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Article

An experimental study on internal and external negotiation for trade agreements

An Experimental Study on Internal and External Negotiation for Trade Agreements

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This paper experimentally studies the performance of negotiation considering individual and party, like a country, share of benefit over the best ones. It experiments two-stage bargaining games, internal and external negotiations. From the experimental results, this paper shows strong tendency to select fair allocation in the internal negotiations, but the tendency would be weaker with attractive outside option. In addition, the outside option may claim difference in individual benefit. From the regressions on individual performance in the negotiations, being a proposing party would matter to enhance the performance. However, relative individual performance within party fairness matters. Still attractive no-agreement options happen to break the tendency. As policy implication for trade negotiation, this paper warns that possible loss in individual benefit from not active participation to the external negotiations, no active role of proposer in case that players stick to internal allocations, and deviation of advantageous sector due to attractive outside options.

I. INTRODUCTION

Trade liberalization happens to make winners or losers within countries. As argued by Ricardian, Hecksher-Ohlin, and other trade models, there would be no doubt that trade liberalization creates benefit for countries implemented such policy. However, since trade liberalization demands specializations on the most efficient sectors within country, relatively less efficient sectors inevitably have less resources allocated and thus less production. It is said that trade liberalization would enhance efficiency by allowing production resource within country to be allocated in proper sectors in production but it would aggravate the fairness between sectors within a country.

Since the trade negotiation results in serious gap between sectors, they would be in conflict, and thus the trade liberalization is hard to implement. Uruguay Round

had to go through eight- year long negotiations, and the Trans-Pacific Partnership agreement, only with 12 countries, also took almost eight years to be concluded.

This paper experimentally studies the performance of negotiation considering individual and party, like a country, share of benefit over the best ones. The experimental design for this paper considers two-stage bargaining games, internal and external negotiations. The first stage, internal negotiation, is designed to be an internal negotiations between two players. One of the two players is called power player, who would be advantageous position on the allocation of fixed amount benefit compared to other player, non-power player. The second stage of the games, external negotiation, is a divide-the dollar games between two power players in each party. The power player who is at better position in allocation of benefit participate in the external negotiation as a representative of each party. In the end, share of benefit to each party would be determined by the performance at the external negotiation, and the share attributed to each party would be divided by the allocation determined at the internal negotiation.

From the experimental results, this paper is to analyze some aspects of internal and external negotiations. This paper studies (1) allocation of benefit as the result of internal negotiations, (2) share of benefit to players, and (3) factor to affect performance of external or internal negotiations on the trade negotiations. From the analyses, we can have policy implications on trade negotiations in that how to start and peruse the trade negotiations considered internal and external negotiations.

Baron and Ferejohn (1989) identify the equilibrium in non-cooperative multilateral bargaining games and shows the proposing power in the legislative bargaining. Morelli (1999)'s demand bargaining game shows the limited proposing power under a various rules. Winter (1996) added the power of veto right to the Baron and Ferejohn (1989). As experimental studies on bargaining, Frechette, Kagel, and Lehrer (2003) experiment Baron and Ferejohn (1989), and Frechette, Kagel, and Morelli (2005a, 2005b, 2005c) compare Gamson (1961), Baron and Ferejohn (1989) and Morelli (1999) with diverse experimental settings. Those show the qualitative similarity but quantitative difference between experiments and the theories. Kagel, Sung, and Winter (2010), and Sung (2012, 2015a) discuss veto player games based on Baron and Ferejohn (1989) and Winter (1996). Those stress the strength of veto power, compared to that of proposing power or multiple votes. In particular, Sung (2015a) applies the experimental results on games with veto players on the trade negotiations and identifies learning mechanism in the process

of negotiations. Sung (2015b) experimentally analyzes the Trans-Atlantic Trade and Investment Partnership (TTIP) using the two stage games. It sees determinants to bring better agreement in internal negotiations and factors to affect absolute size of individual prize for the TTIP. Sung (2015a) studies the agreement in the internal negotiation would result in higher payoff for players. Although this paper uses the same experimental data with Sung (2015b), it shows relative performance of individual players unlike Sung (2015b). In addition, this paper tries to compare allocations between different type of experiments and relative performances between internal and external distribution of benefit.

The rest of this paper is organized as follows: Section II provides describes the experimental design, and Section III shows conclusions from the experimental results. Section IV provides the policy implications and Section V does concluding remarks.

II. EXPERIMENTAL DESIGN[1]

The experimental design for this paper is identical to Sung (2015b). While Sung (2015b) focus on the aspect of the TTIP negotiations, but this paper considers the relative individual performance compared to the best ones or parties' performance.

This paper accounts for three types of experiments, called Exp1, Exp2, and Exp3. In each experiment, four or five teams play together.[2] The number of subjects in each experiment are 20 to 36. Each team consists of two parties, and each party has two players. One of the two players is called a power player who can obtain benefits greater than or equal to those of another player (non-power player) in the party at the internal negotiation. The power players as representative negotiators take part in external negotiations with other parties.[3] The role of players is randomly and fairly assigned by casting a dice as typical experimental designs. Players in each team supposedly do not know each other.

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[1] This chapter summarizes the experimental design in Sung (2015b)

[2] Exp1 and 2 consist of two sessions and Exp3 does one session. Each sessions consists of four to five teams.

