. The non-students are university staffs and ordinary persons. ^a One student did not reveal the self's age. Moreover, the university majors of three treatment groups did not show any significant differences in Chi-square test. The Chi-square test result is available upon request.

A total of 24, 30, and 27 subjects were randomly assigned to *No-Info*, *Half-Info*, and *Full-Info* treatments, respectively. Three players make one group; hence, there were 27 groups and 810 games in the total 30 rounds. If the total number is not a multiple of three, one or two subjects at the last composition will not participate in the experiment. This information was provided in the public notification. The experiment lasted around 1 hour and 20 minutes. The average reward

was 14,538 KRW (12.19 USD⁶). Most subjects were students, and the minimum wage per hour was 8,350 KRW (7 USD) in 2019; thus, the reward was an acceptable level to elicit the subjects' preferences. Before the experiment started, all the necessary information regarding the experimental procedure was provided to the participants. To confirm the subject's understanding of the experiment, a simple quiz asking a player's payoff in a certain situation was given to them at the end of the introduction. All procedures were conducted using Z-Tree version 4.1 (Fischbacher, 2007).⁷ In the following analysis, the first round across three treatments is excluded because it does not reflect the different levels of information properly. Moreover, to simplify notations, the first phase is defined as the first 14 rounds from the second round to the 15th round. Furthermore, the second phase is the last 15 rounds from the 16th round to the last round.

3.1. SELLER'S BEHAVIOR

Figure 1 illustrates the average asking price across the treatments and rounds. The average asking price is lower in the first phase than in the second phase because the cost increases by 2 units after the first 15 rounds. Moreover, in *Half-Info* treatment, the largest difference in the asking price is shown between the first and the second phases.



Figure 1: The average asking price of the seller across the treatment and the rounds

⁶It is estimated with the Korean won– US dollar exchange rate of 1192.30 won/dollar as of October 6, 2019.

⁷The practical game screen seen by the subjects is attached in the Appendix.

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Table 3 summarizes the average asking price of the seller across the treatments and the first and second phases. The Kruskal-Wallis test rejects the null hypothesis that the averages of three treatments are the same ($\chi^2 = 4.84$). Also, the asking price in the first phase, 6.08, is significantly lower than that in the second phase, 6.96 (Mann–Whitney Z = 10.30). In the second phase, the sellers increase the asking price by 0.88 units less than the 2 units increase in the cost. This seller's behavior exhibits similarity with that of Proposition 1; that is, the seller will increase the price by 1 unit for a 2-unit increase in cost.

Table 3: The seller's average asking price						
	No-Info	Half-Info	Full-Info	Pooled		
First phase	6.13	5.82	6.33	6.08		
	(1.00)	(1.11)	(0.88)	(1.03)		
Second phase	6.86	7.00	6.99	6.96		
	(1.02)	(1.20)	(0.94)	(1.07)		
Pooled	6.52	6.43	6.67	6.53		
	(1.07)	(1.30)	(0.97)	(1.13)		

Notes: Standard deviation is enclosed in parentheses.

Moreover, the average asking prices of three treatments in the second phase are statistically the same (Kruskal-Wallis test $\chi^2 = 2.52$), implying that the entire difference in the asking prices yielded from the first phase (Kruskal-Wallis test $\chi^2 = 15.04$). The asking price of *No-Info* treatment in the first phase, 6.13, is higher than that in *Half-Info* treatment, 5.82 (Mann–Whitney Z = 2.05). Meanwhile, the asking price of Full-Info treatment in the first phase, 6.327, is higher than that of *No-Info* treatment, 6.125 (Mann–Whitney Z = 1.75).

The sellers significantly lowered the asking price in Half-Info treatment and then returned to the average asking price in the second phase. It implies that they overestimate the possibility of boycotting when revealing their profit information purely to the consumers. Moreover, the sellers seem to expect that revealing another consumer's boycott history decreases the consumer's willingness to boycott.8

⁸The sellers may be concerned whether showing their previous profit history is showing unkindness if the profit ratio is way higher than a subjective fair profit level. If so, it implies that the sellers consider the buyers' other-regarding preferences, such as reciprocity concerns. In other words, the sellers seem to doubt whether the buyers have the same preferences with those in Hahn and Albert (2017) hypothesis. However, if another consumer's boycott tendency is revealed to another consumer, the consumers may increase their boycotting by following another consumer's boycotting if his/her boycotting tendency is higher than an expected fair level. Conversely, if an-



