EFFECTIVENESS OF PROJECT AND PROGRAM AID IN IMPROVING QUALITY OF LIFE

By

Jaewon Kim

THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

MASTER OF DEVELOPMENT POLICY

2018

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charge:

Professor Kye Woo Lee, Supervisor 

Professor Hee-Seung Yang 

Professor Shun Wang 

Approval as of December 2018

ABSTRACT

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The purpose of this study is to find out which aid modality between project and program aid is more effective for enhancing the quality of life in recipient countries with different levels of income. It connects the two major topics in aid effectiveness: (1) effectiveness of different aid modalities, and (2) aid effectiveness regarding the promotion of overall quality of life of the recipients. Panel data between 2004 and 2015 was used to compare the impact of two aid modalities on the improvement of overall welfare, and on economic growth, which is the traditional indicator. Results of the study indicate that it is recommended to give more program aid to lower middle income countries (LMICs) rather than least developed countries (LDCs), while LDCs are more adaptive to the project aids.

Key words: Official Development Aid, Aid Effectiveness, Aid Modality, Project Aid, Program Aid, Budget Support, and Human Development Index

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to my supervisor, Prof. Kye Woo Lee, for accepting me as his last thesis supervisee. Despite his busy schedule, he always responded to me so quickly and shared valuable pieces of advice which guided me to the right direction. Without his trust, passion, and patience, I would have never finished this work. I also send my profound gratitude to Prof. Hee-Seung Yang, who taught me the joy of research and encouraged me to grow as a researcher. Lastly, I send my love to my friends and family who showed unfailing support throughout my years of study.

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I. Introduction

Ever since the Paris Declaration on Aid Effectiveness confirmed the consensus of international society on the urgent need for improving aid effectiveness in 2005, it has been a mutual assignment for both donors and recipients to secure aid effectiveness. Considering that the Sustainable Development Goals (SDGs) for 2016 to 2030 require more commitments and efforts than the previous global development goals, it is essential to ensure that aid actually works.

As a part of efforts to improve aid effectiveness, there has been a growing interest about aid modality in recent decades. Aid modality describes ways of delivering Official Development Assistance (ODA): the two major modalities are project aid and program aid (Sumner & Mallett, 2013). Project aid is an aid providing funds and technologies for a specific investment, whereas program aid indicates financial support for policy-based sector-wide investment program or overall budget (Rugare & Lee, 2016). Thus, program aid is also called budget support, including sector budget support and total budget support. In practice, project aid has always been more popular among donors. According to the Organization for Economic Cooperation and Development's Creditor Reporting System (OECD/CRS) database, although the recipients of the program aids are increasing, program aid has always been overwhelmed by projects aid in its volume. Most recently in 2016, while 147 individual recipients received a total of 93,302.66 million USD in project aids, 114 individual recipients received a total of 10,043.17 million USD in program aids.

One of the factors contributing to the ineffectiveness of aid is that aid is delivered without considering which aid modality is better for achieving its goal. The theoretical debate on the relative effectiveness between the project and program aid is inconclusive. There are criticisms on project aid because it may lead to the proliferation and fragmentation of aids

which feature high transaction costs and coordination burden of the recipients (Jelovac & Vandeninden, 2008). At the same time, due to the limited role of the recipient government, the donors have more control over the usage of the aid and are able to monitor the implementation of the activities (Cordella & Dell'Ariccia, 2007). On the other hand, the program aid is believed to increase the ownership of the recipients and predictability of aid inflows, and reduce the transaction costs. But it can also mean the recipients who do not put their priorities in development would misuse the supported budget for irrelevant purposes (Cordella & Dell'Ariccia, 2007). Empirical studies on the effectiveness of program and project aids have also shown mixed results (Nilsson, 2004; Dijkstra, de Kemp & Bergkamp, 2012; Tavakoli & Smith, 2013; Rugare & Lee, 2016).

Another issue in aid effectiveness is how to measure the effectiveness. Most of the studies have measured aid effectiveness by evaluating how much aid contributes to achieving its ultimate goal, the development. Given this, one must start by setting an agreed definition of development. Following the tradition of mainstream economics that focused on development in terms of accumulation of wealth (Hansen & Tarp, 2000; Kim, 2016), many previous studies in development economics have tried to evaluate aid effectiveness by analyzing the relationship between aid and growth of income per capita (Burnside & Dollar, 2000; Rugare & Lee, 2016). However, growth of income does not explain all of the various dimensions of development such as life expectancy, education attainment, and political freedom. Development should be interpreted as an expansion of freedom in one's economic, social and political life (Sen, 1999). With this now more widely accepted approach, economic growth is not a proper criterion of development, but only a mean to achieve it. Accordingly, aid effectiveness should be assessed by its performance in improving the overall quality of life, not just per capita Gross Domestic Product (GDP) (Kosack, 2003). For instance, the

Human Development Index (HDI) is a good alternative for measuring the all-encompassing impact on living standards.

The ongoing debate on aid effectiveness is recently more focusing on the effectiveness of disaggregate aid rather than aggregate aid (Akramov, 2012), because the effectiveness of aggregate aid is difficult to be empirically proven. This new consensus tells that accumulation of precise evaluation on each disaggregate aid will eventually increase the overall aid effectiveness (Kim, 2016). In this context, exploring the optimal aid modality to make the best out of each disaggregate aid will be able to contribute to such efforts. It is even more crucial considering that while there have been some studies that measured aid effectiveness using HDI, few of them tried to distinguish the different aid modalities.

Therefore, this research seeks to connect the two topics under the theme of aid effectiveness: (1) the effectiveness of different aid modalities, and (2) aid effectiveness regarding promoting the overall quality of life of the recipients. The purpose of this study is to find out which aid modality between project and program aid is more effective for enhancing the quality of life in recipient countries. It also tries to examine whether the effectiveness of the two modalities is conditional on the level of governance and democracy and whether it differs depending on the level of income in the recipient countries. I use panel data between 2004 and 2015 to compare the impact of two aid modalities on the improvement of overall welfare, and on economic growth which is the traditional indicator. To the best of my knowledge, there has been little attempt to connect these two topics and compare the economic and welfare impacts of program and project aid. Thus, the result of this study contributes to the ongoing academic debate on aid effectiveness by filling the gap in the previous literature. In addition, it may help the practical policy decisions on which aid delivery modality is more preferable, depending on the political, institutional, and economic

situations in the recipient countries.

