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Global partnerships for development and risk tendencies of partners: A theoretical approach with the Gavi case^{*}

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Despite the continuous endorsement of global partnership by international community, development partnership faces double road blocks in the field of both theory and practice. Current literature on global partnerships contributes explaining why agents form global partnerships, but fails to elaborate on when and in what actual condition global partnerships occur in a good shape. Discussions on incentives for partnerships and how to fund them also have many rooms for addition. The primary concern of this study is to tackle those problems by incorporating von Neumann and Morgenstern's Expected Utility Theorem and the economic concept of risk tendency into the field of development partnership. It aims to provide a new theoretical framework for evaluating in what condition global partnerships occur, and then attempts to testify this framework via a case analysis with the Gavi.

Keywords: Global Partnerships, Expected Utility, Risk Tendency, Agent Motivation, Development, Gavi

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I. INTRODUCTION

Global partnerships have been the center of discussion in the field of development cooperation since the creation of the Millennium Development Goals (MDGs) in 2000. The era of MDGs came to an end in 2015 and the global search for the sustainable development goals (SDGs) culminated in a new roadmap of development effectiveness for another 15 years. Particularly, MDG 8 and SDG 17 call for global partnerships for development, and the targets related to both goals emphasize strategic cooperation with non-state actors to make available benefits of new technologies and financial resources for partner countries. It is now a common understanding that development cannot be done by a single actor but needs to be addressed comprehensively by multi-stakeholder-centered cooperation with various specialties in public, private and civic sector.

The phenomenon can also be seen numerically by the shift of amount in development aid. In 1990, the amount of Official Development Assistance (ODA) was 5.5 times larger than funds from private sector. Reversely, in 2000, funds from private sector have increased to amount 1.6 times larger than that of ODA, and the private investment dramatically multiplied 5.73 times of ODA in 2015. Due to this shift of funds embedded in the growing centrality of partnerships with private agents, even the term ODA was redefined as the Total Official Support for Sustainable Development to incorporate other significant funds from various agents of partnerships. Indeed, multi-stakeholder partnerships with intergovernmental organizations (IGOs), nongovernmental organizations (NGOs), governments, and private sectors become essential in the area of development cooperation.

However, global partnerships are still faced with various problems in reality. While global partnerships are becoming more rampant, comprehensive global partnerships including various agents with comparative advantages that can actually bring difference for development projects are scarce and often do not last long, thereby making the impact minimal. In 2007, 65% of all partnerships, registered in the UN, still lacked funds. In 2006, all partnerships looked for funds amounting to USD 710 million, which is equivalent to 55.6% of the total fund the partnerships had altogether (Biermann et al. 2007, 245). There are also participation deficits or imbalances in partnerships, given that 56% of all partnerships have no developing countries as partners and industrialized countries are the main state agents for partnerships.

Global partnerships, despite their magnitudes, face double road blocks in terms of both theory and practice. While global governance takes place in various sectors, the actual realization of partnerships is limited both in number, quality and its effectiveness. While Jennifer Brinkerhoff (2002) gives us insights on why agents form global partnerships, current accounts fail to explain in what

conditions global partnership actually occur (Peterson 1996; Austin 2000). Basing the explanation on ‘why global partnership occurs’ does not give us the answer for the question why it does not happen in many cases. It also does not explain why some agents of the same group participate when others do not when their motivations and de-motivations may be similar. Undoubtedly, an intuitive answer can be presentable, but more logical answer is called for in order to pursue the theory-building and actual formation of global partnerships for development. There is little discussion on how much incentives are actually needed, whereas existing explanations mention incentives as a way to promote global partnerships (Greve and Hodge 2013).

In a nutshell, it is fair to state that the missing link in discussions on global partnerships is a theoretical approach to elaborate on in what actual condition global partnerships occur, rather than why agents form partnerships. The primary concern of this study is to identify the main causes hindering the formation of successful global partnership, which are not yet discussed in previous studies. With the aim of a new approach for how to promote global partnerships, this study incorporates von Neumann and Morgenstern’s Expected Utility Theorem to discuss how risk tendencies of partnership agents and incentive provisions affect global partnerships. Lastly, the study adopts the Gavi as an empirical case to testify the theoretical framework. While this study does not attempt to quantify the actual amount of incentives needed, it aims to add on to the conceptual and theoretical discussion by visualizing the amount of incentive needed and how to fund them. Main questions this study tackles therefore include: in what conditions and when do global partnerships occur?; how much incentives are needed to promote global partnerships?; how can we fund them?

II. VARIETIES OF AGENTS FOR PARTNERSHIPS

1. Defining partnerships

The definition of ‘partnership’ is yet ubiquitous. For the past 20 years, the term partnership has been used most frequently and undergoing changes to incorporate various phenomena. Concerning international development, some of definitions characterize global partnership as an ideal-type of “voluntary cooperative arrangement involving public, private and/or civil society organizations that is formalized with common, non-hierarchical decision-making procedures and that addresses a public policy issues” (Steets 2010, 7). The defining factor is commonly tuned with a careful balance between synergy and respective autonomy, which incorporates mutual respect, equal participation in decision making, mutual accountability and transparency.

