COMPARISON STUDY OF DISAGGREGATED ODA AND FDI IMPACT ON WELFARE OF ODA RECIPIENT COUNTRIES

By

LEE, Youngji

THESIS

Submitted to

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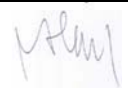in partial fulfillment of the requirements

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Committee in charge:

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ABSTRACT

COMPARISON STUDYOF DISAGGREGATED ODA AND FDI IMPACT ON WELFARE OF ODA RECIPIENT COUNTRIES

By

Young-ji Lee

This study compares effect of ODA, Disaggregated ODA and FDI on developing countries' welfare. The aim of this paper is to seek the most efficient way of promoting inclusive growth and help development entities to forge development strategy. Econometrics estimation, using panel data of 108 ODA recipient countries from period of 2005 to 2013, suggests that FDI has higher impact than ODA on HDI when observed with overall samples, but mixed results were drawn based on different regions and income levels. The major findings of this empirical study are; first, ODA as a whole does not have significant impact on HDI, but marginal impact of disaggregated ODA on welfare is positive, second, when tested by disaggregated ODA, economic infrastructure ODA has higher impact than FDI, third, policy interaction terms of disaggregated ODA have a positive impact on HDI in Lower Middle Income Countries. This implies that aid practitioners should be cautious when setting a strategy, and take an individual approach based on partner countries' context.

ACKNOWLEDGEMENT

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I. Introduction

1.1 Overview

The origin of official development aid (ODA) can be traced back to Marshall Plan, an American initiative to aid Europe. Launched from period of 1948 to 1951, the purpose of this initiative was to support rebuilding European economies from aftermath of World War II. This 60-year history of development aid has attributed to decline of the extreme poverty. As a result, the number of people living in extreme poverty has declined by more than half, falling from 1.9 billion in 1990 to 836 million in 2015(United Nations, 2015). On the other hand, regardless of 60-year long history of ODA, more than 1/5 of the population is still captured in the chains of extreme poverty (KOICA, 2011). As the target year of Millennium Development Goals is now ending, international community is committed to forming Post-MDGs, which is known as Sustainable Development Goals. The key feature of post MDGs is comprehensive development; no one is to be left behind. In other words, the focus of new goals is on inclusive growth and people's welfare (KOICA, 2015). Among various measures taken to solve poverty issue, foreign aid is the far most controversial discourse of all. Moyo (2009) asserts that execution of ODA should be terminated because aid deteriorates situations in African countries by aggravating corruption. According to Moyo, economic measures such as foreign investment and trade should be pursued to achieve sustainable growth.

The result of empirical test on aid effectiveness varies depending on variables being included and used. While most of these mixed results focus on the impact of aid flows on GDP growth, not much research has been conducted on the impact of foreign aid towards human development indicators (Masud and Yontcheva, 2005). Numerous empirical studies have confirmed that economic growth is the most effective tool for reducing poverty and

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improving the quality of life of people in aid recipient countries (DFID, 2008). However, even if economic growth has been found to be necessary in enhancing well-being, poverty incidence tends to be quite unresponsive to economic growth among the highest-inequality countries (Ravallion, 2007). Therefore, in order to confirm aid effectiveness on reducing poverty, it is more valid to test the impact of aid on welfare than economic growth. In regards to this, Boone (1996) examines impact of aid on human development indicators such as infant mortality rate, life expectancy and primary schooling. He interprets higher level of these index (except for infant mortality rate, which is lower the better), as evidence of greater empowerment of the poor (Boone, 1996). Likewise, in this paper, Human Development Index (HDI)is adopted as an adequate indicator for people's welfare. Such choice can also be attributed to insufficient amount of data being compiled for other poverty index.

The aim of this paper is to empirically compare impact of foreign aid and foreign investment on human development index. It measures effect of net ODA at large, as well as disaggregated sectors of ODA on different purposes. Moreover, the study adds policy interaction tern for ODA and FDI to ensure enhanced effects of good institution. Empirical test builds on three panel data sets which are 108 aid recipient countries as a whole, by regional and by income level of countries.

1.2 Hypothesis

1) ODA has higher impact that FDI on welfare of ODA recipient countries.

2) Policy interaction terms of ODA and FDI have more positive impact on welfare than that of a single variable.

