

Foreign Aid Negotiation by a Selfish Donor*

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Abstract: Both donors and recipients must negotiate before they agree upon foreign aid contracts. As a first step to study aid negotiations, we start to assume a sole motive of aid to be selfish. Even in a simple setting (one donor, one recipient and one good), we found some interesting results. Although this is quite natural, foreign aid occurs only when the wealth difference between a donor and a recipient is high. Also, depending on the negotiations, their welfare levels and income inequality vary. Both countries become better-off and the income inequality declines while one becomes better-off (the other remains the same) and the income inequality rises.

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1. INTRODUCTION

Even in this new century, the United Nations declared the Millennium Development Goals as our common objective of human beings to fight the extreme poverty and hunger widespread in the world. Despite of the substantial amounts and continuous efforts of foreign aid, there still exist not a small number of under-developed countries and regions where people suffer from shortage of basic human needs and rights.

Efficiency of foreign aid has been a popular research topic for the previous decade. Recently, foreign aid began to be analyzed in a game theoretic framework¹ since one of the most serious shortages in the past literature had been lack of strategic aspect of foreign aid.

As foreign aid studies by the non-cooperative game theory, those of the principal agent models formed a major field.

Svensson (2000a) started to analyze foreign aid in his principal agent model where one donor government is a principal and two recipient governments are agents. Azam and Laffont (2003) is one of the most typical examples of principal agent model application into foreign aid distribution. In their simple setting, one donor (principal) sends foreign aid to one recipient (agent) where the former can be interpreted as the North and the latter as the South. The biggest contribution of these two studies would be their counter proposal against a common view in the foreign aid literature. Foreign aid without any condition has been believed (especially in the international institutions) to be the best for the welfare and the economic growth of recipients. On the contrary, both studies found that foreign aid is ineffective without any conditionality.

Several studies (c.f. Ribar and Wilhelm (2002)) followed two of the above research

¹ Research topic is further extended to military aid and war. Murshed and Sen (1995) analyze foreign aid to two types of recipient countries which react differently on their military enlargement after receiving aid. Panagariya and Shibata (2000) analyze aid to affect the war possibility between two recipient countries whose relationship is highly tense. Lin (2001) constructs a game where two rival donor countries compete to gain an international reputation by distributing foreign aid. Also, foreign aid is analyzed in strategic international trade models (c.f. Lahiri, Raimondos-Moller, Wong and Woodland (2002), Dercon and Krishnan (2003), Bandyopadhyay and Majumdar (2004)). As a few examples of foreign aid studies by cooperative game theory, Kowalczyk and Sjostorm (2000, 1994) explains GATT or WTO agreement by a core formation, interpreting foreign aid as an income transfer given to a new member.

extending the simple settings of principal and agent. Hsieh (2000) analyzes a case where two types of individuals (laborers and capitalists) exist in a recipient country and a donor's objective is to stabilize a macro economy in a recipient. Svensson (2000b) increases the number of recipients so that there are multiple interest groups in a recipient country. Rai (2002) constructed a model of multiple societies in a recipient country where rich and poor individuals coexist in each society. Lahiri and Raimondos-Moller (2000) analyzes foreign aid in a model where identical religious groups or races coexist both in the recipient and donor countries. Each group in the donor country urges the donor government to help its overseas compatriots in the recipient country.

Although quite a few of papers succeeded in explaining foreign aid in principal agent models, motives of aid of donors were all altruistic. Here, a fundamental question is whether donors sacrifice themselves to help recipients. An immediate and proper answer would be negative. In reality, both donors and recipients will never lose after foreign aid occurred. In particular, individuals in donor countries will never expect their government to lose after sending foreign aid because aid resources come from the government budget taxed on their own income. If the donor government decides to send aid which is sure to damage the donor's welfare, such a government will be ousted by the next election.