However, defining the partnership in the Weberian ideal-type fashion is problematic in a sense that not many partnerships can fit into the killing criteria, regardless of how successful the partnership is in the field of development aid (Kim and Lim 2017). The problems of the definition stem from the negative observations that partnerships are never fully operational and the justification for them is subjective. Global partnership in this study, therefore, is defined in a more practical way, aiming to catch up with the ideal-type definition eventually.

On the practicality of global partnership, the concept of ‘mutuality’ is undeniably essential. Mutuality is “distinguished as horizontal, as opposed to hierarchical, coordination and accountability and equality in decision making, rather than the domination of one or more partners” (Brinkerhoff 2002, 15). Mutuality, in the context of intersectoral partnerships, also refers to value balance and partnerships, thereby, having tendency to be more durable and performing better when partners benefit equally from the partnership (Austin 2000; Kanter 1994; McQuaid 2000). Mutual cooperation as an essential component for global partnership sets forth a fundamental question of ‘why agents partner up.’ It is because partnerships enhance effectiveness by promoting better access to resources through expertise and relationships, which would otherwise be inaccessible. The resources include better information, lower transaction costs, and strong incentives for securing performance. Partnerships can also foster effectiveness by creating innovation by taking in different perspectives of various players and trust building, which leads to effective problem solving and positive sum solutions (Peters 1998).

In this regard, both conceptual and empirical studies on development partnerships have been hitherto focusing on actor-oriented approaches (performances, incentive-allocation, trust-building, information-sharing, etc.), rather than structure-oriented perspectives in the field of development cooperation (aid allocation, effectiveness, accountability, governance, etc.). As one of structural elements, the plethora of scholars, classically, has pursued for the modeling of aid allocation and the determinants of foreign aid in the varieties of contextualization (McGillivray 2003; McKinlay and Little 1977; Alesina and Dollar 2000). However, the main contribution of previous results on aid allocation fails to link itself with the determinants of successful development partnerships. Indeed, it fails to include the formation of development partnerships as one of the determinants of foreign aid, due to the overemphasis on structural indicators such as political regimes, donors’ strategic interests, recipients’ income levels, colonial past and political alliances, and so forth (Truman and Ayoub 2010; Kim and Oh 2012; McKinlay and Little 1978). It is fair to state that considering development partnerships as one of critical elements for the actor-based interpretation of aid allocation needs to be strongly recommendable. Likewise, development partnerships also need to consider the determinants of aid allocation as an independent

variable affecting the profile of partners involved in development partnerships.

Current focus on achieving SDGs by 2030 makes partnerships essential. Increasingly, cooperation among governments, IGOs, NGOs, and private agents is viewed as an essential prerequisite in order to achieve sustainable development in a holistic sense incorporating social, political, ethical, and economic issues (United Nations 2013). Such a holistic view conveys the notion that concerted actions at all levels from macro to micro and across all sectors are required for the successful implementation of sustainable development. Through comparative advantages each partner holds, the holistic nature of global partnerships can attain multiplier effects, particularly win-win solutions for all participants in partnerships (Brown and Ashman 1996). Therefore, global partnerships are seen as a common prerequisite for all partners to achieve their own objectives in development cooperation.

2. Agent motivations for partnerships

Along with the abovementioned general insights on why partnerships are formed, more attention should be paid to the level of individual agents, treating each agent as a variable. Global partnerships are formed when each agent is motivated to join partnerships by their own particular motivations rather than by vaguely expecting the advantages mentioned above. In this regard, we need to analyze agents as individual variables because their decisions to take part in the partnerships depend on their various innate traits. We also need to look at why each agent may refuse to join partnerships in many cases when de-motivations in opposition to the agent's motivations, hinder the formation of global partnerships.

Agents as candidates forging global partnerships can be largely categorized into governments, IGOs, NGOs and private firms, and each group represents its motivations and de-motivations in different shapes (see table 1). First, governments have various motivations for joining global partnerships. In many cases, governments join partnerships to boost their national prestige and reputation. Most governments, especially if dishonored with negative reputations for corruption, seek credibility by joining partnerships. Domestically, joining partnerships also helps government to sell itself on account of elections and increasing tax payment (Fiszbein and Lowden 1998). On the other hand, government's de-motivations include the risk of losing its autonomy in domestic and international politics. Particularly, aid-receiving governments are more severely exposed to this danger as letting in partners may create various demands from partners that can jeopardize the autonomous decision-making and precipitate government failure (Devarajan et al. 2001; Zartman 1995). Failure of a partnership can also diminish participating governments' international reputation as a capable state and undermine domestic legitimacy.

Second, IGOs serve their own purposes by participating in global partnerships for development. Like national governments, IGOs also participate in partnerships in order to increase its reputation. Given that IGOs' funds mostly come from voluntary donations and IGOs compete over them, increasing IGOs' reputation that they deliver and make difference would attract more donors. Partnerships with other development agents grant IGOs with various resources such as financial resources, expert knowledge, and activity implementation. Likewise, IGOs' de-motivations beget the loss of reputation and legitimacy in case partnerships fail to function properly.