[3] External trade negotiations are generally pursued by advantageous sectors, so this paper set the power on the representative in the external negotiations.

Table 1. Basic Experimental Designs

	Exp1	Exp2	Exp3
Number of Subjects	32	36	20
Discount Factor to the Benefits (External Negotiation)	0.5	0.95	0.5
Number of Teams	8	9	5

Source: Sung (2015b)

When subjects start a game, players are at the internal negotiations. For the internal negotiations, each player chooses one out of six allocations simultaneously without any communication.[4] As shown in Table 2, the six allocations on the benefits are displayed to each players. As the allocation number increases, those become more equal distributions up to the equalized distribution between power and non-power players in the internal negotiations.

If players in a party choose the same allocation without any communications, experimenters tell them that they are in agreement. This means that outcome of the external negotiation would be distributed as the agreed allocation. If not, then experimenters would tell players that they are not in agreement. This 'no agreement' makes players end up with a designated allocation in each experiment, and it may be worse one than agreed allocations.[5] These relatively worse allocations in 'no agreement' options imply that due to conflicts (or no agreement) from negotiations players could not fully enjoy outcome of the negotiations. For example, although trade liberalizations as a result of the trade negotiations would be beneficial for a country, the country may not utilize the possible benefit due to their lack of proper implementation process from domestic conflicts in interest.

External negotiations start right after the internal ones were wrapped up. External negotiation is to divide a fixed amount of money between parties. A power player comes to the external negotiations as a representative of his party.

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[4] Even though no direct communication is allowed within team, players could indirectly communicate with each other by looking at the result and respond to others' decisions in the repeated Games and rounds.

[5] For Exp3, from Game 1 to 6, this may be equal to or better than allocation 5 or 6 for power player.

Two power players take seats, and one of the two players is randomly chosen as a proposer who suggests the division of the money between parties.

Table 2. Available Allocation at The Internal Negotiations

Allocation of Benefits		Share to Power Players	Share to Non-Power Players
Allocation 1		100%	0%
Allocation 2		90%	10%
Allocation 3		80%	20%
Allocation 4		70%	30%
Allocation 5		60%	40%
Allocation 6		50%	50%
No Agreement	Exp1		
	Games 1~6	30%	15%
	Games 7~12	20%	10%
	Exp2		
	Games 1~6	30%	15%
	Games 7~12	20%	10%
	Exp3		
	Games 1~6	60%	30%
	Games 7~12	40%	20%

Source: Sung (2015b)

    As a power player is chosen as a proposer, he or she keeps the role until the external negotiation is over. Proposers write down the allocations on money without any communication, another power player (partner), who is not chosen as a proposer, may accept or reject the suggested division. If the allocation is agreed, then the external one is over, and the agreed allocation is implemented to parties. The amount allocated to one party in the implemented allocation is distributed to each player as the result of internal negotiation. If the non-proposer power player rejects the suggested offer in the external negotiations, then the negotiation moves to another round. As they move to another round, the proposer suggests a new division of the pie, which is shrunk by 50% (in Exp1 and Exp3) or 5% (in Exp2). In the round, the partner may accept or reject the division. If the new division is rejected again, then the external negotiation would start another round. This process repeats until a division is accepted or the process reaches the deadline, which may be 5 rounds (in Exp1 and Exp3) or 10 rounds (in Exp2). In the case of

no division being accepted by the final round, no one has any positive pie. While the experiments are in progress, each player would know whether they are in agreement or not in the internal negotiations within their parties. In addition, non-power players are told the results in the external negotiations from power players who did participate the external ones.

Three experiments were conducted: two sessions for Exp1 and Exp2, and one session for Exp3. In each session, four or five teams played together, and no activity was allowed between teams. Experimental subjects were recruited through bulletin boards at the University of Seoul and its official website. All subjects were students at the University of Seoul, who took at least an economics courses previous or current semester. Before they started cash experiments, they went through instructions and allowed to practice through an exercise experiment. The experiments took an hour to complete. The subjects played 12 cash games (one game consisted of an internal and external negotiation). Because the pace of playing each game varied according to the team, they resumed games together after the completion of six games. After all games were finished, one out of a total of 12 games was randomly chosen for payoff purposes. They were paid KRW 10,000 (around USD 9) for their attendance and participation in the selected game. According to the ethical guide and regulation from the National Research Foundation (NRF), no one would get negative benefits as a result of attending experiments.

Table 3. Total Money Available at the External Negotiation

(Unit: KRW 1000)

	Exp1	Exp2	Exp3
Round 1	80	80	80
Round 2	40	76	40
Round 3	20	72.2	20
Round 4	10	68.6	10
Round 5	5	65.2	5
Round 6		61.9	
Round 7		58.8	
Round 8		55.9	
Round 9		53.1	
Round 10		5.09	

Because the proposer's role did not change at the external negotiations, the negotiations are likely to be an ultimatum game. Therefore, the ex-post expected payoff of the proposer at the external negotiations was KRW 80,000 (around USD 72.), and the ex-ante expected payoff was KRW 40,000. Then, at the internal negotiations, the subjects were theoretically predicted as power players who would be negotiators at the external negotiations and were supposed to take a larger share of the pie than non-power players.