The remaining paper is structured as follows: Section II presents the literature review which covers previous studies on aid modalities and aid effectiveness for increasing quality of life. Section III lays out the econometric model and the data used. Section IV examines the results of the panel data analysis and the interpretation. Lastly, Section V concludes with the limitations and policy implications of the paper.

II. Literature Review

1. Disaggregate Aid Effectiveness in its Modality

1.1. Background.

The interest in the disaggregate aid effectiveness came out of the long-standing controversy over aid effectiveness (Tarp, 2010). Sachs (2005), one of the most renowned figures who have optimistic views on aid, insisted that more investment through aid will fill the financing gap in the recipient country, and only full-scale investment in various sectors (i.e., “Big Push”) will make it possible. Easterly (2006), who represents aid pessimism view, opposed to this “Big Push” and financing gap model and argued that aid could cause a negative impact on the macroeconomic development in recipient countries. Along with such strong conflicting views, the controversy has never been resolved, because an optimal methodological model to measure the aggregate aid effectiveness has not been clearly developed yet. Empirical studies have been challenged by complex and diverse variables that may affect the relationship between aid and development (Riddell, 2007; Tarp, 2010) and thus resulting in mixed outcomes (Hansen & Tarp, 2000). Ironically, due to the contradicting ideas, a new consensus has been made in the recent decades: it is necessary to focus on disaggregate aid effectiveness at a micro level, where we can draw more reliable and practical

lessons for the future aid practice (Kim, 2016).

Aid can be disaggregated in various ways, depending on how we set the criteria. Some studies have focused on the different features of bilateral and multilateral aid, sorted by type of donors (Biscaye et al., 2017). Others have disaggregated aid effectiveness by sectors (Williamson, 2008; Ashford & Biswas, 2010). In the 2010s, an increasing number of micro-level analyses have been undertaken to investigate the effectiveness of individual aid (Cohen & Dupas, 2010; Dupas & Robinson, 2013; Hahn, Nuzhat & Yang, 2018). Along with such various approaches, aid can be also classified in two ways depending on how it is delivered: (1) project aid which is the traditional modality, and (2) the program aid which may indicate the rest of the modality other than project aid, including sectoral budget support and general budget support (Sumner & Mallett, 2013). The rest of the section reviews previous literature about the effectiveness of project and program aid.

1.2. Theoretical studies.

Before exploring relative effectiveness of the project and program aid in various situations, it is necessary to know the different features of the two aid modalities and how they were developed. Riddell (2007) explained that the project aid is generally "for fulfilling some form of 'gap-filling' role: providing resources, skills, and systems which the recipient country needs and lacks," and therefore has "clear, tangible objectives" (p.180). This intervention often uses parallel financial and management system of both donor and recipient (Sumner & Mallett, 2013). With an increasing number of donors, an increase in the number of the project resulted in fragmentation of aid. The more the projects emerged, the more coordination burden grew on the recipient side. Eventually, it brought an increase of unnecessary transaction costs, especially when these projects were given through the donors' financial management framework.

In the early 1980s, a variety of new modalities emerged including "structural adjustment lending, support for the private sector, NGO support, emergency assistance, and technical assistance and cooperation" (Robinson & Tarp, 2000, p.7), as an alternative to tackle the problems of traditional aid modality. After the donors realized that such adjustment efforts more or less failed in reforming the recipient government, they started paying attention to budget support from the 1990s (Mosley & Eeckhout, 2000). Especially, sectoral budget support attracted donors who want to encourage sound policy building in specific sectors in recipient countries. Since it was designed in an attempt to overcome the shortcomings of project aid, program aid is usually delivered through the local ministry of finance, to increase the aggregate volume of spending, to improve the predictability of aid (Riddell, 2007), and to enhance the coordination between donors and recipients (de Haan & Everest-Phillips, 2010). Recently in 2005, at the Paris Declaration on Aid Effectiveness, more than 100 donors and recipients selected the use of programme-based approaches (PBA) as one of the indicators to implement the five principles of the Declaration (OECD, 2008). PBA, the indicator nine was selected based on the third principle, harmonization of donor practices. In their assessment, OECD (2011) explained the reason why the use of PBA was selected as the indicator to improve harmonization is that it ensures the use of partner countries systems for planning, funding, and following government activities. By taking this approach, the donor and the recipient are expected to rely on a single budget framework, which increases the recipient's ownership and leadership, as well as reduces the aid fragmentation.

Given this historical background where program aid was induced as an alternative of project aid, many studies that explored the effectiveness of the two aid modalities examined whether program aid is superior to the project aid.

The study of Cordella and Dell'Ariccia (2007) was one of the first studies to

investigate the relative effectiveness of project aid and conditional budget support. In their theoretical model, they showed that it is better to give budget support than project aid when there is an alignment in preferences of donors and recipients, and when the aid flow is relatively smaller than the local resources of the recipients. In their point of view, the preferences of the recipients are key factors that determine the success of any aid, which are sometimes not aligned with the priorities of the donors. To backup these points, they covered the shortcomings of conditional budget support and project aid. When it comes to budget support, its effectiveness depends on the donor's ability to monitor whether the budget is used for the agreed purpose. In this situation, inefficiency may occur if donors allocate more resources to tangible items which they can control and monitor, rather than considering the substantial needs. Such evaluation oriented allocation practice may weaken the funding for genuine and substantial development priorities, and eventually hinder the effectiveness of the aid. The challenge associated with the monitoring can become harsher when the preferences of the donors and the recipients are far apart. In their model, the developmental preferences of recipient countries were proxied by the level of the policy environment. If the recipient does not have a good policy environment, they are likely to divert the budget support and consume it as they wish, in a non-development-oriented purpose. In this case, it is recommended to give project aid.

With a similar model, Jelovac and Vandeninden (2008) also suggested the optimal aid is the unconditional budget support, but conditionality can also improve the aid effectiveness with the recipient governments who meet certain parameters: high developmental priorities, high productivity of the inputs, and a high level of aid compared to the recipient's budget. This means conditionality works only when the recipient government is capable of fulfilling the conditionality, and when the aid amount is large enough to induce the recipient to meet

the conditionality.