II. Literature Review

Theoretical underpinning of aid effectiveness lies on two-gap model (Chenery and Strout, 1966). Originated from Harrod Domar model[1], two-gap model deems that developing countries face constraints on savings and export earnings, which hamper investment and economic growth (Masud and Yontcheva, 2005). According to the model, the role of aid is to fill the gap of investment-savings gap as well as foreign exchange gap, contributing to economic growth (Chenery and Strout, 1966). It has provided the fundamental principles both for early aid policies and for regression models of most empirical papers which focused on aid-growth and aid-savings relations (Masud and Yontcheva, 2005).

2.1 Aid effectiveness and institutional quality

Aforementioned, correlations between aid and growth have mixed results depending on what the model focuses on. Boon (1996) measures impact of aid on investment, consumption and basic human development indicators. He concludes that aid increased consumption more than investment and growth and that political regime is a detrimental factor for aid to be effective (Boon, 1996). The most controversial studies are the ones made by World Bank (1998) and Burnside and Dollar (2000) (Lee, 2013). These papers investigate impact of aid conditional on the policy. The findings confirm aid has had little impact on per-capita GDP growth on average, but it has been effective when interaction term of aid and policy is added. Policy equation of Burnside and Dollar is as follow:

$$\text{Policy} = 1.28 + 6.85 \text{ Budget surplus} - 1.4 \text{ Inflation} + 2.16 \text{ Openness}$$

This implies that aid works in countries with sound policy and good institutional environment.

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[1] A functional economic relationship in which the growth rate of gross domestic product depends directly on the national net savings rate and inversely on the national capital-output ratio (Todaro and Smith, 2012)

However, above equation of policy value was questioned for its simplicity by Hansen and Tarp (2000). In their paper, include investment and human capital, as well as aid, aid squared, aid-policy interaction term and policy squared into a regression model. The result confirms that aid has positive correlation with the growth rate, and it is not conditional on the policy index proposed by Burnside and Dollar. Dalgaard and Hansen (2001) also reinvestigated the aid effectiveness results of Burnside and Dollar (2000), using the same data set as the original study. They found that effect of aid on growth was positive on any policy environment depending on deletion of few countries' observation. In other words, impact of aid conditional on policy is not a robust result. Collier and Dollar (2002) reassesses this matter by adding more specific concept of policy proxies into a regression, which are institutional quality (ICRG) and Country Policy and Institutional Assessment (CPIA). Even when more complex variables are added to the model, the result shows that aid reduces poverty when it is allocated to countries with good institution and policy. Finding of Lee (2013) is also consistent with studies of World Bank (1998), Burnside and Dollar (2000) and Collier and Dollar (2002). Aid itself has negative effects on per capita GDP growth, but when it is interacted with institution variable, it has positive impact on growth. The most recent study in regard to macroeconomic policy and aid effectiveness is conducted by Ma (2015). The result of panel analysis reveals positive and significant effect of grant aid on economic growth of 42 main development partners of Korea. Meanwhile, interaction term of aid and macroeconomic policy, expressed in terms of inflation rate, is not significant. This implies effect of grant aid on economic growth is not conditional on macroeconomic policy.

2.2 FDI and Growth

Theoretically, FDI can be an engine for economic growth. The standard Solow-type

neoclassical model suggests that FDI increases economic growth by adding to the capital stock (Driffield and Jones, 2013).   Other than increase in overall net transfer of revenue, FDI can also be effectual on improving welfare by creating jobs for workers. For this to be valid, the number of jobs created must be greater than the number of jobs lost as a result of FDI related activities such as layoffs due to mergers and acquisitions, the closing of local firms (Gohou and Soumare, 2011). Jang (2007) also predicts that FDI does not always lead to economic growth, apropos to domination of big multilateral companies on domestic market when proper restriction policy had not taken place. Despite such downside of FDI, one of the strongest opponents of foreign aid, Moyo (2011) argues that FDI is a vital measure for achieving sustainable growth in developing countries. She deems foreign aid as a main cause of corruption in African countries, and supports macroeconomic instruments such as FDI and trade as a way to achieve growth (Moyo, 2011).

Empirical results of ODA and FDI impacts on growth vary. Ma (2015) includes both ODA and FDI into a regression. It concludes that both ODA and FDI have positive impact on growth at large, but different results are being drawn based on regional and income level. When analyzed by region, ODA is positively correlated, but impact of FDI is only significant in Latin American countries. Empirical results by income level reveal that ODA is positive among least developing countries, and FDI is positively correlated only in upper middle income countries. On the other hand Lee (2013) has found that both aid and FDI variables have negative impacts on growth. However, when aid is interacted with policy it is positively correlated with economic growth.