III. EXPERIMENTAL RESULTS[6]

This paper shows a series of conclusions from the experimental results as typical experimental literatures.

Conclusion 1: *Players prefer to select more equal allocations than others. The frequency to select most fair one, Allocation 6, would not be statistically different with different delay cost in the external negotiations. However, players prefer to select relatively more unequal allocations in Exp3 with attractive compensation on no agreement in the internal negotiations than those in Exp1 and Exp2.*

As shown in Figure 1, frequency of allocation 6 in Exp1 [Exp2] is about 36.8 [44.4]% larger than that of allocation 5 in Exp1, and selection on allocation in Exp1 and Exp2 are not statistically different (5.28 vs 5.27, on average). Figure 2, 3, and 4 show the relative frequency of proposed allocations over game.

Using the relative frequency of allocation over game has similar result in Exp1 and 2, as players repeat Games, the frequency of selecting Allocation 6 gets steadily higher and that of other allocation gets lower. The frequency of selecting Allocation 6 in Exp1 and 2 is not statistically different each other ($z=1.28$), but unlike Exp1, in Exp2, the relative frequency stays 50% level for the last seven games. Interestingly, frequency of allocation 4 is strictly lower in Exp2 than Exp1. For Exp3, the frequency of allocation 5 is even larger than that of allocation 6 in Exp1 and 2 ($z=-2.722$, p-value<0.01, and $z=-1.702$, p-value<0.05, one-tailed Mann-

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[6] This chapter summarizes the experimental design in Sung (2015b)

Whitney Test)[7]. In Exp1 and 2, the frequency from Game 1 to 6 is a bit larger than that from Game 7 to 12 due to the difference in penalty on no agreement. However, in Exp3, difference of the frequency is evident in Figure 4. It is suspected that the allocation on no agreement in Exp is was equal to allocation 5 for power players for Game 1 to 6, but from Game 7 to 12 it became even worse than Allocation 6.

   As expected, the selection on allocation in Exp3 is more unequal than Exp1 and 2 (z=3.00, p-value<0.01, and z=4.00, p-value<0.01, one-tailed Mann-Whitney Test)[8]. It is due to the existence of an attractive no agreement option in Exp3. The probabilities to reach agreement in Exp1 and 2 are 73. 4 and 71.3%, so those are larger than that in Exp3 (62.5%).

Figure 1. Frequency of Proposed Allocations

	Allo1	Allo2	Allo3	Allo4	Allo5	Allo6
Exp1	0	1	3	65	133	182
Exp2	1	0	34	28	151	218
Exp3	0	0	7	28	134	71

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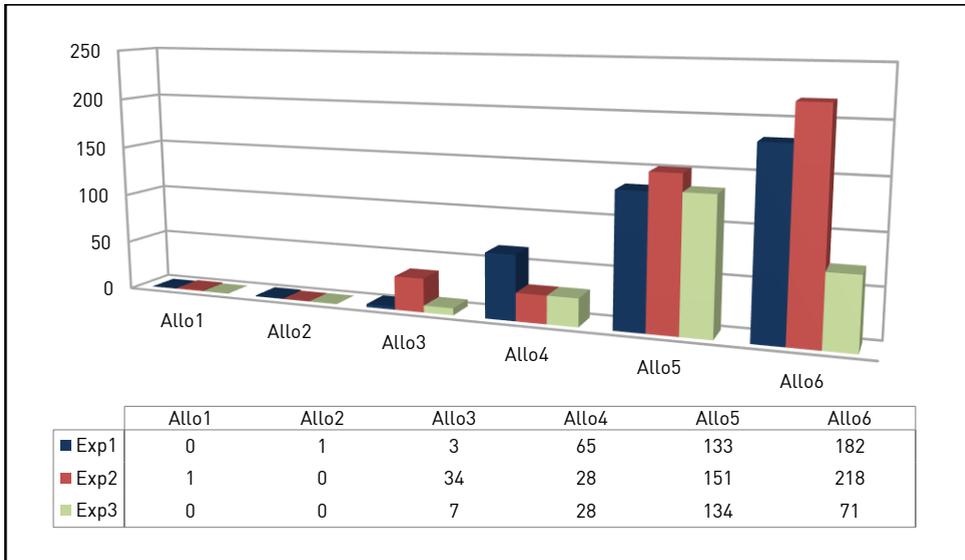
[7] The number of observations are 12 in each.

[8] The number of observations for Exp1, Exp2, and Exp3 are 384, 432, and 240, respectively.