This paper assumes a sole motive of aid to be selfish in order to start from the simplest setting of foreign aid negotiations. Whenever any negotiation matters, every party tries to maximize their own profit, naturally neglecting other parties' profit. In fact, most foreign aid flows are called as Official Development Assistance (ODA), so that donor and recipient governments must negotiate to agree upon an official contract. Of course, motives of foreign aid could be at least partially altruistic, but this paper focuses on a negotiation side, not an assistance side of foreign aid.

Furthermore, we step back even from the traditional role of donors and recipients as principal and agent, so as to deal with negotiations of foreign aid. Both donors and recipients are treated as equal parties such that either party can be a principal or agent, depending on various situations of aid negotiations. At the same time, we made other assumptions of this model as simple as possible in this first analysis of aid negotiations: one donor, one recipient, one good, and one neoclassical production function.

Therefore, in this paper, a donor and a recipient negotiate so that both will not lose after the foreign aid occurs. Namely, according to any aid contract, whenever the donor sends foreign aid transfer to the recipient, the donor must receive a returning transfer from the recipient afterwards. This situation may seem quite unusual in a context of

foreign aid because the recipient pays back to the donor. However, it becomes understandable once the logic is explained as follows. A rich country holds a high endowment of inputs while a poor country does not. If the rich transfer some inputs to the poor country, the poor will enjoy an increased amount of output. Moreover, a gain in the poor is larger than a loss in the rich owing to the decreasing marginal product. Even though the poor transfer a positive portion of the increased output back to the rich, both can be better-off. Thus, the rich and the poor are willing to sign a contract to play a role as a donor and a recipient, and to exchange a resource transfer in part as foreign aid.

Even in this simple model of foreign aid by selfish donors, we were able to explain a couple of fundamental features of real ODA flows. First, foreign aid occurs only when an income difference between donor and recipient countries is high. Second, depending on the negotiations between donors and recipients, both countries become better-off, or either of them becomes better-off while the other remains the same. In the first case, the relative income inequality decreases while the absolute inequality does not change. In the second case, both inequality measures increase when only the donor becomes better-off, and vice-versa.

The structure of this paper after the introduction is as follows. In Section 2, foreign aid games are introduced in two situations where the difference of input endowments is high or low. After the negotiation processes, agreed contracts between the donor and the recipient are explained. In Section 3, three types of foreign aid negotiations are analyzed and resulted income levels of the donor and the recipient are compared. In Section 4, a numerical example is presented and the effects of uncertainty are briefly discussed. In Section 5, conclusions and directions for future research are provided.

2. DONOR AND RECIPIENT

2.1 Model

As a benchmark, we start to consider a situation where a donor sends foreign aid to a recipient, but does not receive any return back. Two countries (A and B) are assumed to exist where country A wants to be a donor and vice-versa. There are no externalities and no information asymmetry between both countries where individuals cannot move across the border. In country A, one good is produced as an output ($F(A)$) utilizing a endowment of inputs ($A > 0$). Thus, Country A's welfare is measured by $F(A)$ if it does not send foreign aid, and by $F(A|D)$ if it sends aid. In the same way, Country B's welfare is $F(B)$ without foreign aid while it is $F(B|D)$ with aid. Now, we assume an economic condition for both countries as follows:

$$F(A) > F(A|D) \quad (1)$$

$$F(B|D) > F(B) \quad (2)$$

$$F(A|D) + F(B|D) > F(A) + F(B) \quad (3)$$

The donor (A) becomes worse-off if it sends foreign aid while the recipient (B) becomes better-off if B receives it. Also, total amount of outputs produced in both countries with foreign aid, becomes larger than that in the Autarky case without aid.

This situation is easy to understand. Country A and B are rich and poor in terms of endowments of inputs ($A > B$). If an endowment difference is extremely large, marginal product in A is far less than in B because of the neoclassical production function. Then, Country A (a donor) sends a small portion of its endowment as foreign aid to Country B (a recipient), which yields the situation of Inequality 3. Still, it is true that Country B has an incentive to receive aid but Country A does not because the welfare level of Country A decreases².