Figure 2: The average asking price across the cost

To confirm whether the sellers systematically overestimate the possibility of buyer's boycotting, I show the relationship between the cost and the average asking price in Figure 2. The predicted asking price following Proposition 1 is illustrated in a black line. The average asking price is lower than the predicted asking price except when the cost is low. When the cost is either 0 or 1, the t-test does not significantly reject the hypothesis that the pooled average asking prices are inconsistent with the predicted asking prices, 5 (p - value = 0.40) and 5.5 (p - value = 0.84). However, when the cost is greater than 1, the pooled average asking prices are significantly lower than the predicted asking prices. The sellers appear to overestimate the likelihood of the consumers' boycotting in an overall sense. Notably, the sellers have more tendency to overestimate the possibility in Half-Info treatment, in which the seller's previous profit ratio is revealed to the consumers, than in other treatments. Moreover, in Full-Info treatment, the sellers seem to expect that the buyers' boycott decision is mitigated by the previous boycott history provided to the consumers. The average asking price in *Full-Info* treatment is higher than that in *Half-Info* treatment.

To find the determinants of the asking price of the seller, the asking price is regressed on the treatments and cost of the seller. The treatment variables and

other consumer's boycotting level is lower than an expected fair level, a consumer may decrease boycotting to punish another consumer. If the seller expects that the influence of the consumer's reciprocity concern would offset, the seller may keep the asking price to an average level.

the second phase (*Half-Info*, *Full-Info*, and *Second-Phase*) are dummy variables. *Second-Phase* dummy is 1 when a round is in the second phase. Moreover, the *Previous-Boycott*, the number of boycotting of the two consumers in the previous round, is also controlled. The seller may adjust their asking price depending on the boycotting experiences of the consumers. In addition, because the difference in the asking prices between the first and the second phases is largest in *Half-Info* treatment among the other treatments, the interaction dummy variables represented by the product of the treatment and the second phase are incorporated into the model. The following is the regression model:

 $AskPrice_{i} = a + \beta COST_{i} + \gamma_{1}HalfInfo_{i} + \gamma_{2}FullInfo_{i} + \gamma_{3}SecondPhase_{i}$ $+ \delta_{1}HalfInfo_{i} \times SecondPhase_{i} + \delta_{2}FullInfo_{i} \times SecondPhase_{i}$ $+ PreviousBoycott_{i} + \varepsilon_{i}, \varepsilon_{i} \sim N(0, \sigma^{2})$

As shown in Table 4, the model is statistically significant (F - value = 119.83). The seller significantly increases the asking price as the cost increases. Moreover, the sellers significantly lowered the asking price in Half-Info treatment compared with the *No-Info* treatment (*Half-Info* = -0.22 * *). By contrast, in *Full-Info* treatment, the sellers significantly increase the asking price (*Full-Info* = 0.18*). Thus, the seller overestimates the possibility of boycotting in *Half-Info* treatment, but they evaluate the boycott likelihood to become lower when the boycott history of another consumer is presented to the consumers in *Full-Info* treatment.

The Second-Phase dummy variable itself is not statistically significant. However, its effect appears to be broken down into the interaction dummy, which is the product of *Half-Info* and *Second-Phase*, that is significant. Moreover, its coefficient, 0.32, is positive. As shown in Figure 1, the relatively low asking price in *Half-Info* treatment returned to the average level of asking prices in the second phase. Additionally, the *Previous-Boycott* significantly increases the asking price (0.09**).⁹ Concerning why the asking price in the first phase of the *Halfinfo* treatment returned to the average level in the second phase, the seller may evaluate the boycott tendency as sufficiently low in the first phase, which increases their asking price in the second phase.

⁹The seller knows the current payoff, in which he can infer the number of the goods sold. However, he does not know who boycotted and the previous boycott history of the consumers was not given. Hence, it is unlikely that he depends on a specific consumer.

Table 4: The regression result on the asking price

Variables	Coeff.	s.e.
Intercept	4.80	(0.10)***
Cost	0.38	(0.02)***
Half-Info	-0.22	(0.10)**
Full-Info	0.18	(0.10)*
Second-Phase	0.06	(0.11)
Half-Info×S.H.	0.32	(0.14)**
Full-Info×S.H.	-0.06	(0.14)
Previous-Boycott	0.09	(0.04)**
F-Value	119.83***	
Adj R ²	0.52	
Observation	783	

Notes: * p < 0.1; * * p < 0.5; * * * p < 0.01.