Figure 2. Relative Frequency of Proposed Allocations in Exp1

	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7	Game 8	Game 9	Game 10	Game 11	Game 12
Allo1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Allo2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0
Allo3	0.0	3.1	0.0	0.0	0.0	3.1	3.1	0.0	0.0	0.0	0.0	0.0
Allo4	21.9	21.9	21.9	18.8	18.8	12.5	12.5	18.8	12.5	15.6	15.6	12.5
Allo5	25.0	34.4	34.4	37.5	37.5	40.6	34.4	34.4	37.5	31.3	34.4	34.4
Allo6	53.1	40.6	43.8	43.8	43.8	43.8	50.0	43.8	50.0	53.1	50.0	53.1
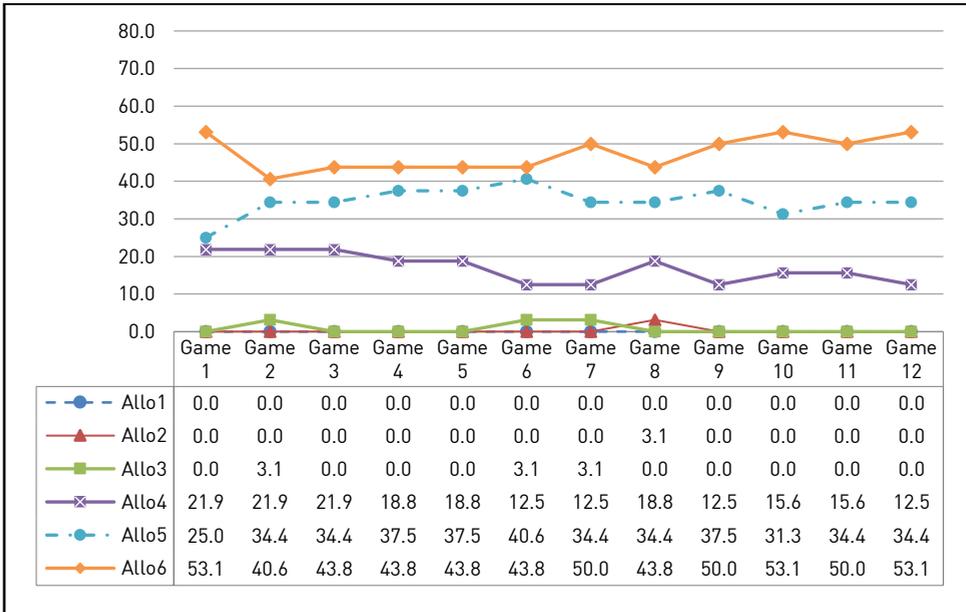
Figure 3. Relative Frequency of Proposed Allocations in Exp2

	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7	Game 8	Game 9	Game 10	Game 11	Game 12
Allo1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8
Allo2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Allo3	13.9	8.3	2.8	8.3	5.6	5.6	5.6	8.3	8.3	8.3	11.1	8.3
Allo4	19.4	13.9	16.7	5.6	2.8	8.3	8.3	2.8	0.0	0.0	0.0	0.0
Allo5	19.4	30.6	30.6	33.3	33.3	36.1	36.1	38.9	41.7	41.7	38.9	38.9
Allo6	47.2	47.2	50.0	52.8	58.3	50.0	50.0	50.0	50.0	50.0	50.0	50.0
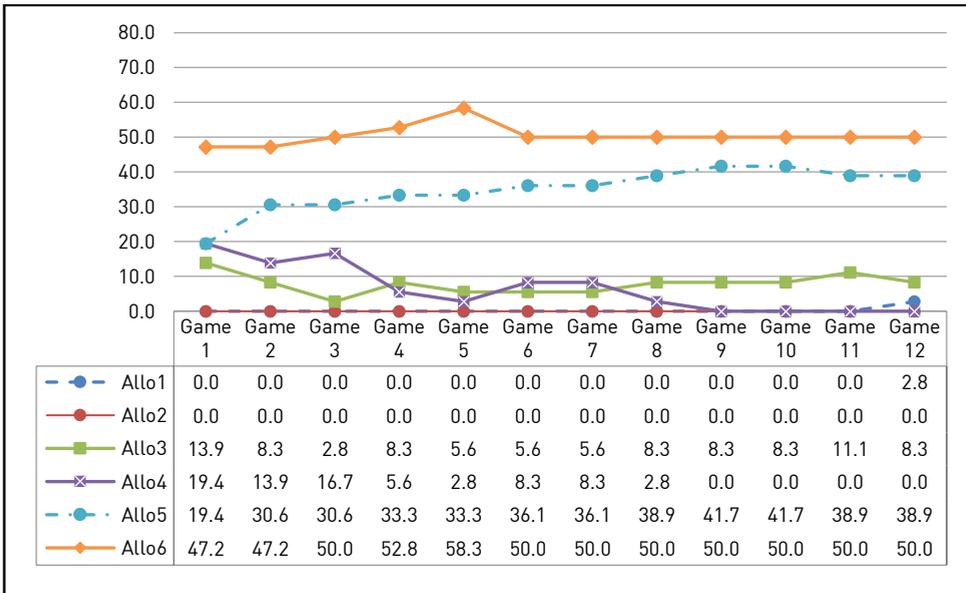
Figure 4. Relative Frequency of Proposed Allocations in Exp3