Regarding project aid, Jelovac and Vandeninden (2008) explained that project aid inherently requires transaction cost for coordination between a donor and a recipient, and limited harmonization and lack of coordination will increase the transaction cost. Because of this, all aid should be given in the form of program aid.

Cordella and Dell'Ariccia (2007) indicated another risk of project aid. They said project aid always carries a risk of fungibility, meaning the crowding out effect of the developmental budget that the recipient government would have used if the aid was not given. The project aid flow is fungible as much as the recipient can divert its resources other than developmental purposes. Therefore, they argued aid is more fungible with smaller projects, which is why the results of relatively large project aids are superior.

Both studies (Cordella & Dell'Ariccia, 2007; Jelovac & Vandeninden, 2008) have same limitations that they only relied on the simple variation of the Cobb-Douglas model and did not conduct an empirical analysis. Without considering a variety of restrictions and variables that may affect the actual implementation and achievement of project and program aid, such theoretical approach cannot fully illustrate the status quo of aid delivery.

1.3. Empirical studies.

Empirical studies on the effectiveness of each aid modality showed mixed results. Riddell (2007) noted that although project aid is losing its credibility in terms of its effectiveness, nonetheless, the records of project aid have been highly successful. By reviewing thousands of project completion reports, written by both donors and recipients, Riddell (2007) showed they achieved their immediate goals in 70 to 85 percent of the cases, especially when they had set tangible objectives. This indicates that with a clear objective, project aid can be an effective prescription to meet specific development needs within a short

term. Yet, the fact that most of the reports did not contain the long-term impacts of the projects implies that project aid lacks sustained impact.

de Haan and Everest-Phillops (2010) discussed implications for both practice and theory on the effectiveness of program aid, focusing on the Joint Evaluation of General Budget Support 2004-06. The joint evaluation was conducted for cases from Burkina Faso, Malawi, Mozambique, Nicaragua, Rwanda, Uganda, and Vietnam, and the separate evaluation for the case of Tanzania. In these countries, the Partnership General Budget Support (PGBS) programmes were implemented, which were long-term budget supports with active policy dialogue for strengthening the recipient government policy for poverty reduction. The result indicated that there were small but positive impacts: PGBS helped effective allocation of the public budget by reducing transaction costs and increasing discretion of governments. It also offered a forum to consolidate the rules of different donors and made the financial and operational arrangement evolve. Net benefits were greater in countries where PGBS programmes were implemented for a longer period of time. The literature also covered how this result can be understood in theory. By ensuring that there will be a continuous budget flow, PGBS increased entitlements of the recipient governments that encouraged their policy development and harmonization in a donor-recipient relationship. Although this research contributed to the debate over the effectiveness of program aid, the limited source of analysis did not allow them to expand the discussion out of the boundary of PGBS programmes.

Most recently, based on these theoretical and empirical achievements of the previous literature, Rugare and Lee (2016) explored the relative effectiveness of program and project aid in 41 Sub-Sahara African countries, to which this research owes a great deal. They measured aid effectiveness by examining the impact of aid on increasing the GDP per capita,

using the actual disbursement data of program and project aid for 2006-2014. To address the potential endogeneity of aid variables, they estimated the same growth model twice, once with average data of 2 five-year periods for all variables, and secondly with one year lagged data for project and program aids. Other than the amount of each aid modality as a percentage of GDP, they also included control variables such as Policy, proxied by Country Policy and Institutional Assessment (CPIA) index, gross investment, total exports and imports, life expectancy, and primary education enrollment. To determine whether the effectiveness of program and project aid is conditional on sound policies and institutions, they created an interaction term between Policy and each aid modality.

As a result, they showed that program aid promoted economic growth with diminishing marginal returns on growth, and the sound policy and institutional environment was not a necessary condition for both modalities. They also found project aid on its own had no significant impact on the economic growth but had a negative impact on per capita economic growth when interacted with policy and institutions. This could be interpreted as inefficiency caused by parallel financial systems; when the recipient county's macroeconomic institutions are already firmly established, the project aid can be ineffective because of using parallel financial systems. Hence, they concluded with a policy prescription that development countries in Sub Saharan Africa should induce more program aid for their economic growth.

On a firm ground of existing theoretical debate on the effectiveness of different aid modalities, Rugare and Lee (2016) used an actual disbursement data of large number of panels contributed to evaluating the effectiveness of the recent practices in international aid allocation. However, because they conducted their analysis only with the countries in Sub Saharan Africa, their result does not fully represent the whole recipients in the world. Also, by measuring the effectiveness of the economic growth only, they could not grasp the

comprehensive and aggregated impact of aid.

1.4. Contributions and limitations.

Although there is not a vast literature yet, the studies on aid modalities are gradually being accumulated. The interests in this area were originated from the big wave on aid effectiveness discourse, more specifically from the recent focus on the disaggregate aid effectiveness. The empirical studies on the effectiveness of each modality were developed by theoretical studies and the Paris Declaration, to meet the urgent global needs for improving aid effectiveness for both donors and recipients. Despite such contribution, the fact that most of the literature focused on economic impact of aid but not on its welfare impact gives more space to develop for future researchers.

2. Aid and Development

2.1. Background.

How we measure the impact of aid depends on how we define its goal, the development. The conception of development has become encompassing and wider over the last few decades. Sen (1999) is the most renowned figure who brought up the discussion on the wider conception of development, by demonstrating that wealth itself is not an ultimate goal of development, but only a method to allow us to have substantive freedoms. According to him, “Expansion of freedom is viewed ... both as the primary end and as the principal means of development.” (Sen, 1999, p. 12) On this theoretical basis, the Human Development Report was first published in 1990 by the United Nations Development Programme (UNDP), and its index, HDI, is in increasing usage by researchers who connect the idea of aid effectiveness and its ability in improving the quality of life. By quoting Sen (1999), Kosack (2003) criticized that most of the previous studies which only focused on the economic impact of aids, and measured aid effectiveness using growth of HDI in his study. Fraser-

Moleketi and Argyriades (2010) also clarified that the narrow definition of development has an inherent limitation and that HDI is one measure to correct that. Hwang, Park, Lee & Lim (2016) used HDI as well in their study and warned that understanding the goal of aid as economic growth can be dangerous because such approach would evaluate many aid programmes as a failure, especially when those are not directly targeting economic growth.