As discussed above, there are several studies relating aid effectiveness with policy. Likewise, previous research on the importance of institutions suggests a positive and significant relationship between institutional reform and economic performance (Babecky and Campos, 2011). Boerner and Hainz (2009) concludes that reforms reduce investment risk,

generating higher returns to private sector investment and innovation as well as eliminating sources of corruption. On the basis of this, developing countries are recommended by multilateral entities to ameliorate their institutions and national governance structures (Driffield and Jones, 2013). The result of Driffield and Jones (2013) indicates that better ICRG variable not only attracts larger scale FDI, but also generates higher economic growth. In other words, countries with robust protection on investors and higher level of law and order will experience enhanced growth.

Acknowledging significant role of policy on growth model, this paper includes policy interaction terms of ODA and FDI, in addition to overall ODA and FDI share.

Ⅲ. Research Method and Data

3.1 Methodology

The purpose of this study is to compare the impact FDI and ODA on Human Development Index, and how each variable is associated with policy. It is based on the sample of 108 countries and time period from 2005 to 2013. The analysis employs following two panel regressions:

Welfare $_{it}$ = a + b$_1$ ODA $_{it}$ + b$_2$ ODA $_{it}$ ^{2} + b$_3$ ODA* ICRG $_{it}$ + b$_4$ FDI $_{it}$ +

b$_5$ FDI* ICRG $_{it}$ + b$_6$ Trade $_{it}$ + b$_7$ ICRG $_{it}$ + b$_8$ Social Expenditure $_{it}$ + b$_9$ GFC $_{it}$ +

b$_{10}$ Inflation $_{it}$ + b$_{11}$ Population Growth $_{it}$ + b$_{12}$ GDPpc $_{it}$ + e $_{it}$

$$(1)$$

Welfare $_{it}$ = a + b$_1$ Social Infra ODA $_{it}$ + b$_2$ Social Infra ODA $_{it}$ ^{2}+ b$_3$ Social Infra ODA *

ICRG $_{it}$ + b$_4$ Econ Infra ODA/GDP $_{it}$ + b$_5$ Econ Infra ODA $_{it}$ ^{2}+ b$_6$ Econ Infra

ODA/GDP * ICRG $_{it}$ + b$_7$ Production ODA $_{it}$ + b$_8$ Production ODA $_{it}$ ^{2}+

b$_9$ Production ODA * ICRG $_{it}$ + b$_{10}$ Multi ODA $_{it}$ + b$_{11}$ Multi ODA $_{it}$ ^{2}+ b$_{12}$ Multi

ODA *ICRG $_{it}$ + b$_{13}$ FDI $_{it}$ + b$_{14}$ FDI* ICRG $_{it}$+ b$_{15}$ Trade $_{it}$ + b$_{16}$ ICRG $_{it}$ +

b$_{17}$ Social Expenditure $_{it}$ + b$_{18}$ GFC $_{it}$ + b$_{19}$ Inflation $_{it}$ + b$_{20}$ Population Growth $_{it}$ +

b$_{21}$ GDP pc $_{it}$ + e $_{it}$

$$(2)$$

Where detailed description is shown in <Appendix Table 1>.

Equation (1) tests overall correlation of welfare and ODA and equation (2) estimates effect of ODA by sectors for different purposes. In this paper, fixed effects model is chosen over random effects model, as it is favored by the result of Hausman specification test. Cameron and Trivedi (2005) observe that fixed effects may be used to control for endogeneity in panel data where endogeniety arises owing to a time-invariant omitted variable.

3.2 Variables

The main variables used in this paper to compare the impact of ODA and FDI on welfare are net ODA, disaggregated ODA, net inflow of FDI, HDI and number of control variables.

Welfare

The dependent variable representing welfare is the UNDP's Human Development Index (HDI). It is a composite statistic developed by the UNDP to capture the income, life expectancy, and educational attainment of individual nations. Despite the fact that aid bureaucracies define their final objective as "poverty reduction" (Easterly, 2003), conventional studies apply GDP per capital growth as to capture economic dimension of welfare. However, development is multidimensional phenomenon, and welfare depends not only on economic factors but on social factors such as health care, education, and income. Poverty ratio can also be a proper indicator to measure standard of living. However, data for poverty incidence is not recorded and compiled annually and it is too country-specific to be aggregated across countries. Such non-availability of data does not allow it to be used in empirical studies. Meanwhile, HDI is relatively well compiled across countries, and thus it

was selected as a dependent variable.