3.2. BUYER'S BEHAVIOR

As shown in Table 5, the purchase ratio in the second phase, 0.87, is significantly higher than that in the first phase, 0.83 (Mann–Whitney z = 1.93). It increases in the second phase despite an increase in the asking price; thus, the buyers appear to acknowledge the inevitable increase in the asking price.¹⁰ This is inconsistent with the result of Tyran and Engelmann (2005) that the consumer boycotts increase after a cost increase deriving from a tax increase. According to Campbell *et al.* (2015), if the rationale of a price increase is justified to the consumers, the consumers perceive the price increase as fair. This implies that the tax increase as a cause of the price increase seems to be well justified to the consumers, and thus, they purchase more rather than less in the first phase. Besides, note that the treatment effects in the first half (Kruskal-Wallis test $\chi^2 = 3.61$) and in the second phase (Kruskal-Wallis test $\chi^2 = 0.47$) are not significant. It does not show any interaction effect between the treatment and phase.

¹⁰An alternative interpretation that a reviewer suggested is that consumers appear to reciprocate the kindness shown by the seller when they perceive an intentional small increase in the seller offer price as being kind even when there is a 2-unit cost increase. However, based on the regression result of the instrument motive in the next subsection, the consumers seem to increase the purchase ratio as the round increases. However, when the round is included, the effect of the second phase is diluted, which seems to be more related to the instrument motive.

	No-Info	Half-Info	Full-Info	Pooled
First phase	0.84	0.86	0.78	0.83
	(0.37)	(0.35)	(0.41)	(0.38)
Second phase	0.88	0.88	0.86	0.87
	(0.33)	(0.32)	(0.35)	(0.33)
Pooled	0.86	0.87	0.82	0.85
	(0.35)	(0.34)	(0.39)	(0.36)

Table 5: The purchase ratio of consumers when the purchase is profitable

Notes: Standard deviation is enclosed in parentheses. 1 refers to 'purchase' while 0 refers to 'boycott'.

Influences of the given value and the asking price

The purchase ratio is also regressed on the value, the asking price, the treatment dummy variables, and the *Second-Phase* dummy variable in Model 1 to find the determinants of the indirect reciprocity. Model 1 used all observations in which the value is greater than and equal to the seller offer. A logistic regression model is employed because the purchase ratio is a binary variable. Moreover, no interaction exists between the treatment and phases; hence, the interaction dummy variables are not incorporated in Model 1.

Model 1: $Purchase_i = a + \beta_1 Value_i + \beta_2 AskingPrice_i + \gamma_1 HalfInfo_i$ + $\gamma_2 FullInfo_i + \gamma_3 SecondHalf_i + \varepsilon_i$

The total number of observations is 980. As shown in Table 6, Model 1 is statistically significant (LR = 273.63). The treatment dummy variables are not statistically significant, whereas the *Second-Phase* dummy is significantly positive. The purchase ratio significantly increases with the value and decreases with the asking price. This result is inconsistent with the buyer's behavior in Proposition 1; that is, the buyers always purchase the goods if the value is greater than and equal to the cost, irrespective of both the value and the asking price. Therefore, the possibility that the consumers are purely egoistic players is rejected. The buyers purchase more as the consumer surplus, $v_i - p$, increases; therefore, the buyers' such behavior seems to underpin the instrumental motive.

To find an effect of APR and additional information given to the consumers, the purchase ratio was regressed differently across each treatment in Table 7. Model 2 is the same as Model 1 except that it uses the observations in the *No-Info*

	Model 1		
Variables	Coeff.	s.e.	
Intercept	-0.52	(0.70)	
Value	1.89	(0.17)***	
Asking-price	-1.87	(0.20)***	
Half-Info	0.12	(0.26)	
Full-Info	-0.21	(0.27)	
Second-Phase	0.60	(0.23)*	
LR	273.63 ***		
Correct percent	88.6%		
Observation	980		

Table 6: The logistic regression result on the purchase decision

Notes: * p < 0.1; * * p < 0.5; * * * p < 0.01.

treatment. Model 3 added APR as an independent variable using the observations in the *Half-Info* treatment, whereas Model 4 also added two variables given to the consumers, *Average-Price* and *Boycott-Count*, using the observations of the *Half-Info* treatment. The *Average-Price* is the average seller-offer price given to the partnered consumer in the previous five rounds. The *Boycott-Count* variable is the average number of boycotting for the partnered consumer in the previous five rounds.