2.2. Aid effectiveness in human development.

In order to illustrate the long-term effect of aid on a country's sustainable development, Kosack (2003) conducted an empirical analysis using panel data of aid amount and HDI growth from 1974 to 1985. He showed aid has a positive effect on increasing the HDI of recipient countries, only when combined with a good level of democracy. To test his hypothesis that aid is effective in democratized countries, he used an interaction term between aid as a percentage of GDP and the level of democracy. For democracy, he adopted two types of proxies: (1) the POLITY index from Polity IV project, which evaluates the level of democratization in a country by assessing the process of regime transition, and (2) the freedom scale from the Freedom House. As a result of the analysis, the coefficient of this interaction term was positive and highly significant, indicating that aid has a positive impact on improving quality of life in democracies, but may bring opposite results in autocracies.

He also figured out that in most cases democracies are more likely to have a poor quality of life compared to autocracies. If started from a same economic condition, an autocracy will grow faster than a democracy, because autocracies would focus their resources on the areas with the highest return, rather than pay attention to the needs of the public. In autocracies, the wealth is concentrated in the elites, the most productive members who make the economy grow more efficiently. Nevertheless, aid can reverse this tendency. Democratic governments tend to treat their people better than autocracies, so only if they have sufficient

resources, they would transfer their resources into increases in living standards. In this sense, Kosack (2003) argued that aid that flows into democracies will create a meaningful improvement in the living standards of their people.

Without a doubt, his research made a substantial contribution to the ongoing discussion on aid effectiveness by using growth of HDI as a dependent variable. Especially, he made the first attempt to check how democracy may alter the aid effectiveness on quality of life. The fact that he only used the aggregated aid amount, however, gave more space to develop in the future studies.

Regarding such limitation, Assima and Quartey (2009) were the researchers who went further from what Kosack (2003) achieved. They also agreed that the current debate on aid effectiveness should be shifted from the traditional analysis of the aid-growth relationship, and investigated the aid's impact on welfare in 39 Sub-Saharan African countries. Unlike Kosack (2003), they used different subsets of aid, such as aggregated bilateral aid and program aid – a type of disaggregate aid. Also, they used infant mortality rate as well as HDI as dependent variables. Their findings showed that aggregate bilateral aid did not have a significant effect on HDI and infant mortality rate. On the contrary, the sector-specific aid and program aid had a significant and positive impact on HDI, but no significant effect on infant mortality rate. Considering this, they recommended that the amount of aid must be scaled up including program aid for further development of this stagnated region. Although their study did not directly compare the relative effectiveness of program and project aid, nor did cover all of the regions, it contributed to the ongoing studies on effectiveness of the new aid modality.

A recent study of Biscaye, Reynolds, and Anderson (2017) tried to overcome the inconclusive results of empirical studies in aid effectiveness, by reviewing 45 empirical

studies that tested the relations between aids and a variety of progress in development including GDP growth, human development indicators, governance indicators, and non-aid investment. They suggested that using a single indicator such as GDP growth alone cannot fully illustrate the multi-dimensional outcomes of aid. They also found that the effectiveness of bilateral and multilateral aid can be affected by some factors including the regional characteristics of the recipients, periods of observation, the objective of the programmes, and the features of the aid agencies. Thus, they reached an inconclusive conclusion that there is no significant evidence to say bilateral aid is more effective than multilateral aid. In this regard, they clarified that future research in this field should pay more attention to the details of the aid flow such as different transaction costs that may cause inefficiency, rather than focusing onto the aggregated aid amount of these channels.

2.3. Contributions and limitations.

As the conception of development evolved, some studies on aid effectiveness also adopted a new indicator to assess whether aid worked or not. These studies argued that those approaches that focus on GDP cannot thoroughly evaluate the impact of aid, especially when the aid is targeting to improve the welfare of the recipients. Most of the literature used aggregate aid data, which could not respond to the recent voices that request more disaggregated analysis on aid effectiveness.

3. Summary and Future Research Implications

Summing up the literature review, the studies on different aid modalities are active but require more experiments. Most of the studies examined aid effectiveness using an economic growth indicator, and only a part of them conducted both theoretical and empirical analysis. There is increasing use of HDI and welfare indicators in the area of aid effectiveness, but many of them did not focus on aid modalities. Also, some of those studies restricted the

region of interest in Sub Saharan Africa. Still, most studies aggregate the recipient countries. It would be useful to disaggregate the recipient countries into the least developed countries (LDCs) and lower middle-income countries (LMICs), because aid effectiveness may differ depending on the level of development or income. Therefore, based on the context and progress in the literature, this research aims to link the two topics by exploring the relative effectiveness of program and project aid for improving HDI in the OECD/DAC recipient countries with different levels of development. We can summarize the working hypothesis to be tested as follows: The program aid is more effective in promoting the quality of life in aid recipient countries with different levels of income.

III. Research Method

1. Construction of the Panel Data

I conduct a panel data analysis using data with 288 observations from 24 countries who received both project and program aid annually from 2004 to 2015. Table 1 shows the summary statistics of the variables. The variable Q represents HDI which is between 0 and 1. It indicates the overall quality of life in a country, by aggregating the level of its health, education, and income. The higher HDI means, the better quality of life. The variable Proj and Prog represent the amount of aid received in each modality, as a percentage of GDP. The variable Gov is proxied by the Worldwide Governance Indicators (WGI), which is a summary of six different dimensions of governance. In this research, I use the average value of each dimension of WGI, and adjust its range to 0 to 5 scale, from its original scale which is -2.5 to 2.5. The higher value indicates better level of governance. The variable Dem is proxied by POLITY Index from Polity IV project. Again, I adjust its range to 0 to 20 scale, from its

original -10 to 10 scale, following the study of Kosack (2003) who used the same value. The lowest value, 0 means successive monarchy and 20 means full-fledged democracy.