	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7	Game 8	Game 9	Game 10	Game 11	Game 12
Allo1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Allo2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Allo3	5.0	0.0	0.0	0.0	10.0	0.0	10.0	5.0	5.0	0.0	0.0	0.0
Allo4	25.0	25.0	10.0	15.0	15.0	5.0	15.0	5.0	5.0	5.0	10.0	5.0
Allo5	50.0	65.0	60.0	65.0	60.0	70.0	45.0	55.0	45.0	50.0	50.0	55.0
Allo6	20.0	10.0	30.0	20.0	15.0	25.0	30.0	35.0	45.0	45.0	40.0	40.0
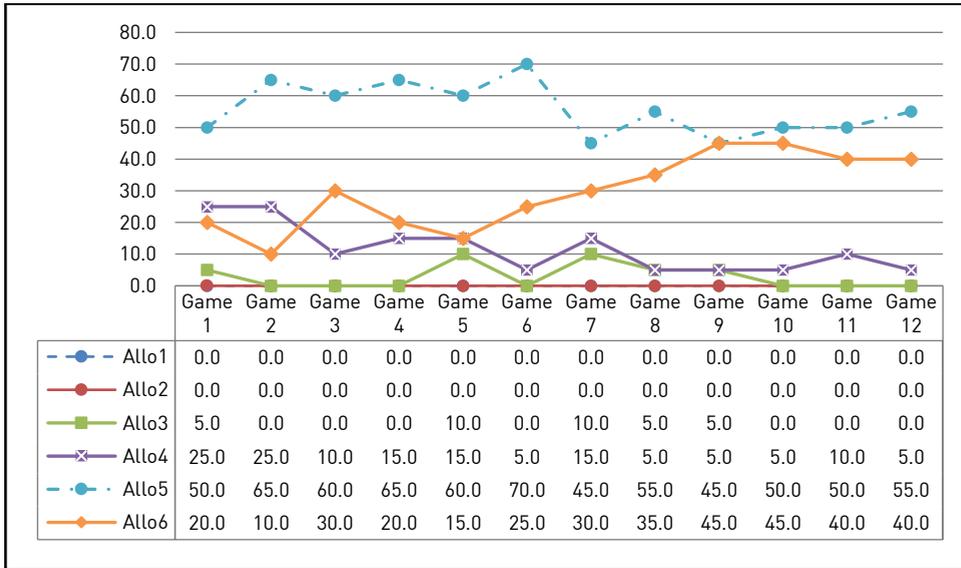
Conclusion 2: *The shares of benefit to the parties in Exp1 and 2 are not statistically different from each other. However, that in Exp1 and 2 are larger than that in Exp3. Although no statistically difference in share to each players between Exp1, 2, and 3, its difference were clear as the allocation for no agreement at the internal negotiation has changed. In particular, considered agreed or not agreed allocations separately, the differences in individual share were observed.*

The share of benefit to the party in Exp1 and 2 are statistically larger than that in Exp3 at 6% and 1% significance level (Mann-Whitney Test). In particular, the individual share of benefits for agreed or not-agreed were not statistically different from each other. From Game 1 to 6, players had larger share of benefit in Exp3 than Exp1 or 2 (z=-2.672, p<0.01; z=-2.729, p<0.01, Mann-Whitney one-tailed test).[9]

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[9] The number of observations for Exp1, Exp2, and Exp3 are 192, 216, and 120, respectively.

Figure 5. Individual Share of Benefit

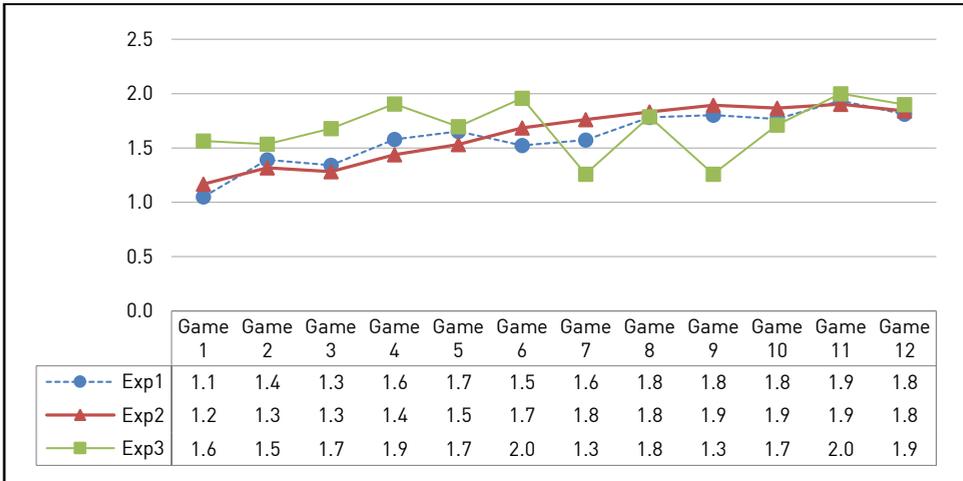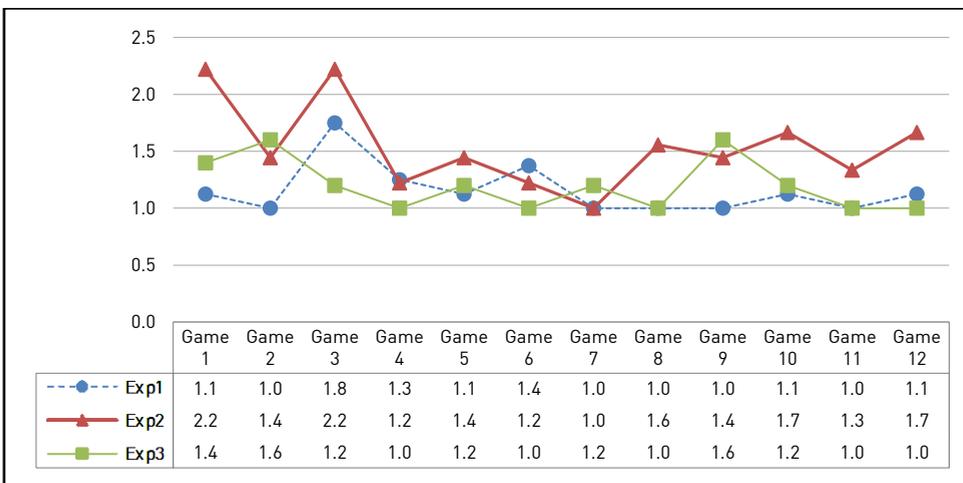|	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7	Game 8	Game 9	Game 10	Game 11	Game 12
Exp1	1.1	1.4	1.3	1.6	1.7	1.5	1.6	1.8	1.8	1.8	1.9	1.8
Exp2	1.2	1.3	1.3	1.4	1.5	1.7	1.8	1.8	1.9	1.9	1.9	1.8
Exp3	1.6	1.5	1.7	1.9	1.7	2.0	1.3	1.8	1.3	1.7	2.0	1.9