Model 2: $Purchase_i = a + \beta_1 Value_i + \beta_2 AskingPrice_i + \gamma_1 SecondHalf_i + \varepsilon_i$ **Model 3**: $Purchase_i = a + \beta_1 Value_i + \beta_2 AskingPrice_i + \gamma_1 SecondHalf_i + \gamma_2 APR + \varepsilon_i$ **Model 4**: $Purchase_i = a + \beta_1 Value_i + \beta_2 AskingPrice_i + \gamma_1 SecondHalf_i + \gamma_2 APR + \gamma_3 AvgPrice_i + \gamma_4 BoycottCount_i + \varepsilon_i$

In Table 7, the value and the asking price are consistently significant as compared with the pooled regression of Model 1. However, the APR, *Boycott-Count*, and *Average-Price* are not significant in Models 3 and 4.¹¹ Moreover, the *Second-Phase* dummy becomes insignificant. Consequently, the consumers do not consider the reciprocity-related variables in a boycott decision-making, but they consider only the value and the asking price.

¹¹Even in other forms of regression with different combinations of the variables, there is still no significance. Other regression results are available upon request.

Table 7. The logistic regression result across each treatment						
	Μ	Model 2 Model 3 Mo		Model 3		odel 4
Variables	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
Intercept	0.35	(1.13)	-2.76	(1.65)*	-0.49	(2.95)
Value	1.20	(0.22)***	3.26	(0.50)***	1.46	(0.24)***
Asking-Price	-1.24	(0.27)***	-3.08	(0.52)***	-1.41	(0.31)***
Second-Phase	0.50	(0.38)	0.84	(0.56)	0.69	(0.46)
APR	-		-0.01	(0.02)	0.01	(0.01)
Average-Price	-		-		0.06	(0.43)
Boycott-Count	-		-		-0.05	(0.18)
LR	49.	.88***	139	9.65***	72.	88***
Correct Percent	80.9		94.0		85.3	
Observation	307		371		290	

Table 7: The logistic regression result across each treatment

Notes: * p < 0.1; ** p < 0.5; *** p < 0.01. For Model 2, all observations including the first round are used.

The experimental result that the consumers do not have indirect reciprocity is inconsistent with that of Seinen and Schram (2006), who showed evidence of indirect reciprocity. They ran a dictator game, in which a dictator receives a recipient's cooperative history when the recipient was a dictator. The dictator gave more tokens to the recipient who showed more cooperative behavior in the previous rounds despite the cooperative history being unrelated to the current dictator's material payoff. For the sensitivity of the decision, if the dictator gives 1 dollar more to the recipient, his or her profit decreases by exactly 1 dollar. This implies the dictator's adjustment of the degree of donation is finely dependent on the degree of indirect reciprocity or psychological obstacle when he or she faces an uncooperative recipient. However, in the boycott model, if the consumer boycotts, his or her profit decreases by $v_i - p$. The consumer boycotts only if the negative utility of purchasing the good is greater than the expected material utility from $v_i - p$. Therefore, the cost of boycotting in my model is higher than that in Seinen and Schram's (2006) model. Moreover, Seinen and Schram (2006) gave information about the average amount of contribution to the recipient. However, in the boycott model, the buyers obtain the average profit ratio associated with two variables, namely, the cost and the asking price. These two pieces of information cannot be compared in the same line because even the same average profit ratios may reflect the different amounts of profits according to the cost.

Influences of instrumental motive

No decisive evidence of the indirect reciprocity has been seen; thus, whether the consumers have the instrumental motive is also checked. After controlling for the value and the asking price, I determined that if the consumers decrease the purchase ratio as the round increases, they can also do so strategically in terms of the instrumental motive. Even if they are randomly assigned in a different group, the likelihood that the consumers can meet the identical seller is not negligible. For example, in *No-Info* treatment, eight sellers are repeatedly and randomly assigned in a group for the 30 rounds. Even in the most efficiently assigned case, a consumer would meet the identical seller three or four times during the experiment. Therefore, they may perceive all sellers, as a whole, to exert a social pressure that holds down the prices. If so, consumers with the instrumental motive may boycott the sellers more in the early rounds. However, they decrease the boycott because the likelihood of holding the price down in the latter rounds becomes lower and the cost of boycotting increases. To identify, the *Round* variable is incorporated in Model 5.

Consequently, along with *Value* and *Asking-Price*, *Round* is statistically significant in Model 5. It captures that the consumers decrease boycotting as the remaining round decreases after controlling for *Value* and asking price. In addition, the *Second-Phase* dummy becomes insignificant when the *Round* was included. This implies that the consumers seem to increase sequentially their purchase ratio, rather than to increase suddenly in the second phase. Then, the instrumental motive is not rejected. This is inconsistent with the expressive and reciprocity motives, mainly because they do not have a rationale to increase purchasing as the round increases.