Table 1: Summary statistics

Variables	Note	N	mean	sd	min	max
Q	HDI	288	0.510	0.116	0.278	0.769
G	log GDP per capita	288	6.708	0.817	4.848	8.396
q_int	initial HDI	288	0.466	0.121	0.278	0.703
g_int	initial log GDP per capita	288	6.116	0.692	4.848	7.589
Proj	project aid/GDP	288	0.0438	0.0347	0.00220	0.221
Prog	program aid/GDP	288	0.0152	0.0145	2.77e-07	0.0753
Gov	Worldwide Governance Indicators (WGI)	288	2.014	0.389	1.044	3.071
Dem	POLITY Index	288	13.61	4.835	3	20
Fdi	foreign direct invest	288	1,008	1,713	-40.70	11,800
Rem	personal remittances	288	1,269	2,750	0.0100	19,306
Hiv	HIV/AIDS prevalence	288	2.907	4.090	0.100	14.10

Table 2: Correlation between explanatory variables of Model (1A)

	q_int	Proj	Prog	Gov	Dem	Fdi	Rem	Hiv
q_int	1.0000							
Proj	-0.4566* 0.0000	1.0000						
Prog	-0.4298* 0.0000	0.4756* 0.0000	1.0000					
Gov	0.3449* 0.0000			1.0000				
Dem				0.3992* 0.0000	1.0000			
Fdi	0.2059* 0.0004	-0.1644* 0.0052	-0.1585* 0.007		-0.3321* 0.0000	1.0000		
Rem	0.2754* 0.0000	-0.2858* 0.0000	-0.2943* 0.0000	-0.2013* 0.0006	-0.1987* 0.0007	0.5822* 0.0000	1.0000	
Hiv	-0.3330* 0.0000	0.1634* 0.0054	0.3092* 0.0000	0.1299* 0.0275			-0.2525* 0.0000	1.0000

Notes: All values are significant (p<.05).
* p <0.01

Table 3: Collinearity between explanatory variables of Model (1A)

Variable	VIF	1/VIF
Rem	1.95	0.513022
q_int	1.88	0.531805
Fdi	1.86	0.537342
Gov	1.65	0.607276
Prog	1.49	0.673313
Proj	1.48	0.673562
Dem	1.41	0.710799
Hiv	1.33	0.753189
Mean VIF	1.63	

2. Models of analysis

2.1. Effectiveness of project and program aid.

The major research question of this study is whether the sector-wide programs (budget support) have a better impact on the human development of the recipients compared to the project aids. Model (1A) below is the main regression equation in this study.

$$(1A)\ Q_{it} = \alpha + q\_int_i\beta_0 + Proj_{it}\beta_1 + Prog_{it}\beta_2 + {Proj_{it}}^2\beta_3 + {Prog_{it}}^2\beta_4 + Gov_{it}\beta_5 + Dem_{it}\beta_6 + Fdi_{it}\beta_7 + Rem_{it}\beta_8 + Hiv_{it}\beta_9 + \varepsilon_{it}$$

Where

Q_{it} is quality of life in a recipient country *i* in year *t*, as proxied by Human Development Index (HDI) from (United Nations Development Programme, UNDP)

q_int is an initial value of HDI in the year 2004

$Proj$ is project aid received as percentage of GDP obtained from OECD/CRS

$Prog$ is program aid received as percentage of GDP obtained from OECD/CRS

Gov is a level of public policy and institution as proxied by of Worldwide Governance Indicators (WGI) from the World Bank

Dem is a level of democratization as proxied by POLITY Index from Polity IV Project

Fdi is net foreign direct invest inflow sourced from the World Bank

Rem is personal remittances sourced from the World Bank

Hiv is prevalence of HIV/AIDS sourthe ced from the World Bank

In Model (1A), I use the absolute HDI value, following the previous literature (Gomanee, Girma, & Morrissey, 2003; Hwang et al., 2016) that explored aid effectiveness for improving welfare. Additionally, I use aid amount as percentage of GDP, same as in many aid-related studiess (Burnside & Dollar, 2000; Kosack, 2003; Asiama & Quartey, 2009; Rugare & Lee, 2016). Following a recent trend (Rugare & Lee, 2016; Hwang et al., 2016; Galiani et al., 2017), I use net disbursement amount instead of the commitment amount of aid.

Here Gov and Dem are taken to describe different aspects of political and institutional environment in a recipient country, both of which are widely used by many studies covering relationship between aid effectiveness and recipients' characteristics (Boone, 1996; Burnside & Dollar, 2000; Kosack, 2003; Asongu, 2015; Rugare & Lee, 2016; Hwang et al., 2016), often with different proxies. The variable Gov represents the aggregate level of governance including the level of macroeconomic policy and institutional environment of one country. Whereas, the variable Dem, proxied by the POLITY Index from the Polity IV Project, only focuses on the whether the transition of the regimes was conducted in a democratic way or not.

Model (1B) below examined the aid effectiveness of each aid modality on economic growth in order to compare the traditional approach and the main equation.

$$(1B)\ G_{it} = \alpha + g\_int_i\beta_0 + Proj_{it}\beta_1 + Prog_{it}\beta_2 + {Proj_{it}}^2\beta_3 + {Prog_{it}}^2\beta_4 + Gov_{it}\beta_5 + Dem_{it}\beta_6 + Fdi_{it}\beta_7 + Rem_{it}\beta_8 + Hiv_{it}\beta_9 + \varepsilon_{it}$$

Where

G_{it} is a logarithm of per capita GDP of a recipient country i in year t

g_int is a logarithm of the initial value of per capita GDP in year 2004

I use the logarithm of per capita GDP throughout the entire paper, in consideration of the difference in scale between it and other the variables. Same as many studies that explored aid's impact on economic growth (Burnside & Dollar, 2000; Rugare & Lee, 2016), I include the logarithm of initial per capita GDP to control the impact of initial income gap.

Although many growth studies used growth rate of GDP per capita as their dependent variable (Burnside & Dollar, 2000; Rugare & Lee, 2016; Hwang et al., 2016), in this paper, I use the logarithm of per capita GDP, following other studies (Irfan & Nehra, 2016; Galiani et al., 2016). The rest of the explanatory variables are the same as in Model (1A).