2.2 Gains Claim

The recipient sends an income transfer back to the donor when both agreed on an aid contract that the donor can claim their share out of the gains generated in the recipient. The donor's and the recipient's welfares (V) after they exchange an income transfer with each other are represented by $V(A|D)$ and $V(B|D)$ where $t > 0$ means income return (gains claim) from the recipient to the donor:

$$V(A|D) = F(A|D) + t \quad (4)$$

$$V(B|D) = F(B|D) - t \quad (5)$$

Then, from Inequality 3, the gain of the recipient by receiving aid is larger than the loss of the donor by sending aid:

² In this paper, both countries produce an identical good, and so evaluate it equally, which means the price of this good is one. Of course, welfare level of each country should be evaluated by each utility level. However, according to leading studies in this field (c.f. Knack and Rahman (2007)), welfare comparison is simplified to be based on the amount of output.

$$V(B|D) - F(B) > F(A) - V(A|D) \quad (6)$$

Both countries will agree upon an aid contract if they remain to be better-off even after the donor receives an income return from the recipient. An amount of return must satisfy next two inequalities though it is not uniquely determined:

$$V(A|D) = F(A|D) + t \geq F(A) \quad (7)$$

$$V(B|D) = F(B|D) - t \geq F(B) \quad (8)$$

In the real foreign aid distribution, it is almost impossible for the recipient to transfer an income return to the donor. But, we can easily imagine that a donor sends a project aid to enhance export capacities in a recipient such that the donor holds an advantageous position to import from the recipient. For example, a donor invests for natural resources in a recipient such as coal, oil, and iron ore through a project aid. Also, through an infrastructure aid, a donor builds a dam in a recipient to increase the agricultural and industrial production for exports, such as cotton, wheat, and aluminum.

We implicitly assume that aid and collateral transfers between a donor and a recipient occur at the same time, or must be carried out, in order to observe a mutual agreement. However, as Eaton and Engers (1992) and Eaton (1992) clearly analyzed, there exist a risk such that the recipient may not send back an agreed amount of return to the donor even though the recipient has already been given an agreed amount of aid. Differently from an ordinary loan, Sovereign Debt problem can happen when the donor cannot take anything for security (including the aid project itself) in the recipient against a default. Still, the donor will cease to send aid, and so the recipient cannot be better-off once the donor concerns about a default by the recipient. Therefore, under a stable and long term relationship between a donor and a recipient, they are always assumed to observe a foreign aid contract once they agreed with each other³.

³ For example, Japanese government sends a large yen loan for a project in an economically and politically stable country like the Asian NICS. On the contrary, foreign aid can follow an income return like the Japanese war compensation to Asian countries. Also, the relationship between the donor and the recipient has been tight through continuous and numerous exchanges of income transfers like a foreign aid from England or France to its former colonial countries.

2.3 Basic Model Reconsidered

A benchmark model (Inequality 1, 2, 3) is reconsidered. Next inequality is assumed in stead of Inequality 3.

$$F(A|D) + F(B|D) < F(A) + F(B) \quad (9)$$

Here, total amount of outputs in both countries with foreign aid is less than without aid. Needless to say, a donor will not agree to send foreign aid if the donor does not receive an income return from the recipient. Moreover, the donor will never agree to send aid even if the donor can receive the return. The reason is shown as next inequality:

$$F(A) - F(A|D) > F(B|D) - F(B) \quad (9')$$

Welfare loss of the donor cannot be compensated even when the recipient send any positive portion of the increased amount of output to the donor. Therefore, we obtained a next proposition to determine whether foreign aid is sent or not.

Proposition 1 *Under the situation that $F(A) > F(A|D)$ and $F(B|D) > F(B)$, foreign aid occurs with a proper amount of income return only if $F(A|D) + F(B|D) > F(A) + F(B)$.*

The situation of Inequality 9 emerges when the endowment difference between a donor and a recipient is small, leading to a small difference of marginal products. The opposite side of this result is that foreign aid between two countries is never fulfilled if their income levels are close. This seems to be such a natural feature of a real distribution of foreign aid.