4. ROBUSTNESS CHECK

In this study, I also checked whether both sellers and buyers' behaviors are affected by the number of times they encounter the same buyer and the same seller, respectively. The *NumBuyer* is the number of the same buyers whom the seller has met in the current and previous groups showing the total number of meetings. For example, if the seller had met the same buyer twice before for one buyer and he/she had met another buyer once before, the *NumBuyer* would have been five. The higher the *NumBuyer*, the more likely it is that the seller's behavior is path dependent. Also, the *NumBuyer* is likely to increase as the round increases. In Table 9, which shows the regression result including the *NumBuyer* and the *Round*, the *NumBuyer* is insignificant.

	Model 5				
Variables	Coeff.	s.e.			
Intercept	-1.07	(0.74)			
Value	1.91	(0.17)***			
Asking-price	-1.88	(0.20)***			
Half-Info	0.09	(0.27)			
Full-Info	-0.26	(0.27)			
Second-Phase	-0.28	(0.44)			
Round	0.06	(0.03)**			
LR	279.04 ***				
Correct percent	88.8%				
Observation	531				

Table 8: The logistic regression result on the purchase decision with *Round* variable

Notes: * p < 0.1; ** p < 0.5; *** p < 0.01. Model 5 added the *Round* variable as an independent variable into Model 1.

Additionally, the *NumSeller* is the number of the same seller whom the buyer has met in the current and previous groups as the *NumSeller*. In Table 10, whether the *NumSeller* affects the purchase decision is checked. Although the *NumSeller* is significant in the model without the *Round*, its significance disappears when the *round* variable is employed. Considering that the *NumSeller* increases with the *round*, the consumers increase the purchase ratio as the *round* increases, which strengthens the instrument motive.

Additionally, Table 11 shows the average purchase ratio across the *Round* and *NumSeller*. The overall purchase ratios of the case in which the *NumSeller* is 1 are similar to others, except when the *NumSeller* is greater than 4. Moreover, the Kruskal-Wallis test does not reject significantly the hypothesis that the purchase ratios differ depending on the *NumSeller* ($\chi^2 = 12.91$). Also, when the *NumSeller* is less than and equal to 4, its significance decreases ($\chi^2 = 1.70$). Therefore, the frequency of meeting the same seller does not seem to influence the consumers' behavior significantly.

5. CONCLUSION

This study mainly investigates the role of reciprocity preferences in the boycott participation decision of buyers and how sellers respond to buyers who

Variables	Coeff.	s.e.	Coeff.	s.e.
Intercept	4.79	(0.10)***	4.83	(0.12)***
Cost	0.38	(0.02)***	0.38	(0.02)***
HalfInfo	-0.22	(0.10)**	-0.22	(0.10)**
FullInfo	0.17	(0.10)	0.17	(0.10)
SecondPhase	0.05	(0.11)	0.07	(0.15)
Half-Info×S.H.	0.32	(0.14)**	0.32	(0.14)**
Full-Info×S.H.	-0.06	(0.14)	-0.06	(0.14)
Previous-Boycott	0.09	(0.04)**	0.09	(0.04)**
NumBuyer	2.36e-3	(7.14e-3)	2.88e-3	(7.42e-3)
Round	-		-1.78e-3	(7.05e-3)
F-Value	104.74***		93.00***	
Adj R ²	0.51		0.51	
Observation	783		783	

Table 9: The regression result on the asking price with the *NumBuyer* variable

Notes: * p < 0.1; * * p < 0.5; * * * p < 0.01.

demonstrate reciprocity. The results show that sellers have an overestimated belief that consumers are more likely to participate in boycotting when the selling price is high. This overestimation is related to the fact that boycotting is an effective tool for executives to change firms' behaviors (Friedman, 1999; Kritikos and Boller, 2004; Davidson *et al.*, 1995). Since share prices are negatively associated with boycott announcements (Davidson *et al.*, 1995), sellers may overestimate the effect of boycotts before consumers participate in boycotts. Moreover, this study's findings do not support Tyran and Engelmann's (2005) experimental results that boycotting does not lower sellers' asking prices.