2.2. Effectiveness of project and program aid conditional on governance.

Model (2A) and (2B) are variations of Model (1A) and (1B) for testing whether the effectiveness of project and program aid differs depending on the good level of governance. The only difference from Model (1A) and (1B) is that interaction terms between aid and governance are included in Model (2A) and (2B).

$$(2A)\ Q_{it} = \alpha + q_{int_i}\beta_0 + Proj_{it}Gov_{it}\beta_1 + Prog_{it}Gov_{it}\beta_2 + Proj_{it}\beta_3 + Prog_{it}\beta_4 + {Proj_{it}}^2\beta_5 + {Prog_{it}}^2\beta_6 + Gov_{it}\beta_7 + Dem_{it}\beta_8 + Fdi_{it}\beta_9 + Rem_{it}\beta_{10} + Hiv_{it}\beta_{11} + \varepsilon_{it}$$

Same as in Model (1B), I test the equation with log GDP per capita as a dependent variable and an initial economic level as one of the control variables in Model (2B).

$$(2B)\ G_{it} = \alpha + g_{int_i}\beta_0 + Proj_{it}Gov_{it}\beta_1 + Prog_{it}Gov_{it}\beta_2 + Proj_{it}\beta_3 + Prog_{it}\beta_4 + {Proj_{it}}^2\beta_5 + {Prog_{it}}^2\beta_6 + Gov_{it}\beta_7 + Dem_{it}\beta_8 + Fdi_{it}\beta_9 + Rem_{it}\beta_{10} + Hiv_{it}\beta_{11} + \varepsilon_{it}$$

2.3. Effectiveness of project aid program aid conditional on democracy.

Model (3A) and (3B) are another variations of Model (1A) and (1B) for testing whether the effectiveness of project and program aid differs depending on the good level of democracy. Here, interaction terms between aid and democracy are included.

$$(3A)\ Q_{it} = \alpha + q_{int_i}\beta_0 + Proj_{it}Dem_{it}\beta_1 + Prog_{it}Dem_{it}\beta_2 + Proj_{it}\beta_3 + Prog_{it}\beta_4 + {Proj_{it}}^2\beta_5 + {Prog_{it}}^2\beta_6 + Gov_{it}\beta_7 + Dem_{it}\beta_8 + Fdi_{it}\beta_9 + Rem_{it}\beta_{10} + Hiv_{it}\beta_{11} + \varepsilon_{it}$$

Same as in Model (1B) and (2B), I use log GDP per capita and an initial economic level in Model (3B).

$$(3B)\ G_{it} = \alpha + g_{int_i}\beta_0 + Proj_{it}Dem_{it}\beta_1 + Prog_{it}Dem_{it}\beta_2 + Proj_{it}\beta_3 + Prog_{it}\beta_4 + {Proj_{it}}^2\beta_5 + {Prog_{it}}^2\beta_6 + Gov_{it}\beta_7 + Dem_{it}\beta_8 + Fdi_{it}\beta_9 + Rem_{it}\beta_{10} + Hiv_{it}\beta_{11} + \varepsilon_{it}$$

In this research, each model was estimated twice. In the first analysis, I use annual data for all variables. In the second analysis, I divide the data into 3 four-year periods (2004-2007, 2008-2011, and 2012-2015) and use the average data for all variables.

IV. Results and Discussion

All Models were tested in a fixed effect model and random effect model, followed by a Hausman test for each equation. All of the results from Hausman tests allowed the researcher to reject the null hypothesis ($p < .05$) and to select the fixed effect model. The same dataset was also analyzed by income level in two groups – LDCs and LMICs. Table 4 is

the result of using all observations, and Table 5 and 6 are the results of LDCs and LMICs, respectively.

In the fixed effect model, the time-invariant variables, such as the initial GDP per capita (g_int) and the initial HDI (q_int) were omitted due to collinearity. Also, after running Model (1A) and (1B), I adjusted the remaining models; in Model (2A) and (2B), the variable *ProjxGov* was eliminated, and Model (3A) and (3B) was not tested at all. This adjustment was made for two reasons: (1) The coefficients of project aid in Model (1A) and (1B) were already significant and positive, so it was not necessary to create an interaction term with project aid. (2) Another variable of interest, program aid showed negative or insignificant coefficients in Model (1A) and (1B), so the interaction term with program aid was still necessary to see if it is effective under certain conditions. However, because the coefficients of democracy were insignificant in Model (1A) and (1B), an interaction with democracy was not necessary to be tested.

In Table 4, project and program aid show opposite direction of coefficients. Project aid shows a significantly positive impact in improving both HDI and log GDP per capita. Its squared terms has negative coefficients in all estimations, meaning that project aid has a marginal diminishing return on human development and economic growth. The overall tendency is similar in Table 5 and 6, with some difference between LDCs and LMICs. The effect of project aid in HDI is bigger in LDCs, compared to LMICs, but its economic growth impact is bigger in LMICs. This can be caused by two reasons: (1) LDC's have more room to improve their HDI, and (2) LDCs require more resources to achieve economic growth, compared to LMICs, because of their weak economic fundamentals. The fact that the estimations with LMICs show almost twice higher governance level, compared to LDCs, supports this explanation.

Table 4: Results of Model (1A), (1B), (2A), and (2B) using annual data

Variables	(1) Model (1A)	(2) Model (1B)	(3) Model (2A)	(4) Model (2B)
Proj	0.972***	11.39***	0.956***	11.28***
	(0.0996)	(1.508)	(0.0998)	(1.517)
Prog	-0.347*	-10.02***	-1.076**	-15.43**
	(0.200)	(3.034)	(0.491)	(7.456)
$Proj^2$	-2.800***	-45.16***	-2.770***	-44.93***
	(0.538)	(8.147)	(0.537)	(8.158)
$Prog^2$	0.369	74.91	1.400	82.56
	(3.295)	(49.88)	(3.345)	(50.84)
ProgxGov			0.339	2.518
			(0.209)	(3.172)
Gov	0.0207***	0.576***	0.0155**	0.538***
	(0.00663)	(0.100)	(0.00734)	(0.112)
Dem	0.000123	0.00140	0.000210	0.00205
	(0.000562)	(0.00851)	(0.000563)	(0.00855)
Fdi	3.40e-06***	7.93e-05***	3.62e-06***	8.09e-05***
	(9.84e-07)	(1.49e-05)	(9.90e-07)	(1.50e-05)
Rem	4.25e-06***	6.26e-05***	4.23e-06***	6.25e-05***
	(6.98e-07)	(1.06e-05)	(6.96e-07)	(1.06e-05)
Hiv	-0.0251***	-0.127***	-0.0250***	-0.126***
	(0.00270)	(0.0408)	(0.00269)	(0.0409)
Constant	0.502***	5.500***	0.511***	5.569***
	(0.0179)	(0.271)	(0.0187)	(0.285)
Observations	288	288	288	288
R-squared	0.736	0.588	0.739	0.589
Number of id	24	24	24	24
F	79.10	40.51	71.92	36.47
Prob > F	0.0000	0.0000	0.0000	0.0000
(Hausman)				
chi2	64.54	14.38	67.51	21.86
Prob > chi2	0.0000	0.0000	0.0000	0.0000

Notes: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
q_int and g_int are omitted due to the collinearity.