Third, NGOs lacking legitimacy due to their limited resources unlike governments and IGOs are prompted to increase reputation through their part in successful partnerships, and thereby intend to enhance legitimacy based on effectiveness. Global partnerships can be also used as a networking mechanism to attain personal contacts with people or organizations with power (Bratton 1990). NGOs are able to increase their capacity through partnerships by gaining experience and skills, and material support from better resourced agents. However, NGOs can be de-motivated by the loss of organizational identity, which means 'voluntary failure' discolored voluntarism and autonomy due to financial donor's harsh conditionality (Salamon 1995; Hulme and Edwards 2013). Partnerships may impose NGOs with overburdened administrative and structural requirements, making NGOs lose their voluntarism-based comparative advantages. While NGOs participate in partnerships to increase their legitimacy, they can correspondingly lose it by being overly dependent on other actors financially (Murphy and Bendell 1999).

Lastly, the private sector is increasingly aware that reputation as a responsible company has a strong correlation with their profits, as we can see from the fact that many companies now emphasizes Corporate Social Responsibilities (Moon 2002; Marens 2012). Joining partnerships is also used to hedge potential risks of moral hazard that private companies are often blamed with. Partnerships can also reduce input and transaction costs by understanding various stakeholders and learning new technologies and solutions (Brinkerhoff and Goldsmith 1992). De-motivations of the private sector in joining partnerships result from various sources, such as invested money, opportunity cost of the resources, possible backfiring of philanthropic activities and so forth.

TABLE 1. AGENTS' MOTIVATIONS AND DE-MOTIVATIONS

	Governments	IGOs	NGOs	Private Firms
Motivations	National prestige, reputation, elections and tax, resources access, increase legitimacy,	Reputation, resources access, purpose achievement	Increase leverage, resources access, reputation, networking, capacity building	CSR, future profit, reputation, motivating staff, managing risks, customer loyalty, lower transaction costs
De-motivations	Loss of autonomy in domestic/foreign policies, loss of reputation when failure	Loss of reputation and legitimacy	Loss of comparative advantage and organizational identity	Loss of profit and opportunity cost, backfiring

Sources: By authors.

III. THE EXPECTED UTILITY THEOREM FOR GLOBAL PARTNERSHIPS

The basic analytical framework is the realist paradigm that describes international cooperation among various partners can be realized when it satisfies the interests of the players. While the liberal approach attributing the realization of international partnerships to goodness of heart and institutionalization also provides significant insights, this study advances the rational choice theory among the realist perspectives as a main theoretical platform to best describe the incentive factor within global partnerships. It is safely assumed that agents participate in global partnerships only when they benefit each agent one way or the other, and agents act to maximize their expected utility (EU) rather than their expected value (EV). Thus, with less regard to the actual gains or losses of the agents, the analytical framework puts more weight to agents' subjective perceptions towards the gains and losses (Demirag et al. 2010). At the center of this framework is the von Neumann-Morgenstern Expected Utility Theorem (EUT) specifying that the subjective value associated with an agent's speculation, if specific axioms are satisfied, is the statistical expectation of that agent's valuations of the outcomes (von Neumann and Morgenstern 1944).

1. Expected utility theorem

The EUT gives great cross-sector insights in this matter of global partnerships, in that it provides necessary and sufficient conditions which the expected utility hypothesis holds under uncertainty. Let us take the example of buying a lottery ticket in order to understand the EUT. It is better to suppose that a person can buy 3 types of lottery ticket with his USD 10,000. If the person buys lottery ticket A, he has a 1/2 chance to win 12,000 USD and 1/2 chance to win 8,000 USD. If the person buys lottery ticket B, he has a 1/2 chance to win 14,400

USD and 1/2 chance to win 6,400 USD. If the person buys lottery ticket C, he has 1/8 chance to win 40,000 USD and 7/8 chance to win 0 USD. The EUT explains this subjective decision by introducing the concept of EU, as long as it attempts to determine the level of utility of each value and it assumes that people make decisions by maximizing EU, rather than EV. The EUT presumes three types of utility functions – risk neutral ($U = \frac{1}{2} (M)$), risk averse ($U = \sqrt{M}$), and risk seeking ($U = \frac{1}{1000} M^2$) – to explain the differences of decision making under uncertainty. The calculated outcomes of both EU and EV can be summarized in table 2.

TABLE 2. EXPECTED VALUE AND EXPECTED UTILITY

Decision	Probability	Result	EV	EU		
				$U = \frac{1}{2} (M)$	$U = \sqrt{M}$	$U = \frac{1}{1000} M^2$
Lottery Ticket A	1/2	12,000	10,000	5,000	99.5	104,000
	1/2	8,000				
Lottery Ticket B	1/2	14,400	10,400	5,200	100	124,160
	1/2	6,400				
Lottery Ticket C	1/8	40,000	5,000	2,500	25	200,000
	7/8	0				
Not buying	1	10,000	10,000	5,000	100	100,000

Source: By authors.