Moreover, reciprocity concerns do not affect boycott participation decisions, implying that consumers do not perceive a firm's egregious behavior toward another consumer as an egregious action that warrants boycotting. This implies that consumers do not participate in boycotts to punish firms for their violation of social norms. Rather, buyers participate in boycotts based on instrumental and partly expressive motives. This result is consistent with various studies that highlighted the instrumental motive (Sen *et al.*, 2002; Klein *et al.*, 2002; Makarem and Jae, 2016). Based on a text analysis of tweets on Twitter regarding boycott motivations, instrumental motives were found to be more prominent than non-instrumental motives (Makarem and Jae, 2016). Moreover, many previous consumer boycotts of organizations drew on instrumental motives (Friedman, 1999).

Variables	Coeff.	s.e.	Coeff.	s.e.
Intercept	-0.84	(0.73)	-1.16	(0.75)
Value	1.89	(0.17)***	1.91	(0.17)***
Asking-price	-1.87	(0.20)***	-1.88	(0.20)***
Half-Info	0.16	(0.27)	0.11	(0.27)
Full-Info	-0.21	(0.27)	-0.25	(0.27)
Second-Half	0.37	(0.26)	-0.25	(0.44)
NumSeller	0.16	(0.09)*	0.09	(0.09)
Round	-		0.05	(0.03)*
LR	276.97 ***		279.97 ***	
Correct percent	88.8%		88.8%	
Observation	980		980	

Table 10: The logistic regression result on the purchase decision with *Round* variable

Notes: * p < 0.1; * * p < 0.5; * * * p < 0.01.

However, this finding must be examined further in future research because an increase in price may not be enough to be perceived as a firm's egregious act deriving a social boycott. For example, despite massive dismissal being irrelevant to consumers' interests, it may trigger a social boycott.

Additionally, consumers may boycott a firm's products in the early stages to express their negative feeling relative to high prices. However, if the buyers perceive that the seller will not reduce the asking price significantly, they may stop boycotting due to costs and the decreased possibility of influencing firm's behavior. In such cases, it is difficult to discern whether the consumers' behavior is governed by merely instrumental motives or partly by expressive motives as well, and whether the preferences of the consumers have changed. If we acknowledge that consumers with purely instrumental motives rarely boycott, then we can reasonably conclude that the preferences of the consumers are heterogeneous (Makarem and Jae, 2016).

In an experimental sense, since the observation number is not large enough to claim that reciprocal influence does not exist, an opposite result may emerge in a case with a large enough observation. Therefore, the experimental result should be limitedly understood in a sense that the hypothesis that reciprocity does not influence the boycott decision is not rejected statistically. Moreover, the model in this study differs from the previous experimental research regarding indirect reciprocity in that the decision-maker is considered the second mover. Buyers

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Table 11: The average purchase ratio across the *Round* and the *NumSeller*

Rounds/	1	2	3	4	5-9
NumSeller					
2	0.77 (0.43)	1.00 (-)	-	-	-
3–7	0.83 (0.37)	0.77 (0.42)	0.85 (0.38)	-	-
8-11	0.84 (0.37)	0.81 (0.40)	0.89 (0.31)	0.75 (0.46)	-
12–14	0.86 (0.35)	0.86 (0.35)	0.76 (0.44)	0.80 (0.41)	1.00 (-)
15-22	0.88 (0.33)	0.81 (0.40)	0.83 (0.38)	0.95 (0.22)	0.82 (0.39)
23-30	0.89 (0.32)	0.83 (0.38)	0.93 (0.26)	0.80 (0.40)	0.96 (0.19)
Mean	0.84 (0.37)	0.81 (0.39)	0.86 (0.35)	0.85 (0.36)	0.94 (0.24)
Obs.	284	264	196	124	112

Notes: Standard deviation is enclosed in parentheses. The *rounds* are divided into a different row when the new *NumSeller* number emerges. For example, number 4 is used as the *NumSeller* is first shown in round 8. Moreover, because the *NumSeller* above 4 is rare, the rounds were tied as the same group.

choose to boycott only after observing the high asking price of the seller who is the first mover. Therefore, in a limited sense, this finding can be interpreted as follows: consumers develop instrumental motives as the second movers after observing the first mover's behavior. In other words, if consumers act as the first mover in choosing to boycott a firm, expecting the seller's response, the outcomes may be different.