Net ODA and Disaggregated ODA

This paper employs net official development assistance (ODA) deflated by GDP. Net ODA is consisted of disbursements of loans made on concessional and grants by donor agencies to promote economic development and welfare in ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent) (World Bank Indicator, 2015).

OECD/DAC categorizes types of ODA based on Creditor Reporting Systems(CRS).[2] There are four main forms of ODA which are Social Infrastructure and Services, Economic Infrastructure and Services, Production Sectors and Multisector (OECD statistics, 2015). Detailed description of each type is as follow:

1) **Social Infrastructure and Services:** This main category supports efforts to develop the human resource potential and improve living conditions in developing countries. It includes education, health and population, water supply, sanitation and sewerage.

2) **Economic Infrastructure and Services:** This major heading includes assistance for networks, utilities and services that facilitate economic activity. It includes energy, transportation and communications.

3) **Production Sectors:** This main heading groups contributions to all directly productive sectors. It comprises agriculture, fishing , forestry, industry, mining and construction, trade and tourism.

4) **Multisector:** This type of aid covers several sectors, with a concentration on the environment, gender projects and urban and rural development.

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[2] The objective of the CRS Aid Activity database is to provide a set of readily available basic data that enables analysis on where aid goes, what purposes it serves and what policies it aims to implement, on a comparable basis for all DAC members. Data are collected on individual projects and programmes. (ODA statistics).

Foreign Direct Investment

FDI is measured by FDI net inflows, the sum of equity capital, reinvested earnings, long-term capital, and short-term capital as shown in the balance of payment (World Bank Indicator, 2015).

Policy

Policy variable is measured by the International Country Risk Guide (ICRG) rating. It comprises 22 variables in three subcategories of risk: political, financial and economic. There are total 12 components in the category of political risk.[3] This study adds only three scores among many subcategories of composite index. Following three scores capture institutional quality; Corruption (0~6 scores), law and order(0~6 scores), and bureaucracy quality(0~4 scores). Selection of these three scores is consistent with study of Lee (2013).

Social Expenditure

Government spending is expected to ameliorate welfare because HDI measures the outcome of aid recipient' investments in education and health as well as countries' economic performances, all of which are mainly supported by government spending. Especially in developing countries, citizens' basic needs are principally ensured by government spending (Gohou and Soumare, 2011).

Gross Capital Formation

Gross capital formation consists of outlays and fixed assets of the economy plus net

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[3] 1)Government Stability, 2)Socioeconomic Conditions, 3)Investment Profile, 4)Internal Conflict, 5)External Conflict, 6)Corruption, 7)Military in Politics, 8)Religious Tensions, 9)Law and Order, 10)Ethnic Tensions, 11)Democratic Accountability, 12)Bureaucracy Quality. (The PRS Group)

changes in the level of inventories. Fixed assets include land improvements, plant, machinery, and equipment purchases; and the infrastructure such as roads, schools, offices, hospitals and private residential dwellings. By laying ground work for improvement in health and education, these assets may affect people's welfare (World Bank Indicator, 2015).

Inflation

Inflation is introduced to capture macroeconomic instability. Inflation is expected to have a direct negative impact on welfare as high inflation increases the price of basic goods and directly impacts the poor (Lucas, 2000).[4]

Population Growth

Population increase could be associated with welfare. Larger population might cause fewer public resources to be distributed to people, but at the same time, larger human capital can support economy.

GDP per capita

Basically, most studies have assumed that economic growth and welfare are perfectly and positively correlated and have thus used GDP growth as a proxy for welfare. Since overall economic growth might have spillover effects such as job creation, better public infrastructure and facility, which lead to inclusive growth. However, this assumption has recently been challenged, and evidence from several sources now indicates that GDP can grow even as poverty is on the rise (Ravallion, 2007).

IV. Analysis and Findings

4.1 Overall Trend

The estimated results of total 108 ODA recipients from year 2005-2013, are indicated in <Table 1>. The estimation of equation (1) tests impact of total ODA and equation (2) shows impact of disaggregated ODA on welfare.

As shown in <Table 1>, the estimation result of equation (1) shows that overall ODA amount is insignificant to welfare. Moreover, though ODA squared term is correlated with HDI, no evidence is found for decreasing marginal returns to ODA as it is not negative. The interaction term ODA*policy is also insignificant, which means policy does not exercise any influence against aid effectiveness. On the other hand, FDI has significant impact on HDI, Meanwhile, the interaction term of ICRG was negatively correlated with HDI, but this is insignificant since ICRG variable alone is insignificant. In other words, policy interaction term is only valid when individual ICRG variable is significant. Overall, the tests confirm that ODA has been ineffectual, while FDI has been effective in promoting welfare of recipient countries during the period of 2005-2013. In < Appendix Table 4> government's social expenditure is positively related, implying that government spending is well used to serve its purpose. Other control variables such as gross fixed capital, population growth and GDP per capita are also positively correlated with HDI as expected.