We can better understand these three tendencies toward risk by looking at the graphical projections. Let us assume that a risk neutral person, a risk averse person, and a risk seeking person respectively make the decision whether or not to buy lottery ticket A and buying lottery ticket A is considered a ‘fair game’ as either the EV of buying the ticket or not buying the ticket is identical (10,000 USD). If a person’s utility function is $U = \frac{1}{2} (M)$, the person’s order of the most preferable purchase would be lottery ticket B, followed by ticket A and C. This order is equal to that of choices maximizing EV. Also, the person would feel indifferent in buying or not buying lottery ticket A (which is a fair game), which makes the person risk neutral. Risk neutral agents’ utility curve is identical to their expected value line (see figure 1).

Source: By authors.

FIGURE 1. UTILITY CURVE OF RISK NEUTRAL AGENTS

In case of a risk averse person, his EU, if the person buys lottery ticket A, is point $d(99.5)$ which is smaller than point $e(100)$ when he does not buy the ticket. Thus, risk averse person has no intention to participate in a fair game. The marginal utility of risk averse agent's expected utility curve would decrease as figure 2 demonstrates, since the higher the risk, the agents are less willing to take it. If a person's utility function is $U = \sqrt{M}$, the person would prefer keeping his money rather than buying lottery ticket A. This person thus would not avail himself to uncertainty even if it is a fair game.

Source: By authors.

FIGURE 2. UTILITY CURVE OF RISK AVERSE AGENTS

The case of risk seeking agents shows that if the person buys lottery ticket A, his EU is point d(104,000), which is larger than point e(100,000) that is the EU when he gives up buying the ticket. Thus, risk seeking person intends to participate in a fair game, given that his marginal utility keeps increasing as he is more willing to take risks when more is at stake (see figure 3). The subjective value of taking risks (point c) has higher utility than not participating (point b) and thus the agents would participate in partnerships. If a person’s utility function is $U = \frac{1}{1000} M^2$, the person would prefer to put himself in uncertainty by investing his money in lottery ticket C, rather than being guaranteed the amount of 10,000 USD.

Source: By authors.

FIGURE 3. UTILITY CURVE OF RISK SEEKING AGENTS

2. Global partnerships and expected utility theorem

Now, applying the EUT to global partnerships is a critical step to understand how partnerships are shaped and managed. As shown in table 3, forging global partnership is similar to buying a lottery ticket in a sense that it can either succeed or fail, causing returns or losses, and requiring the investment of resources. Original investments agents have to make can be regarded as the price for lottery ticket, motivations as winning the lottery, and de-motivations as losing the lottery. If a certain agent joins a global partnership but fails to attain whatever result it attempts, international society would question the agent’s comparative advantage, thus undermining its authority. Reversely, success in partnerships would enhance its authority. Therefore, the calculated chance of success and

failure, multiplied by the amount of authority gained or lost would be the EV for the partners involved in global partnerships. However, agents' perception towards the chances of return and loss tend to be agent specific, thereby being equivalent to their EU. Some agents of global partnerships would value taking risks more than others which would then increase their utility beyond the EV. Other agents would likely be risk averse and unwilling to participate in global partnerships even though it may be a fair game.

TABLE 3. LOTTERY AND GLOBAL PARTNERSHIPS

Buying lottery	Joining global partnerships
Agents of economic activity	Agents of global partnerships
Lottery price	Investments made to partner up
Money earned when win	Returns from global partnerships
Money lost when lose	Losses from global partnerships
Expected utility	Subjective perception

Source: By authors.

The following questions can be raised in the field of global development partnerships: in what conditions regarding risk tendencies would agents decide to participate in global partnerships?; what can be done to promote global partnerships in the state of being mired with inherent nature of risk averseness?; can global partnerships between risk averse agents never happen?; and how much incentives are needed to embrace risk averse agents and where can the incentives come from? The EUT is able to provide some critical insights to these questions, particularly analyses on the incentive formation and its transfer to attract risk averse agents into global partnerships.

We first look at to what extent incentives are needed to promote participation of risk averse agents. As shown in figure 4, risk averse agents with the upper concave utility function would not participate in global partnerships even if it is a fair game, as the EU of not participating (point e) is larger than that of participating (point d). The intuitive notion, which more incentives would eventually lead the risk averse agent to join the partnership, is further elaborated by confirming how much that incentive might be. Supposed the amount of (I) is given to the risk averse agent, the agent would agree to participate in the global partnership. Namely, the EU of risk averse agents would again reach the point e due to the incentive transfer, even though the agent is participating. (I) is the least amount of incentive that should be offered to the risk averse agents in order for them to be with other agents for partnerships.

Source: By authors.

FIGURE 4. INCENTIVE FORMATION FOR GLOBAL PARTNERSHIPS

Then the next task is to figure out from where this incentive can be funded to risk averse agents. For this matter, the attention on the expected utility function of risk seeking agents gains insight on how. Risk seeking agents would join global partnerships with or without incentives since their EU is always higher when participating. In theory, they would be willing to give up the amount (F) to create a global partnership, as they would feel indifferent to participating and not participating in global partnerships even when they give up the amount (F) (see figure 4). Therefore, using (F) as incentives for risk averse agents would help better realize global partnerships. If the amount (F) is greater than amount (I) and the risk seeking agent is willing to transfer the resources to the risk averse agent, global partnership involving risk averse agents is possible. If amount (F) is smaller than amount (I), or if risk seeking agents are not willing to invest more resources to be given as incentives due to political reasons, however, funding in a global level is necessary.