APPENDIX A: PROOF OF PROPOSITION 1

Proof. Let us assume that the seller believes in the buyers' values independent from the cost drawn. Buyers purchase the good only if $v_i \ge p$, regardless of the seller's cost drawn. The values are drawn from an identical and independent uniform distribution [4, 10]. Then, after the cost is realized, the seller's expected payoff is:

$$E(\pi_f) = 2Pr(v_i \ge p)(p-c) = \frac{10-p}{3}(p-c)$$

Therefore, the optimal strategy of the seller is:

$$p^*(c) = 5 + \frac{c}{2}$$

APPENDIX B: EXPERIMENT DESCRIPTION AND SCREENS

The experiment description presents in Korean as following the original way in the experiment.

보이콧 게임 방법

(1) 게임이 시작되면 여러분은 각자 소비자 혹은 판매자의 역할을 임으로 할당 받게 됩니다. 한 명의 판매자와 두명의 구매자가 한 팀이 되어 게임을 진 행합니다.

(2) 판매자는 임으로 비용 C를 할당받으며 소비자는 임으로 가치 V를 할당 받습니다. 비용과 가치는 모두 0과 10사이에서 임으로 할당됩니다.

(3) 판매자는 비용 C이상의 가격으로 물건을 소비자에게 팔 때 그 만큼 이 익이 됩니다. 예를 들어 비용이 3인데 5의 가격을 제시하였고 두명의 소비자가 구매하였다면 (5-3)*2가 판매자의 수익이 됩니다.

(3-1) 판매자는 소수점 첫째자리까지 가격을 정할 수 있습니다. 예를 들어 5.1, 5.3의 가격 제시도 가능합니다.

구매자는 NoInfo조작, HalfInfo조작, FullInfo조작의 세가지에 따라 각각 다른 정보를 가지게 됩니다. NoInfo조작에서(4)를 실해하고 종료합니다. HalfInfo 조작에서는 (4)와 (4-1)의 정보를 추가로 제공받습니다. FullInfo조작에서는 (4)와 (4-1), (4-2)의 정보를 추가로 제공받습니다.

(4) 구매자는 가치 V보다 저렴한 가격으로 구매할수록 이익이 증가합니다. 예를 들어 가치가 7일 때 가격 5의 물건을 구매하면 2가 구매자의 수익이 됩니 다.

(4-1) 구매자에게 과거 판매자의 과거 5회의 마진율 평균을 제시합니다. 우선 원가율은 가격/비용*100입니다. 예를 들어, 비용이 3인데 5의 판매가격 을 제시하였다면 원가율은 3/5*100=60%입니다. 그 이전의 원가율이 50%라면 지난 2회의 평균 원가율은 55%입니다. 이 때 마진율은 45%가 됩니다. 즉, 10 이 판매가격이라면 4.5가 마진입니다. 5회가 되지 않을 경우 과거 모든 회의 평균을 제시합니다.

(4-2) 구매자에게 상대 소비자의 지난 5회의 평균가격과 그에 따른 보이 콧 횟수를 제시합니다. 예를 들어 판매자가 5의 가격을 제시하였고 소비자가

구매하지 않았다면 5의 가격에 1회 보이콧을 실시하였습니다. 그 이전에 6의 가격을 제시하였고, 구매자가 구매를 하였다면, 지난 2회간 평균 5.5의 가격에 1회 보이콧을 실시하였습니다.

(5) 순서는 판매자가 먼저 가격을 제시하고 구매자가 구매결정을 내립니다.

(6) 이러한 구매행위를 총 30회 진행합니다. 방법은 동일합니다. 다만, 16 회부터는 판매자에게 비용상승 원인이 존재하여 전반적으로 할당 받은 비용 이 상승합니다.

(7) 게임이 끝나고 설문이 있습니다.

(8) 실험자들은 게임이 끝난 후 참가비 5천원과 위 30라운드에서 얻은 점수 * 200원을 곱한 것을 더하여 보상비로 통장으로 지급됩니다.



Figure 3: The experiment screen for the seller

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Figure 4: The experiment screen for the seller



Figure 5: The experiment screen for the seller



Figure 6: The experiment screen for the seller *Notes:* This screen was shown to both the seller and the buyers.