Looking at the individual share of benefit, individual shares in Exp1 and 2 are larger than Exp3 (p-value<0.01) only when the allocation at the internal negotiation is on agreement. However, there were no statistical difference of individual share between Exp1 and 2. For allocations with no agreement that give the same benefit as allocation 5 for power players, individual shares in Exp1 and 2 are smaller than Exp3 (p-value<0.01).

Figure 6. Round at the External Negotiations

	Game 1	Game 2	Game 3	Game 4	Game 5	Game 6	Game 7	Game 8	Game 9	Game 10	Game 11	Game 12
Exp1	1.1	1.0	1.8	1.3	1.1	1.4	1.0	1.0	1.0	1.1	1.0	1.1
Exp2	2.2	1.4	2.2	1.2	1.4	1.2	1.0	1.6	1.4	1.7	1.3	1.7
Exp3	1.4	1.6	1.2	1.0	1.2	1.0	1.2	1.0	1.6	1.2	1.0	1.0

Conclusion 3: *For individual performance, which is defined as individual benefit over best individual benefit in all experiments, agreement at the internal negotiations would lead higher individual benefit. In addition, being a member of proposing party would be better for higher individual benefit than being a proposer. For higher individual performance over party performance, fair allocation would be preferred in Exp1 and 2, but not necessary, and agreement may not be preferred in Exp3.*

Table 4. Explanations of Variables

Variable	Explanation
IndivPerform	Individual benefit over the best individual benefit in all experiments
PartyPerform	Party benefit over the best party benefit in all experiments
IndivPartyPerform	*IndivPerform* over *PartyPerform*
Exp2	1 if subjects are playing in Exp2 and 0 otherwise
Exp3	1 if subjects are playing in Exp3 and 0 otherwise
AlloInternal	Allocation chosen by the subject at the internal negotiations
AlloIntenral2	The interaction term between *AlloInternal* and *Exp2*
AlloIntenral3	The interaction term between *AlloInternal* and *Exp3*
AggInternal	1 if both subjects in a party choose the same allocation simultaneously at the internal negotiations 1 and 0 otherwise
AggInternal2	The interaction term between *AggInternal* and *Exp2*
AggInternal3	The interaction term between *AggInternal* and *Exp3*
PowerPlayer	1 if the subject is a power player and 0 otherwise
PowerPlayer2	The interaction term between *PowerPlayer* and *Exp2*
PowerPlayer3	The interaction term between *PowerPlayer* and *Exp3*
ProExternal	1 if the subject is chosen as a proposer at the external negotiations and 0 otherwise
ProExternal2	The interaction term between *ProExternal* and *Exp2*
ProExternal3	The interaction term between *ProExternal* and *Exp3*
ProPartyExternal	1 if the subject is in a proposing party at the external negotiations and 0 otherwise
ProPartyExternal2	The interaction term between *ProPartyExternal* and *Exp2*
ProPartyExternal3	The interaction term between *ProPartyExternal* and *Exp3*
RndExternal	The number of rounds played by subjects at the external negotiations.
RndExternal2	The interaction term between *RndExternal* and *Exp2*
RndExternal3	The interaction term between *RndExternal* and *Exp3*
Gender	1 if the subject is male and 2 otherwise
Gender2	The interaction term between *Gender* and *Exp2*
Gender3	The interaction term between *Gender* and *Exp3*
Game	The Game currently played by subjects
Field	1 if the subject's field is economics or business and 2 otherwise

This paper considers the following two types of regressions, pooled regression in Equation (1) and panel regression in Equation (2).

$$y_i = \alpha_0 + F(x_i; \alpha_i) + \varepsilon_i, \tag{1}$$

$$y_{it} = \beta_0 + G(x_{it}; \beta_i) + \delta_i + u_{it}, \tag{2}$$

For each type of regression, it considers two dependent variables, y_i and y_{it}, *IndivPerform and IndivPartyPerform.* For panel regressions, each players are represented as i, and t stands for Game that players are currently involved in. This paper, first, analyzes factors to affect, *IndivPerform,* the individual players' performance that is defined as the individual share of benefit divided by the best share of the benefit among all experiments, and thus they try to capture the players' relative performance all around the experiments. Next, it runs regressions to see factor to affect the relative individual performance over relative party performance, *IndivPartyPerform.* While regressions whose dependent variable is *IndivPerform* are models to see how relative size of individual benefit as a result of internal and external negotiations could be affected by some possible determinants on the whole, regressions with *IndivPartyPerform* are relevant to the relative size of benefit within party.