On the other hand, program aid showed negative or insignificant impacts for HDI improvement and a significantly negative impact on economic growth in Table 4. The coefficients of the interaction terms between program and governance are positive but insignificant. Same as with project aid, the effectiveness of program aid showed different features, depending on the recipients' income level. Table 5 shows that the negative impact of program aid was generally significant in LDCs, whereas Table 6 indicates its negative impact is only significant with Model (2B), in terms of economic growth. The interaction between program aid and governance also has a significant and positive impact only with Model (2B) in LMICs. Still, the net marginal effect of program aid for economic growth in LMICs remains negative (-49.80+20.12).

There can be several reasons for the insignificant or negative effect of the program aid. Firstly, it can be a reflection of practical constraints on the ability of recipient governments to manage and absorb the budget-supports efficiently and effectively (OECD, 2011). The fact that the negative coefficients of program aid are generally more significant in LDCs compared to LMICs also supports this reasoning. Considering that the LDCs on average lack sound macroeconomic policy and financial institutions, the negative impact of program aid could have been bigger in this group. Secondly, because most of the program aid are commonly provided with conditionality, it may also negatively affect the effectiveness of program aid if the recipients have difficulties in meeting the conditionality. The significantly negative coefficient of program aid in LDCs could have been caused due to the lack of capability of LDCs to meet such conditionality.

Table 5: Results of Model (1A), (1B), (2A), and (2B) using annual data - subsample of LDCs

Variables	(1) Model (1A)	(2) Model (1B)	(3) Model (2A)	(4) Model (2B)
Proj	0.986***	7.894***	0.938***	7.506***
	(0.133)	(1.809)	(0.136)	(1.863)
Prog	-0.528**	-9.370***	-1.329**	-15.85*
	(0.238)	(3.237)	(0.587)	(8.029)
$Proj^2$	-2.386***	-26.85***	-2.241***	-25.67***
	(0.642)	(8.745)	(0.647)	(8.852)
$Prog^2$	2.549	75.37	3.242	80.97
	(3.674)	(50.06)	(3.689)	(50.50)
Gov	0.0240***	0.535***	0.0162*	0.473***
	(0.00799)	(0.109)	(0.00950)	(0.130)
Dem	-2.43e-05	0.00173	0.000188	0.00345
	(0.000860)	(0.0117)	(0.000869)	(0.0119)
Fdi	3.42e-06*	8.10e-05***	4.05e-06**	8.61e-05***
	(1.78e-06)	(2.43e-05)	(1.82e-06)	(2.50e-05)
Rem	4.42e-05***	0.000515***	4.38e-05***	0.000512***
	(6.51e-06)	(8.87e-05)	(6.49e-06)	(8.89e-05)
Hiv	-0.0162***	-0.0777*	-0.0165***	-0.0802*
	(0.00321)	(0.0438)	(0.00321)	(0.0439)
ProgxGov			0.402	3.254
			(0.269)	(3.688)
Constant	0.411***	5.149***	0.426***	5.273***
	(0.0254)	(0.346)	(0.0273)	(0.373)
Observations	180	180	180	180
R-squared	0.793	0.613	0.796	0.615
Number of id	15	15	15	15
F	66.43	27.45	60.48	24.74
Prob > F	0.0000	0.0000	0.0000	0.0000
(Hausman)				
chi2	28.31	25.29	29.03	34.69
Prob > chi2	0.0002	0.0007	0.0003	0.0000

Notes: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
q_int and g_int are omitted due to the collinearity.

Table 6: Results of Model (1A), (1B), (2A), and (2B) using annual data - subsample of LMICs

Variables	(1) Model (1A)	(2) Model (1B)	(3) Model (2A)	(4) Model (2B)
Proj	0.699***	16.81***	0.692***	15.34***
	(0.148)	(3.762)	(0.151)	(3.745)
Prog	-0.119	-12.74	-0.303	-49.80**
	(0.344)	(8.746)	(0.764)	(18.94)
$Proj^2$	-2.754**	-93.15***	-2.709**	-84.02***
	(1.059)	(26.96)	(1.078)	(26.74)
$Prog^2$	1.522	206.6	-0.237	-149.1
	(10.32)	(262.6)	(12.26)	(304.0)
ProgxGov			0.0995	20.12**
			(0.370)	(9.173)
Gov	0.0487***	0.949***	0.0481***	0.835***
	(0.00816)	(0.208)	(0.00847)	(0.210)
Dem	-0.000377	-0.00286	-0.000377	-0.00292
	(0.000451)	(0.0115)	(0.000454)	(0.0112)
Fdi	2.08e-06***	6.43e-05***	2.09e-06***	6.61e-05***
	(7.34e-07)	(1.87e-05)	(7.39e-07)	(1.83e-05)
Rem	4.25e-06***	5.31e-05***	4.25e-06***	5.36e-05***
	(4.42e-07)	(1.12e-05)	(4.44e-07)	(1.10e-05)
Hiv	-0.0304***	-0.241*	-0.0304***	-0.252**
	(0.00483)	(0.123)	(0.00486)	(0.121)
Constant	0.522***	5.127***	0.523***	5.365***
	(0.0185)	(0.470)	(0.0191)	(0.473)
Observations	108	108	108	108
R-squared	0.831	0.682	0.831	0.699
Number of id	9	9	9	9
F	49.23	21.49	43.85	20.64
Prob > F	0.0000	0.0000	0.0000	0.0000
(Hausman)				
chi2	55.01	49.67	53.78	48.33
Prob > chi2	0.0000	0.0000	0.0000	0.0000

Notes: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
q_int and g_int are omitted due to the collinearity.