3. Agents of global partnerships under unfair circumstances

The nexus of global partnerships and the EUT proposed above contends with how risk tendencies of agents affect the formation of partnerships in a fair game situation. However, in reality, fair game is very rare and most partnerships are unfair, either favorable or not favorable to the agents. Thus unfair circumstances are divided into two modes: a favorable game where the EV of joining is larger than that of not joining; and an unfavorable game where the EV of joining is smaller than that of not joining. Then three risk tendencies are reevaluated by reflecting the two modes of unfair games.

Source: By authors.

FIGURE 5. RISK NEUTRAL AGENTS IN UNFAIR GAMES

Firstly, risk neutral agents participate in fair partnerships without any need for incentives or any room for fund. However, in a favorable game, the EU of joining exceeds the EU of not joining (see figure 5). Assumption here is that the return of successful partnership increases ($b \rightarrow b^*$) and the loss of failed partnership decreases ($a \rightarrow a^*$). Then, the EV of joining the partnership shifts from point c to point c^* , while the EV of not joining stays the same at point c . Since point c^* is larger than point c , this fits the definition of a favorable game. The EU then increases to $EU(c^*)$, which is higher than the EU of not participating. Thus, risk neutral agents in a favorable game are willing to give up the maximum amount of (F) to join in partnerships. Similarly, risk neutral agents in unfavorable partnerships would need the least amount of (I) as an incentive to be persuaded to join.

Source: By authors.

FIGURE 6. RISK AVERSE AGENTS IN UNFAIR GAMES

Risk averse agent in a favorable game can end up either participating or not participating depending on how favorable the game is. As a game becomes more and more favorable, incentives the agent require to participate in partnership become smaller and smaller, eventually passing the point where joining in partnership actually gives larger EU than not joining (see figure 6). Thus, if the partnership is highly favorable, there is also a chance that even risk averse agent would be willing to pay to participate. On the other hand, risk averse agent in an unfavorable game would be more unwilling to join, thereby requiring larger amount of incentives to be persuaded to join as the game becomes more and more unfavorable. Accordingly, partnership planners need to pay more attention to favorable games if they want risk averse agents to partner up.

FIGURE 7. RISK SEEKING AGENT IN UNFAIR GAMES

It is obvious that risk seeking agents in a favorable game are more than willing to join the partnership and the amount the agent is willing to pay also becomes greater. Meanwhile, risk seeking agents in an unfavorable game would either participate or not participate depending on how unfavorable the game is. As figure 7 illustrates, therefore, the main concerns of risk seeking agents need to be refocused on the degree of unfavorable conditions that the game provides in terms of the EU they can achieve when joining the partnership.

All possible cases considered on the basis of discussions proposed above, global partnerships under the EUT can departmentalize into the nine cases where three patterns of partnership games (fair game, favorable game, and unfavorable game) intersect with three risk tendencies of participating agents (risk neutral, risk averse, and risk seeking). Each scenario within this three-by-three matrix aims to seek commonly shared tasks - the density of partnerships, fund availability, and need for incentive to promote partnerships - in spite of its various feedbacks on

how to respond to those tasks (see table 4). Table 5 lays out key upshots of the nine cases formed by the mixture of partnership games and risk tendencies.

TABLE 4. POSSIBLE SCENARIOS OF GLOBAL PARTNERSHIPS

	Fair game	Favorable game	Unfavorable game
Risk neutral	Case 1	Case 4	Case 7
Partnership	(+)	(+)	(-)
Fund availability	No	Yes	No
Need for incentive	No	No	Yes
Risk averse	Case 2	Case 5	Case 8
Partnership	(-)	(+)/(-)	(-)
Fund availability	No	Yes/No	No
Need for incentive	Yes	Yes/No	Yes
Risk seeking	Case 3	Case 6	Case 9
Partnership	(+)	(+)	(+)/(-)
Fund availability	Yes	Yes	Yes/No
Need for incentive	No	No	Yes/No

Source: By authors.

TABLE 5. KEY FEATURES OF THE NINE CASES

Case 1. Fair game / risk neutral

Risk neutral agents join a fair game regardless of the incentives. However, since they are indifferent in joining and not joining the partnership, they would not have extra fund to contribute.

Case 2. Fair game / risk averse

Risk averse agents do not join a fair game since their EU of not joining is larger than that of participating. Thus, risk averse agents in a fair game would need incentives to be persuaded to join.

Case 3. Fair game / risk seeking

Risk taking agents definitely join a fair game. Since the EU of joining is larger than that of not joining, funds are available from these agents.

Case 4. Favorable game / risk neutral

Risk neutral agents join an unfair game that is favorable to them. Since the EU of joining is higher than that of not joining, funds are also available.