3. FOREIGN AID NEGOTIATIONS

3.1 Donor's Initiative

We will analyze how the amount of income return (r) is determined depending on three patterns of negotiations: one-shot negotiations by donor's and recipient's initiative, and recursive negotiations between two countries alternately (c.f. Myerson (1991)).

First, a donor initiates one-shot negotiation to a recipient, given the endowment of inputs in both countries. Then, the donor proposes an aid contract to a recipient which specifies amounts of foreign aid and income return between two countries. If the recipient rejects the contract, the Autarky levels of outputs are produced without foreign

aid. If the recipient accepts the contract, the donor sends an agreed amount of foreign aid to the recipient, and receives an agreed amount of income return from the recipient when the production of outputs is done with foreign aid.

Donor's objective is to maximize its welfare ($V(A|D)$) by a foreign aid negotiation. Since donor's welfare must be larger than or equal to the Autarky level, next constraint is necessary for foreign aid contract to be negotiated:

$$V(A|D) \geq F(A) > F(A|D) \quad (10)$$

Recipient's welfare must be also larger than or equal to the Autarky level. A constraint for the recipient is shown as:

$$V(B|D) \geq F(B) \quad (11)$$

Maximization of the donor's welfare is represented as next equation:

$$V(B|D) = F(B|D) - t = F(B) \quad (12)$$

The donor receives all the rent generated by foreign aid. So, the amount of income return is calculated as next equation:

$$t = F(B|D) - F(B) \quad (12')$$

Therefore, from Inequality 3, the donor becomes better-off by this foreign aid negotiation.

$$V(A|D) = F(A|D) + t = F(A|D) + F(B|D) - F(B) > F(A) \quad (13)$$

3.2 Recipient's Initiative

Second, similarly to the above case, a recipient initiates one-shot negotiation, given the endowment of inputs. Then, the recipient offers a contract to a donor that specifies amounts of foreign aid and income return. If the donor rejects the contract, the Autarky levels of outputs are produced without foreign aid. If the donor accepts the contract, the donor and the recipient exchange the agreed amounts of foreign aid and income return with each other.

The same constraints as in the above case (Inequality 11 and 12) are necessary for both the recipient and the donor to participate an aid negotiation. The welfare maximization of the recipient is given as next equation:

$$V(A/D) = F(A/D) + t = F(A) \quad (14)$$

The recipient, not the donor receives all the rent of foreign aid. Then, the amount of income return is calculated as:

$$t = F(A) - F(A/D) \quad (14')$$

Therefore, from Inequality 3, the recipient becomes better-off by this foreign aid negotiation.

$$V(B/D) = F(B/D) - t = F(A/D) + F(B/D) - F(A) > F(B) \quad (15)$$

3.3 Continuous and Alternate Negotiations

In stead of one-shot negotiation, both a donor and a recipient negotiate continuously such that one party offers its own contract after it rejects the offer from the other party. We apply the Nash negotiation equilibrium into this situation, assuming zero future discount rate for both countries. Each party negotiates to gain the largest share out of the possible rent, which is a remainder of the output increase in the recipient from compensating the donor's output up to the Autarky level. Then, the Nash negotiation equilibrium⁴ is shown as $[F(A) - F(A/D) + F(B/D) - F(B)]/2$. So, income return (t^{NB}) from the recipient to the donor is derived as:

$$\begin{aligned} F(A/D) + F(B/D) - F(B) &> t^{NB} \\ &= \frac{F(A) - F(A/D) + F(B/D) - F(B)}{2} \end{aligned} \quad (16)$$

⁴ This result is based on the assumption that both are equal negotiation partners. Of course, one party may well be equipped with more negotiation power than the other. It is natural to consider that the donor tends to be more advantageous than the recipient partly because it owns more resources and partly because it should be more patient. Then, the resulted equilibrium could be more biased to the donor.