Overall, the effectiveness of project and program aid did not change much depending on the different dependent variables: HDI and log GDP per capita. On the theoretical background of the wider definition of development, the Models in this research were designed to show that the HDI-measure is superior to the GDP per capita-measure for evaluating aid effectiveness. These two measures are generally expected to be different from each other, because HDI requires longer period to change, while GDP can be more sensitive to the amount of aids and change within a relatively short time. The little difference in this dataset can be explained that it may indicate the number of observations was more or less adequate to capture long-term changes since it was collected from a reasonably long period – twelve years.

After running the analysis using annual data, I estimate the Models using average period data to eliminate excessive fluctuations in the dependent and independent variables, same as in the study of Rugare and Lee (2016). I divide the dataset into three four-year periods: 2004-2007, 2008-2011, and 2012-2015. I transform all of the variables into average period values, except the initial GDP per capita and initial HDI. Table 7 shows that the overall results with average period data has a similar tendency to those with the annual data, except that the results of Hausman tests supported the random effect model ($p < .01$). Also, the overall significance levels drop. This may have been caused by the reduced number of observations and declined variation of all variables, by taking the period average values. As seen in Table 7, the period-average dataset produces insignificant coefficients for most of the variables, although the signs of the coefficients are almost similar to those in Table 4. Because both governance and democracy in Model (1A) are found insignificant, the Model (2A) and (3A) are not tested.

Table 7: Result of Model (1A) and (1B) using period-avearge data

Variables	(1) Model (1A)	(2) Model (1B)
q_int	0.983***	
	(0.0382)	
Proj	1.541***	16.83***
	(0.275)	(4.096)
Prog	-1.131	-25.20**
	(0.771)	(11.50)
$Proj^2$	-4.288**	-71.08***
	(1.681)	(25.08)
$Prog^2$	3.946	262.4
	(13.03)	(194.4)
Gov	0.00735	0.240
	(0.0102)	(0.171)
Dem	-0.000394	-0.0138
	(0.000830)	(0.0134)
Fdi	3.56e-06	6.18e-05*
	(2.16e-06)	(3.24e-05)
Rem	2.58e-06*	2.23e-05
	(1.36e-06)	(2.09e-05)
Hiv	0.000457	-0.0109
	(0.000923)	(0.0139)
g_int		1.019***
		(0.117)
Constant	-0.00410	-0.116
	(0.0232)	(0.592)
Observations	72	72
Number of id	24	24
Wald chi2	1255.19	248.61
Prob > chi2	0.0000	0.0000
(Hausman)		
chi2	10.08	4.57
Prob > chi2	0.1838	0.7120

Notes: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

V. Conclusion

Summing up, this study conducted an empirical analysis using a balanced panel data from 2004 to 2015, in order to measure the relative effectiveness of the project and program aid in improving quality of life in recipient countries. Based on a wide theoretical consensus that the development implies comprehensive freedom rather than mere economic growth, this research urged that aid effectiveness should be assessed based on its ability to enhance the overall welfare of the recipients rather than the income growth. In alignment with the recent literature that emphasized the importance of disaggregate aid effectiveness (Quattara & Strobl, 2004; Kim, 2016), this research also tried to find out whether the project and program aid have different impacts on the quality of life, proxied by HDI.

The findings of this study show that project aid has a strongly significant and positive impact in improving quality of life and economic growth in aid recipient countries. On the contrary, program aid on its own has a negative or insignificant impact on economic growth and quality of life. In the income level analysis, dividing the sample into LDCs and LMICs, project aid had greater welfare impact but a smaller economic impact in LDCs. Program aid was generally negative for both welfare and economic growth in LDCs, but mostly insignificant in LMICs. The impact of governance in HDI and log GDP per capita was almost twice higher in LDCs compared to LMICs. Therefore, the difference in relative aid effectiveness between LDCs and LMICs may have been caused by lack of macroeconomic fundamentals and governance level in LDCs. This result suggests that the relative effectiveness of the project and program aid may differ depending on the local governance level, consistent with theoretical studies in the features of different aid modalities (Cordella & Dell'Ariccia, 2007; Jelovac & Vandenindem, 2008).

One of the limitations of this study is that the size of the panel data is relatively small. Also, the number of explanatory variables is not large enough to control the factors that may affect the HDI or income. In addition, although the panel analysis in fixed effect model may weaken the endogeneity issue, the results may become more reliable if more elaborated metrics were used to better address the endogeneity.

From the results of this study, it is recommended to give more program aid to LMICs rather than LDCs, because LMICs have more capability to fulfill the development-oriented conditionality. As earlier urged by Sumner and Mallett (2013), “Aid 2.0” in the future should be made through close cooperation between donors and middle-income countries. Whereas, LDCs can be more adaptive to the traditional project aids, and can be much better off with HDI-related projects. In other words, future aid commitments should be made in consideration of the different income and governance levels of the recipients, and the interaction of these features with different aid modalities. Aid delivery modality is to be prudentially decided based on that.

Appendix: List of recipients grouped by income level

No.	Country	Region
Least Developed Countries (LDCs)		
1	Benin	Sub Saharan Africa
2	Burundi	Sub Saharan Africa
3	Ethiopia	Sub Saharan Africa
4	Madagascar	Sub Saharan Africa
5	Malawi	Sub Saharan Africa
6	Mali	Sub Saharan Africa
7	Mozambique	Sub Saharan Africa
8	Niger	Sub Saharan Africa
9	Rwanda	Sub Saharan Africa
10	Senegal	Sub Saharan Africa
11	Sierra Leone	Sub Saharan Africa
12	Tanzania	Sub Saharan Africa
13	Uganda	Sub Saharan Africa
14	Zambia	Sub Saharan Africa
15	Lao PDR	Far East Asia
Low Middle Income Countries (LMICs)		
16	Cabo Verde	Sub Saharan Africa
17	Ghana	Sub Saharan Africa
18	Honduras	North & Central America
19	Guyana	South America
20	Vietnam	Far East Asia
21	Armenia	South & Central Asia
22	Georgia	South & Central Asia
23	Kyrgyz Republic	South & Central Asia
24	Pakistan	South & Central Asia

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