Case 5. Favorable game / risk averse

Risk averse agents in a favorable game can both join the partnership and cannot join the partnership. Depending on how much favorable the game is, the agent can be needing incentives or also can be willing to give fund.

Case 6. Favorable game / risk seeking

Risk seeking agents always join in a favorable partnership. Moreover, the agents are willing to contribute fund whose amount is likely to be bigger than any other situations.

Case 7. Unfavorable game / risk neutral

Risk neutral agents refuse to join unfavorable partnerships. Incentives are required for their participation.

Case 8. Unfavorable game / risk averse

Risk averse agents do not join unfavorable partnerships. Their decision to join needs incentives whose amount is likely to be largest in all situations.

Case 9. Unfavorable game / risk seeking

Risk seeking agents in unfavorable game either join or refuse to join the partnership depending on how unfavorable the partnership is. In this case, the agent can be needing incentives or also can be willing to give fund.

What we have discussed thus far, ranged from various agents in global partnerships to EUT's applications with the nine reflections, galvanizes further development of deliberative debates on how global partnerships can be created and promoted. The following three aspects contribute to carrying out this deliberation. First, the matrix containing the nine groupings for global partnerships provides the moving frontiers of locations covering different positions of various developmental agents such as governments, IGOs, NGOs, and private actors. It can help us figuring out any possible matches for global partnerships among the agents by tuning up risk tendencies of all possible partners. Second, we can combine strategically the potential cases for global partnerships by embracing risk averse agents with fund incentives from risk seeking agents. For instance, matching Case 6 (risk seeking in favorable game) and Case 8 (risk averse in unfavorable game) would be taken into consideration as the positive arrangements for multiple agents to partner up despite different risk tendencies under different game conditions. Last but most importantly, this scholarly effort to detect various trajectories of global partnerships engenders a flow chart of how to construct a global partnership via the evaluation of conditions, incentives, and funding mechanisms in the following sequences illustrated by figure 8. The algorithm of the flow chart can be generalized as cross-cutting essences which are commonly applicable to various forms of development partnerships. It encloses the sequential order from the decision on both fair game and risk tendency, through the amount of financial contributions and incentives for participations, to the final decision of global partnership (see figure 8).

Source: By authors.

FIGURE 8. FLOW CHART OF GLOBAL PARTNERSHIPS

IV. CASE ANALYSIS: GAVI AND ITS RISK MANAGEMENT

A short case analysis of Gavi, the Vaccine Alliance (hereafter, Gavi) is undertaken to verify the proposed framework. Selecting Gavi as a central case is justified by the fact that Gavi, created in 2000 at the World Economic Forum, is the largest and most successful public-private partnership that exists to give underdeveloped nations access to new and underused vaccines with all types of the alliance partners including government, IGOs, NGOs, and private companies. Gavi supports eligible countries by providing new and underused vaccines, strengthening health system, providing immunization services to improve immunization performance, and aiding civil society organizations (GAVI 2013). Another important role of Gavi is to lower the prices of vaccines in the developing countries and to ensure sustainable supply of the vaccines (Clemens et al. 2010). Gavi's major partners include donor governments, WHO, UNICEF, World Bank, Bill and Melinda Gates Foundation, civil society, vaccine industry, research and technical health institutes and the private sector. Gavi is also successful in funding its programmes, committing USD 8.2 billion to new and underused vaccines and health system strengthening programmes. The success of Gavi is largely due to its innovative funding mechanisms which consist of 33% of the total funding. Gavi is also known for its remarkable success in innovative funding mechanisms such as Advance Market Commitment (AMC) which gives insight on funds and incentives in this analysis.

This case analysis assumes that the agents of Gavi AMC partake of various risk tendencies under the changing nature of the game. Under this framework, the analysis explores whether the partnership is probable among the agents and if so, how the fund and incentive structure is likely to be. Then the analysis compares the results from the framework with the actualities of the case in order to verify the practicality of the algorithm of the framework.

1. Advance market commitment for vaccines

Under the system of AMC, donors commit funds to guarantee the price of vaccines once AMC was initiated (GAVI 2010). This financial commitment provides vaccine manufacturers with the incentives they need to invest in vaccine research and development, and expand manufacturing capacity. In return, companies sign a legally-binding commitment to provide the vaccines at a price affordable to developing countries in the long term. Donor agents make grant payments to the World Bank, in accordance with its specific schedule or through an agreed demand-based payment arrangement; the World Bank holds donor payments on its balance sheet (Vujicic et al. 2011). These payments are designated assets with a corresponding liability and are disbursed to Gavi, according to AMC terms and conditions. In conformity with the Strategic Demand Forecast Gavi updates on a semi-annually basis, UNICEF issues Calls for Supply Offers and suppliers willing to participate sign a registration agreement, binding them to the AMC terms and conditions. UNICEF also assesses all offers received and enters into supply agreements with those manufacturers whose products have been deemed AMC eligible by WHO. Participating manufacturers are obliged to make a 10-year commitment to supply a share of the target demand of 200 million doses annually at a price no higher than 3.50 USD per dose. Each manufacturer receives a share of the committed AMC Funds of 1.5 billion USD in proportion to their supply commitments.