$$> F(A/D) + F(B/D) - F(A)$$

From Inequality 3,

$$\begin{aligned} V(A/D) + F(A/D) + t^{NB} &= F(A/D) + \frac{F(A) - F(A/D) + F(B/D) - F(B)}{2} \\ &= F(A) + \frac{F(A/D) - F(A) + F(B/D) - F(B)}{2} \quad (17) \\ &> F(A) \end{aligned}$$

Next proposition summarizes the results of this foreign aid negotiation:

Proposition 2 *If total amount of outputs in both countries increase after foreign aid,*

1. *Welfare levels of both countries become higher or unchanged with foreign aid if income return is possible from the recipient to the donor.*
2. *The recipient remains the same while the donor becomes better-off if the donor offers a one-shot negotiation to the recipient.*
3. *The donor remains the same while the recipient becomes better-off if the recipient offers a one-shot negotiation to the donor.*
4. *The donor and the recipient gain an equal share of rent if both repeat alternate negotiations.*

Under the neoclassical production function, above proposition explains a direction of income (output) inequality between both countries for each of these three patterns of negotiations.

Proposition 3 *If foreign aid is carried out between both countries,*

1. *Income inequality becomes worse if the donor offers a one-shot negotiation.*
2. *Income inequality becomes better if the recipient offers a one-shot negotiation.*
3. *Relative income inequality (the recipient's income divided by the donor's) becomes better while absolute income inequality (the donor's income minus the recipient's) does not change if both repeat alternate negotiations.*

4. DISCUSSION

4.1 Numerical Examples

We will reproduce and explain the major results with a help of a numerical example.

Output levels of a donor and a recipient without and with foreign aid are shown as: $F(A) = 5$, $F(B) = 1$, $F(A|D) = 4$, and $F(B|D) = 3$. If it were not for income return, two Nash equilibria are given as follows. One is that the donor does not send foreign aid and the recipient does not receive aid. The other is that the donor does not send aid and the recipient receives aid. In either equilibrium, foreign aid contract is not agreed and both countries end up with the Autarky levels of output ($F(A) = 5$ and $F(B) = 1$).

In a normal form game [a] below, the donor as a row player chooses *NS* (not send aid) or *S* (send aid) while the recipient as a column player chooses *NR* (not receive aid) or *R* (receive aid). Then, as a Nash equilibrium, the donor chooses *NS* and the recipient does *NR*, or the donor does *NS* and the recipient does *R*.

		<i>NR</i>	<i>R</i>		<i>NR</i>	<i>R</i>
[a]	<i>NS</i>	5,1	5,1	[b]	<i>NS</i>	5,1 5,1
	<i>S</i>	5,1	4,3		<i>S</i>	5,1 4+t, 3-t

What happens if the donor can claim its share on gains by the aid in the recipient? Income levels of both countries with income return (t) are shown as: $V(A|D) = 4 + t$ and $V(B|D) = 3 - t$. In order for a foreign aid contract to be agreed, we need that $2 \geq t \geq 1$, noting that both are assumed to accept an aid contract with equality (see game [b] above).

If the donor initiates a one-shot negotiation to the recipient, income return (t) is 2, and welfare levels are given as: $V(A|D) = 6$, $V(B|D) = 1$. As is shown in game [c] below, foreign aid contract is agreed as a Nash equilibrium⁵ that the donor chooses *S* and the recipient chooses *R*. On the contrary, if the recipient initiates a one-shot negotiation, income return (t) is 1, and welfare levels are shown as: $V(A|D) = 5$, $V(B|D) = 2$ where the donor chooses *S* and the recipient chooses *R* in game [d] as a Nash Equilibrium. Lastly, the Nash solution is represented as: $t = 1.5$, $V(A|D) = 5.5$, $V(B|D) = 1.5$ where the donor does *S* and the recipient does *R* in game [e].