REFERENCES

- Campbell, C. L., Heinrich, D., and V. Schoenmuller (2015). "Consumers' Reaction to Fair Trade Motivated Price Increases," *Journal of Retailing and Consumer Services* 24, 79–84.
- Cissé-Depardon, K. and G. N'Goala (2009). "The Effects of Satisfaction, Trust and Brand Commitment on Consumers' Decision to Boycott," *Recherche et Applications en Marketing (English Edition)* 24(1), 43–66.
- Davidson, W. N., Worrell, D. L., and A. El-Jelly (1995). "Influencing Managers to Change Unpopular Corporate Behavior through Boycotts and Divestitures: A Stock Market Test," *Business and Society* 34(2), 171–196.
- Delacote, P. (2008). "Contributions of Game Theory to the Analysis of Consumer Boycotts," in *Game Theory and Policy Making in Natural Resources* and the Environment, eds., A. Dinar, J. Albiac, and J. Sánchez-Soriano, Routledge, New York, 266-277.
- Dufwenberg, M., Gneezy, U., Guth, W., and E. van Damme (2001). "Direct vs Indirect Reciprocity: An Experiment," *Homo Oeconomicus* 18(1), 19–30.
- Fischbacher, U. (2007). "Z-Tree: Zurich Toolbox for Ready-Made Economic Experiments," *Experimental Economics* 10(2), 171–178.
- Franciosi, R., Kujal, P., Michelitsch, R., Smith, V., and G. Deng (1995). "Fairness: Effect on Temporary and Equilibrium Prices in Posted-Offer Markets," *The Economic Journal* 105, 938–950.
- Freestone, O. M. and P. J. McGoldrick (2008). "Motivations of the Ethical Consumer," *Journal of Business Ethics* 79, 445–467.
- Friedman, M. (1991). "Consumer Boycotts: A Conceptual Framework and Research Agenda," *Journal of Social Issues* 47, 149–168.
- Friedman, M. (1995). "American Consumer Boycotts in Response to Rising Food Prices: Housewives' Protests at the Grassroots Level," *Journal of Consumer Policy* 18(1), 55–72.
- Friedman, M. (1999), Consumer Boycotts: Effecting Change Through the Marketplace and the Media, Routledge, New York.

- Friedman, M. (2001). "Ethical Dilemmas Associated with Consumer Boycotts," Journal of Social Philosophy 32(2), 232–240.
- Hahn, T. and N. Albert (2017). "Strong Reciprocity in Consumer Boycotts," *Journal of Business Ethics* 145, 509–524.
- Hoffmann, S. and S. Müller (2009). "Consumer Boycotts due to Factory Relocation," *Journal of Business Research* 62(2), 239–247.
- Iriş, D. (2017). "Cournot Duopoly and Tacit Collusion under Fairness and Reciprocal Preferences," *Journal of Economic Theory and Econometrics* 28(4), 22–39.
- John, A. and J. Klein (2003). "The Boycott Puzzle: Consumer Motivations for Purchase Sacrifice," *Management Science* 49(9), 1196–1209.
- Kim, R. C., Yoo, K. I., and H. Uddin (2018). "The Korean Air Nut Rage Scandal: Domestic versus International Responses to a Viral Incident," *Business Horizons* 61(4), 533–544.
- Klein, J. G., Smith, N. C., and A. John (2002). "Exploring Motivations for Participation in a Consumer Boycott," *Advances in Consumer Research* 29, 363–369.
- Klein, J. G., Smith, N. C., and A. John (2004). "Why We Boycott: Consumer Motivations for Boycott Participation," *Journal of Marketing* 68, 92–109.
- Kozinets, R. V. and J. Handelman (1998). "Ensouling Consumption: A Netnographic Exploration of The Meaning of Boycotting Behavior," Advances in Consumer Research 25, 475–480.
- Kritikos, A. and F. Bolle (2004). "Punishment as a Public Food. When Should Monopolists Care about a Consumer Boycott?," *Journal of Economic Psychology* 25, 355–372.
- Leimar, O. and P. Hammerstein (2001). "Evolution of Cooperation through Indirect Reciprocity," *The Royal Society* 268, 745–753.
- Makarem, S. C. and H. Jae (2016). "Consumer Boycott Behavior: An Exploratory Analysis of Twitter Feeds," *Journal of Consumer Affairs* 50(1), 193–223.

- Rabin, M. (1993). "Incorporating Fairness into Game Theory and Economics," *The American Economic Review* 83(5), 1281–1302.
- Seinen, I. and A. Schram (2006). "Social Status and Group Norms: Indirect Reciprocity in a Repeated Helping Experiment," *European Economic Review* 50(3), 581–602.
- Sen, S., Gürhan-Canli, Z., and V. Morwitz (2002). "Withholding Consumption: A Social Dilemma Perspective on Consumer Boycotts," *Journal of Consumer Research* 47, 777–780.
- Tyran, J. R. and D. Engelmann (2005). "To Buy or Not to Buy? An Experimental Study of Consumer Boycotts in Retail Markets," *Economica* 72, 1–16.