The regression results are reported in Table 5. The left two columns in the Table 5 shows the result on the regressions with dependent variable, *IndivPerform* and right two columns does ones with *IndivPartyPerform.*

As shown in Table 5, the results on Equation (1)-1 and (2)-1 are generally similar, because the value and significance of coefficient of independent variables are not quite different each other (Hausman test statistic=8.57). For Equation (1)-1 and (2)-1, the estimates of coefficient for *AggInternal* are positive and statistically significant at 1% significance level, other things equal. It shows that whether or not two players in a party are agreed on the allocation in the internal negotiations affects players' relative performance positively in Exp1 and 2. In Exp3, however, where no agreement in the internal negotiations is not that costly, the early agreement in the internal negotiation is relatively affects individual performance less than other experiments.

Table 5. Results on Regressions[10]

	IndivPerform		IndivPartyPerform	
	Pooled	Panel	Pooled	Panel
	Equation (1)-1	Equation (2)-1	Equation (1)-2	Equation (2)-2
AlloInternal	0.567	0.004	1.596***	1.581***
	(0.651)	(0.805)	(0.157)	(0.183)
AggInternal	25.57***	25.68***	5.094***	4.691***
	(1.208)	(1.250)	(0.291)	(0.272)
PowerPlayer	9.394***	8.89***	0.985**	1.036
	(1.393)	(2.103)	(0.336)	(0.600)
ProExternal	2.526	3.608*	0.262	0.144
	(1.955)	(1.796)	(0.471)	(0.382)
ProPartyExternal	14.85***	13.84***	0.193	0.013
	(1.387)	(1.273)	(0.334)	(0.271)
Game	-0.252*	-0.238**	-0.0548*	-0.030
	(0.098)	(0.091)	(0.024)	(0.019)
Gender	0.856	0.874	-1.063***	-1.019
	(1.144)	(2.190)	(0.276)	(0.655)
Field	-0.147	-0.145	-0.508***	-0.474
	(0.615)	(1.171)	(0.148)	(0.350)
RndExternal	-10.08***	-10.10***	-1.126***	-1.102***
	(0.754)	(0.696)	(0.182)	(0.148)
Exp2	-0.159	-4.044	1.622	2.762
	(5.329)	(7.198)	(1.284)	(1.824)
Exp3	33.83***	31.21***	9.126***	10.53***
	(6.647)	(8.442)	(1.601)	(2.114)
AlloInternal2	-0.385	0.250	-0.731***	-0.946***
	(0.86)	(1.03)	(0.21)	(0.23)
AlloInternal3	-1.951	-1.718	-1.377***	-1.686***
	(1.123)	(1.273)	(0.271)	(0.283)
AggInternal2	0.360	0.071	0.392	0.520
	(1.591)	(1.580)	(0.383)	(0.341)
AggInternal3	-14.86***	-15.03***	-3.340***	-3.174***
	(1.776)	(1.745)	(0.428)	(0.376)
PowerPlayer2	-0.016	0.626	0.902	0.566
	(1.913)	(2.900)	(0.461)	(0.827)
PowerPlayer3	1.479	2.184	1.986***	1.909*
	(2.254)	(3.390)	(0.543)	(0.967)

[10] Regressions with robust standard errors hardly provide meaningful difference with the results.

Table 5. Continued

	IndivPerform		*IndivPartyPerform*	
	Pooled Equation (1)-1	Panel Equation (2)-1	Pooled Equation (1)-2	Panel Equation (2)-2
ProExternal2	-0.274	-1.600	-0.612	-0.024
	(2.691)	(2.503)	(0.648)	(0.534)
ProExternal3	7.563*	5.891*	-0.027	-0.040
	(3.153)	(2.874)	(0.760)	(0.611)
ProPartyExternal2	-8.494***	-7.198***	-0.076	0.168
	(1.906)	(1.773)	(0.459)	(0.378)
ProPartyExternal3	2.721	4.484*	-0.173	0.007
	(2.239)	(2.036)	(0.539)	(0.433)
RndExternal2	8.075***	8.144***	1.090***	1.099***
	(0.831)	(0.767)	(0.200)	(0.163)
RndExternal3	-7.887***	-7.145***	0.821*	0.938**
	(1.532)	(1.467)	(0.369)	(0.314)
Gender2	-0.915	-0.913	0.720*	0.553
	(1.517)	(2.869)	(0.365)	(0.855)
Gender3	-2.70	-2.884	0.54	0.43
	(1.733)	(3.293)	(0.417)	(0.984)
Constants	16.02***	19.31***	3.626***	3.799**
	(3.992)	(5.616)	(0.962)	(1.460)
No. of Obs	1056	1056	1056	1056
R-squared	0.73	0.73	0.60	0.60

Note: Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

The estimates of coefficient for *Power Player* are positive and statistically significant at 1% level. Being a power player in Equation (1)-1 and (2)-1, as is with results in Sung (2015b), affects each players' performance positively, but, interestingly, the estimates of coefficient of role as a proposer in the external analysis is statistically significant at 10% or larger. Rather, being in a proposing party matters for the individual performances in Exp1 and 3. Even though the impact in Exp2 is obviously smaller in Exp1 than Exp3, still membership for proposing party would boost the relative individual performance. This implies that membership in proposing party or power player is helpful to enhance players' performance, not the role of proposer.