⁵ In fact, a strategy combination that the donor chooses *NS* and the recipient chooses *NR* (Autarky) remains a Nash equilibrium in all the games [c], [d] (*NS* and *R* is also a Nash Equilibrium) and [e]. Still, if we consider a one shot extended version of the game [c] and [d] described as such, the most proceeded outcome will be an agreed foreign aid contract by both parties. Since there is no other Parato efficient outcome, both had better agree to the aid contract in game [e] than Autarky.

	<i>NR</i>	<i>R</i>		<i>NR</i>	<i>R</i>		<i>NR</i>	<i>R</i>			
[c]	<i>NS</i>	5,1	5,1	[d]	<i>NS</i>	5,1	5,1	[e]	<i>NS</i>	5,1	5,1
	<i>S</i>	5,1	6,1		<i>S</i>	5,1	5,2		<i>S</i>	5,1	5.5,1.5

The donor is better-off while the recipient remains the same in the first case, but the recipient is better-off while the donor remains the same in the second case. In the third case, both are better-off. So, inequality changes are confirmed as follows. Relative and absolute income inequalities widen in the first case because income differences are 4 without aid and 5 with aid. Both inequalities narrow in the second case because income difference lowers to 3 and income ratios are $(5 - 1)/1 = 4$ without aid to $(5 - 2)/2 = 1.5$. Relative inequality lowers to $(5.5 - 1.5)/1.5 = 2.67$ but absolute inequality does not change in the third case.

Let's suppose a numerical example represented by Inequality 1, 2, and 10 as: $F(A) = 4$, $F(A|D) = 2$, $F(B) = 1$, and $F(B|D) = 2$. Here, two Nash equilibria are that the donor's not sending aid and the recipient's not accepting aid, and the donor's not sending aid and the recipient's accepting aid, where welfare levels of the donors and the recipient are 4 and 1 without foreign aid. Welfare levels of the donor and the recipient after income return are represented as: $V(A|D) = 2 + t$ and $V(B|D) = 2 - t$. The donor has no incentive to send foreign aid because the welfare becomes to $V(A|D) = 2 + 1 = 3 \leq 4 = F(A)$ even when $t = 1$. Thus, there does not exist such an income return to improve both. At the same time, the recipient has no incentive to accept foreign aid because $V(A|D) = 4 = F(A)$ but $V(B|D) = 2 - 2 = 0 < 4 = F(A)$ when $t = 2$.

4.2 Uncertainty and Risk

As is explained in the end of Section 2.2, Sovereign Debt is potentially a big problem, which may ruin the main results in this analysis. In 1990s, recommended by the international institutions (including the United Nations and World Bank), rescheduling and renegotiation of foreign aid loans were not uncommon owing to the stagnated economic performances of the recipient countries especially in Africa. If income transfer (t) is uncertain, what would happen in this model?

Main results will not be altered when the donor and the recipient know the distribution of t beforehand. In game [b], if t is normally distributed 1 and 2, most results will be identical by the optimization of their expected incomes. Of course, the results depend on the distribution of t since it represents the risk of this aid contract. For

example, if t is distributed between 0 and 2, Autarky results will be more likely because t can be too low for the donor to accept it. In the same way, if t is between 1 and 3, Autarky results will be because t can be too high for the recipient to accept it.

We may be able to consider some additional uncertainties or risks in this model. Income transfer from the recipient (td) can be different from one to the donor (tr) as in game [f] in the next page. Suppose that a recipient borrow ODA loans from Japan, which is rented and returned in the yen terms. The recipient suffers foreign exchange loss so that tr can be less than td if yen is appreciated.

Furthermore, economic conditions may affect income and production levels in both the donor and the recipient. Recently, developed countries suffer from a series of financial crises while many developing countries are benefited by the boom of terms of trade gains of their major exporting goods such as food grains and natural resources. Then, $F(A)$ could be smaller than 5, and $F(B)$ be larger than 1 in game [f].