2. Fairness of the game and risk tendencies of agents

The agents of Gavi include government donors (Italy, Canada, Norway, Russia, and UK), IGOs (WHO, World Bank, and UNICEF), and the private sector (Pfizer, GSK, and Bill & Melinda Gates Foundation (BMGF)). The proposed EUT framework is advanced as a litmus test to determine the nature of the game and risk tendencies of the agents, thereby attesting how the AMC partnership works out. The nature of the game is assessed by the EV that the agents hold, and risk tendencies are discussed in turn by using case-specific proofs. The forefront of the analysis is reduced to vaccine manufacturers, governments, and private funds, given that these three agents are the core

mechanisms of AMC and both IGOs and NGOs are marginalized as reactive partners spending only operational costs to assist the AMC partnership.

1) Vaccine Manufacturers

How fair is the vaccine manufacturer for joining AMC? This question is necessarily tackled by comparing the EVs of pharmaceutical companies both joining AMC and not joining AMC. The awareness of the vaccine market needs to take precedence in order for the comparison to be successfully accomplished. Reform of policy must take precedence in order for the economy to grow. First of all, the vaccine market is oligopoly, in that only a few companies who have the license of professional knowledge and technology are allowed to enter the market under the government's strong regulation. Few multinational pharmaceutical companies including Pfizer, GSK, Aventis Pasteur, and Merck share 93% of the whole vaccine market, thereby shrinking the elasticity of supply. Second, unlike common goods market where information is abundant, consumers of vaccines heavily rely on vaccine providers for the access to information, which creates an asymmetrical relationship.

Due to the oligopolistic traits of the vaccine market, enhancing reputation in the market would not be critical for vaccine companies, compared with other private agents. Consumers lack the information to evaluate the public reputation of vaccine companies and even companies' loss of reputation is less significant due to lack of competitors. Vaccine manufacturers turn out to be indifferent to the increasing EV by enhancing reputation in the market, and rather put more weights on shareholder accountability for profits. As the EV of joining AMC (increase of reputation) is unable to compensate for the cut-down in the profit (low selling price by contract), joining AMC is a detrimental game to vaccine manufacturers.

In this unfair game, risk neutral and risk averse suppliers would not join AMC without certain amount of incentives, whereas risk seeking suppliers might make contracts with AMC. Big companies such as Pfizer and GSK would be risk averse or at best risk neutral since they already have a good share of the market and profit structure. Smaller vaccine companies tend to be risk seeking for the opposite reasons, but they have little resources to take part in this magnitude of detrimental game regardless of their risk tendencies. As risk averse agents never participate in detrimental games, it is highly likely to assume that Pfizer and GSK would not participate in AMC.

2) Government

Only Italy is selected as the government agent to be testified, simply because the scale of its funding to AMC exceeds that of any other government among five donor countries. Also, Italy is renowned as its deep-rooted

universalistic approach to health care. The Italian National Health Service, financed by general taxation, provides universal coverage and ensures a free choice of providers to patients through a pluralistic delivery structure at relatively low cost. It is natural to assume that Italy wants to promote its international reputation as a global leader of healthcare development. Furthermore, given the Eurozone Crisis disaffecting its international reputation, Italy would have wanted to turn the tide. Consequently, Italy would decide to join AMC, thereby increasing the EV which means international reputation it aims to heighten. In 2010, the former Prime Minister Mario Monti confirmed this by stating that Italy would not withdraw its commitments to the Global Fund to Fight Aids by reason of its nature of strategic investment. In contrast, Italy's joining a failed partnership would be fatal loss of invested money and the opportunity cost. Albeit this fiscal de-motivation, damage to the EV would be relatively low, given that the pledge is just a political commitment and the regime can change before the actual cost of payment may take effect. It is fair to assume that the game of joining AMC is favorable to Italy and the Italian government facing political instability in domestic politics and its diminishing reputation in the international arena tends to be risk seeking to control them over through the participation in AMC.

3) Private Foundations

BMGF, despite its profile as the private sector, is dissimilar to manufacturing companies in the sense that BMGF is not directly linked with shareholder accountability since the foundation itself does not produce goods and sells them in the market. Nevertheless, BMGF is still subject to reputational and market accountabilities, as it is not entirely exempt from the logic of profit due to its internal connection with Microsoft. Improving the reputation as a responsible private donor is likely not only to secure potential future customers for Microsoft in the recipient countries but also to hedge potential criticisms of moral hazard against Microsoft and BMGF as well.

By joining AMC, BMGF is able to ensure its reputation while losing the profit it might have earned using the resources elsewhere. Precisely, as the EV of reputation which comes from the partnership is greater than that of the profit, participating in the AMC partnership is a beneficial game for BMGF. In general, private foundations such as BMGF are rarely risk averse for the reason that the risk averseness jeopardizes what foundations value most – 'reputation.' Hence, any private foundation claiming risk-averse stances against development aid drifts into the violation of its organizational principles. Also, BMGF is not at all risk seeking since it selects who to permit grants through densely tight evaluation processes, rather than giving grants to any organizations requesting assistance.