The estimates of coefficient of *Game* are negative and statistically significant at 5% level, other things equal. This implies that the players' performance was diminished as they repeat Games. This may be related with the treatments that the penalty not to be in agreement at the internal negotiation is more painful to both players in a party for Game 7 to 12 than for Game 1 to 6, as shown in the modestly increasing trend of allocation 6 in Figure 2, 3, and 4.

The estimates of coefficient for *RndExternal* is negative and statically significant at 1% level, other things equal, as expected. It means that delay in the external negotiation is costly due to the discount of total money on the external round throughout all experiments. Interestingly, however, the estimates affect the relative individual performance more negatively in Exp3, which shares the same discount factor with Exp1, than Exp1.

Results on Equation (1)-2 and (2)-2 are quite different from each other for the effects of the role of power player, gender, and field (Hausman Test statistic=76.73, p-value<0.01). Controlling an unobserved factors using panel data random effect model in Equation (2)-2, it would be proper to see the results in Equation (2)-2. Since the dependent variable, *IndivPartyPerform,* is more relevant to the relative internal distributions of benefit, in Exp1 and 2, the estimates of coefficient of allocation in the internal negotiation are positive and statistically significant at 1% level, others are equal. However, the effects of allocation are smaller in Exp2 and 3, and in particular, those are negative in Exp3. It means that in Exp1 and 2 fair allocation enhances individual performance within party, but it may be the case in Exp3 where has relatively beneficial allocation with no agreement. This is also illustrated in Figure 4 with low frequency in Exp3.

Like pooled regressions, the estimates of coefficient for agreement in the internal negotiation is positive and statistically significant at 1% level in Exp1 and 2, but the impact is mitigated in Exp3. This means that agreement in internal negotiation would enhance the individual performance within party. However, unlike Equation (1)-1 and (2)-1, impact of being a proposer or in a proposer party on the within performance is negligible. Surprisingly, delays for the external negotiations in Exp3, were relatively less costly than shoe in Exp1, where apply same discount factors in the external negotiations.

IV. POLICY IMPLICATIONS ON TRADE NEGOTIATIONS

From the results in Equation (1)-1 and (2)-1, we can conjecture that being a member of proposing party is more desirable for each players' performance rather than being a proposer. Proposers are power players in the internal negotiations, whose benefit depends upon non-power players' cooperation. To avoid 'no agreement' in the internal negotiations, power players are opt to accept fair allocations with non-power players. Thus being a power player may not be that strong advantages in the internal negotiations for each players' performance. This would be problematic if the negotiation must be pursued with some other reasons, because no sector within country would be dedicated to the negotiations due to the fair (!) allocations in the end. If you consider the some trade negotiations that should pursue high level of trade liberalization, due to the internal bargaining no one is willing to move actively. It may result in the situation like prisoners' dilemma, in that although everyone within country knows benefit of trade agreements, no one dare to have strong intention to frontier the negotiation because they already know that the outcome from trade agreement would be distributed relatively evenly to all sector within countries. In the end, without active participation in the external negotiation, the country would have less chance to be a proposing party.

Being a proposer or being in a proposing party would lead players to have aggressive and positive attitudes on the external negotiations as shown in the results in Equation (1)-1 and (2)-1. Since those attitude would result in larger share of benefit toward not only the individual players but also parties, it would be desirable to be an aggressive agenda setter in the real external negotiations. However, comparing results from the regressions on individual performance in overall with that from regression on individual performance over party performance, once the individuals care more about the relative internal performance within their parties, they would neglect to behave as active proposers.

In Exp3, other than Exp1 and 2, players would have incentive not to agree at the internal negotiations. It shows the case that advantageous sectors in the external negotiation would prefer not to be agreed as they think they need to sacrifice too much to reach agreement internally. The advantageous sectors such as power players may be reluctant to have the 'attractive' option to accept fair allocation.

V. CONCLUDING REMARKS

   This paper experimentally studies the performance of negotiation considering individual and party, like a country, share of benefit over the best ones. The experimental design for this paper considers two-stage bargaining games, internal and external negotiations. From the experimental results, this paper shows strong tendency to select fair allocation in the internal negotiations, but the tendency would be weaker with attractive outside option. In addition, the outside option may claim difference in individual benefit. For regressions on individual performances, being a proposing party would matter to enhance the performance. However, relative individual performance within party fairness matters. Still attractive 'no agreement' options happen to break the tendency. As policy implication on trade negotiation from the regression results, this paper warns that possible loss in individual benefit from not active participation to the external negotiations, no active role of proposer in case that players stick to internal allocations, and deviation by advantageous sector due to attractive outside option.

   It shares some limitations with Sung (2015b) and some other experimental works. First, no communication at the internal negotiations would not be realistic, though repetition of games may overcome this shortcoming. Second, further analyses should on the experimental results with lagged variable, which might have some implication on learning in experiments. Third, since it uses a theoretical model and simplified experiments, it may not represent every aspects in real trade negotiations. Future research should cover those.

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