	NR	R		NR	R		NR	R			
[f]	NS	5,1	5,1	[g]	NS	5- ϵ ,1	5- ϵ ,1	[h]	NS	5- ϵn ,1	5- ϵy ,1
	S	5,1	4+ td ,3- tr		S	5,1	4+ t ,3- t		S	5,1	4+ td ,3- tr

The donor can be under the pressure of the international community to send aid so that it might lose an uncertain portion of reputation without offering an aid contract to the recipient. Suppose that the donor is incurred of small amount of cost ($\epsilon > 0$ in game [g]) when it does not offer an aid contract. As long as t is distributed 1 and 2 and ϵ is small (less than one), the results are simplified to be a unique Nash equilibrium (S and R). The agreement is reached between the recipient and the donor because the donor is afraid of reputation loss by not offering an aid contract.

What if the reputation cost is different? The donor pays a small amount of cost ($\epsilon n > 0$) when the donor does not offer an aid contract and the recipient does not want it (NS and NR in game [h] above), and the donor pays a small cost ($\epsilon y > 0$) when the donor does not offer an aid but the recipient wants it (NS and R in game [h]). Still, the agreement will be reached if td and tr are identical and distributed between 1 and 2. Even when ϵn is zero, a minimal loss of ϵy is sufficient for this agreement in game [h].

Nevertheless, if td is different from tr , the agreement may be more difficult to be reached. For example, when td is one and tr is two in game [h], an Autarky Nash equilibrium is added to the original agreement. The recipient offers an aid contract but the recipient does not accept it (S and NR in game [h]). This occurs more frequently

when the recipient has to pay more income return to the donor (tr is higher). It is really ironical that the donor wishes the recipient to give up the aid contract just by curtailing the criticism from the international community.

This could be one of the reasons of foreign aid volatility⁶ studied by many researchers. An occasional gap between the commitment (contract base) and the disbursement (real flow) figures to each recipient country is reported on the ODA data for many OECD countries. Disbursement becomes smaller than commitment when some of the projects funded by the foreign aid are stopped for the unforeseen reasons, such as natural disasters and political or military uprisings. We wish that the donors do not use these incidents as clever excuses in order to evade foreign aid expenses.

5. CONCLUSIONS

This paper analyzed foreign aid negotiations in a simple game framework, assuming a sole motive of aid to be selfish. Furthermore, donors and recipients are not the principal and agent but the equal negotiators, so that both will not be worse-off with foreign aid. A donor with large amounts of inputs sends foreign aid to a recipient with small amount, and the donor receives an income return out of the output increase from the recipient. Both can agree upon an aid contract because both can be better-off with proper amounts of foreign aid and income return.

Foreign aid distributions are realistically characterized in this paper. A natural precondition for foreign aid is the high wealth difference between the donor and the recipient. If the donor leads a one-shot negotiation with the recipient, the donor becomes better-off, but the recipient remains the same, so that the income difference widens. On the other hand, if the recipient leads it with the donor, the results are opposite to the above. Continuous and alternate negotiations between the donor and the recipient will cause both to become better-off and the income difference to narrow.

A contribution of this paper if any would be for this simple model to be able to explain some features of the real foreign aid flows. Thus, there remained quite a few of future research topics extended from this paper. First, direct extension of this paper will be a case of multiple donors and/or multiple recipients where the effects of aid

⁶ For example, Agenor and Aizenman (2010) recently explained theoretically the fact that aid flows from the donor to the recipient are really volatile. They successfully construct a model where the aid flow is so small and volatile that the recipient remains to be in a low production level (poverty trap).

competition and collusion should be analyzed. At the same time, possible substitutes of the income return (gains share) from the recipient to the donor (such as the United Nations votes) can be considered in this model.

Second, foreign aid negotiations should be strategically analyzed by altruistic donors, which is an established assumption in the literature. Third, the analysis should include a case of more than two types of donors and recipients in terms of their wealth levels. Fourth, in order to follow a research frontier in this field, the effects of information asymmetry between the donors and the recipients had better be analyzed. Lastly, empirical studies are strongly demanded to verify the theoretical results in a series of these studies. We hope that future studies (including this) could be even a little help to improve foreign aid policies for the developing countries in the world.

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