Thus, it is safe to conclude that BMGF is risk neutral. The tendency that risk neutral agents always participate in a beneficial game further enables us to anticipate BMGF would join AMC.

3. Possibility of partnerships

Upper evaluation of the agents informs us that vaccine manufacturers, governments, and BMGF will not be able to form successful partnership since vaccine manufacturers views AMC as a detrimental game and they are risk averse. However, partnership can happen if incentives can be funded and given to the agents who are unwilling to participate.

[Graph] Pfizer GSK Utility function

[Graph] Italy Utility function

[Graph] Gates Foundation Utility function

Source: By authors.

FIGURE 9. UTILITY FUNCTIONS OF AGENTS

Line point a and point b on the utility function of Pfizer and GSK both shift left compared to the original fair game, as AMC is an unfavorable game to the manufacturers (see figure 9). If Pfizer and GSK participate in AMC, their utility is $EU(d)$, which is far smaller than their utility of not participating $EU(c)$.

But if the amount of (I) is provided as an incentive, Pfizer and GSK's EU would increase to EU(c), which might lead to their participation. At this point, the manufacturers feel indifferent in joining and not joining in AMC. On the other hand, the utility functions of Italy and BMGF demonstrate that both Italy and BMGF are willing to pay the amount of (F) to join AMC, given that Italy intends to join AMC and BMGF feels indifferent in joining and not joining at the point. If this amount of (F) is used as an incentive for Pfizer and GSK, the AMC partnership can take place. The following table 6 summarizes the findings related to the formation of the AMC partnership.

TABLE 6. KEY AGENTS FOR THE AMC PARTNERSHIP

	Pfizer, GSK	Italy	BMGF
Role	Manufacturer	Donor	Donor
Nature of game	Unfavorable	Favorable	Favorable
Risk tendency	Risk averse	Risk seeking	Risk neutral
Participation	No	Yes	Yes
Room for funding	No	Yes (big)	Yes (small)
Need for incentive	Yes	No	No

Source: By author.

This simulated outcome aptly corresponds to the actual fact that Italy and BMGF were both main donors of AMC fund that would be given to manufacturing companies like Pfizer and GSK (GAVI 2010). We also confirm that only large-scale multinational pharmaceutical companies have taken part in AMC as anticipated above. Although it is difficult to calculate the required exact margins due to classified nature of manufacturers' cost structure, we can certainly see the logic of the funding flow that matches the reality associated with the AMC partnership. Even if the incentives are not enough to compensate for the loss of margin, the partnership makes it up with the EU of large stable demand and increased reputation for future profits. Furthermore, if other multinational pharmaceutical companies that do not join AMC have the cost structures and conditions similar to Pfizer and GSK, it is likely that they are even more risk averse than GSK and Pfizer.

V. CONCLUSION

This study focuses on attempting to explain when and in what conditions global partnerships actually occur. Reflecting on shortcomings found in previous studies on the topic of global partnerships, it attempts to add a new variable of risk tendencies of the participating agents to explain the formation of global

partnerships in ways other than mere emphases on the cost-benefit analysis and political willingness. In doing so, this study borrows insights from the EUT whose merit lies in the trifold sophistication of risk neutral, risk averse, and risk seeking agents, all of which act differently in a given situation. Indeed, the EUT's focus on EU under the assumption that actors' decision-making is similar to their perceptions on gains, rather than EV, is critical when actors decide to participate in global partnerships amidst uncertainty. By this theoretical framework, the agents of global partnerships are distinguished into risk neutral, risk averse, and risk seeking ones and alternative attempts are undertaken to determine in what situations partnerships are likely to occur.

Despite the dearth of quantifiable sources on the losses and gains of actors joining global partnerships, visual explanations on how much incentive is required to persuade agents who are unwilling to join them are an alternative attempt to find a way of how partnerships work out. The amount of value that can put an agent back to its EU when not joining a partnership equals the least amount of incentives required to persuade the agent to partner up. Agents that are risk seeking may even invest far more than others to participate. For this process, an institutional mechanism inside the partnership need to guarantee the amount of value that can be taken away from the agent until the agent's EU of participating equals to agent's EU of not participating. Also, the institutional apparatus needs to secure the redistribution process by which the amount of value is used as incentives to the agents unwilling to participate. The actual evidence of the institutional mechanisms of funds and incentives can be found by empirical cases such as Gavi's AMC.

The economic idea that risk tendencies of the agents are treated as a necessary variable provides a new take on the discussion over how to promote and generalize global partnership for development cooperation under the SDG paradigm. The potential of generalizability of the analysis not only covers its applicability to more case studies which verify the three types of development partners under the EUT-centered framework, but also winnows out the outliers sidelining the theoretical applicability of the EUT. On top of this, a task ahead needs to not only incorporate an actual proposal for institutionalizing the allocation of incentives to the actors in need, which the partnerships are required to prepare, but also develop a practical design for the political leadership within a partnership to manage such an institutionalized process. Incorporating such missing factors such as internal allocation institutions and political leadership into a holistic approach will cure the EUT-centered approach in this study.

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