Result of equation (1) in <Table 1>, does not necessarily imply that ODA has no contribution in improving welfare. In order to ensure impact of ODA based on a different purpose, equation (2) tests for HDI based on ODA by different sectors. Among four main sectors of ODA, only economic infrastructure and service sector is found to be positively associated with HDI. Squared term of this variable is negative, indicating diminishing returns,

which is congruent with the earlier studies (Burnside and Dollar,2000; Hansen and Tarp, 2000; Dalgaard and Hasen, 2001; Collier and Dollar, 2002; Lee, 2013). Other sectors of ODA; Social ODA, Production ODA, Multi ODA are statistically insignificant. Meanwhile, FDI is once again empirically proven to be effective in improving welfare when tested with equation (2), yet economic ODA has greater impact. Social expenditure, GFC, Population Growth, GDPpc have positive impact on welfare, while inflation is negative as expected < Appendix Table 4>. In order to see overall net effect of aid on HDI, marginal impact of aid should be assessed by looking at the differential coefficient of equation (2). This can be derived as follows:

$$MHDI= 0.0132+2* (-0.0000811)(Econ\ ODA) + -0.00487*(ICRG)+ 2*1.243(Multi\ ODA)$$

When taking the mean value of the variables in equation (2) from <Appendix Table 2>, the marginal impact of disaggregated ODA on HDI is positive. Thus, disaggregated ODA has positive effects on improvement of welfare.

In order to analyze impact of ODA and FDI conditional on certain exogenous factors, this study expects that the impact of aid on governance may differ depending on invariant conditions of each country. These conditions include geographical location, and income level. Results by total, regional and income level are shown in <Appendix Table4>, < Appendix Table5> and < Appendix Table6> respectively.

4.2 Impact by Geographical Location

98 ODA recipient countries are divided into 4 categories based on their geographical locations; Asia (East Asia & South Asia& Central Asia), Africa, Latin America and Europe. In Asian countries, neither overall ODA nor FDI was statistically significant<Appendix Table

5, Equation (1.1)>. In regards to impact of disaggregated ODA, which is the second equation, none of the ODA variables have proven to be statistical significance in Asia < Appendix Table 5, Equation (1.2)>. FDI has negative correlation with HDI. Apropos of Africa, only Economic ODA and FDI are positive among other variables, but FDI has slightly greater effect.

Among four different regions, overall ODA amount was statistically significant only in Latin American countries, although negatively associated. Also, contrary to expectation, ICRG variable is negative for both equation (1) and (2). Yet, interaction variable of ODA and ICRG has positive sign. In accordance, Multi sector ODA in equation (2) has negative impact, but Economic ODA is positively correlated with HDI. This means, welfare in Latin America can be enhanced when Economic ODA takes place.

4.3 Impact by Income Level

104 developing countries are divided into 3 different groups based on income level; Upper Middle Income Countries (UMICs), Lower Middle Income Countries (LMICs) and Least Developing Countries (LDCs).

In case of UMICs, both overall ODA and FDI are insignificant in < Table 1, Equation (1)>. In regards to second equation with disaggregated ODA, Production ODA shows statistical significance, but with a negative sign. Contrary to earlier study by Ma (2015), FDI is insignificant in both equation (1) and (2).

In accordance with UMICS group, both overall ODA and FDI are insignificant for LMICS group as indicated in <Table1, Equation (1)> and < Appendix Table 6, Equation (2.1)>. Yet, when tested based on ODA by sector (equation (2)), Social ODA and Economic ODA have positive association with HDI. Although Production ODA and Multi sector ODA have negative effects on HDI, their policy interaction terms have positive impact on welfare.

This implies Production ODA and Multi sector ODA in countries within LMICs groups are effectual in countries with sound institution. Moreover, ICRG variable in this group is positive for both equations.

In LDCs group, ODA has negative impact on HDI < Appendix Table 6, Equation (3.1)>. On the other hand, overall FDI net inflow is statistically insignificant, but its policy interaction term is effectual for promoting welfare. In regards to impact of disaggregated ODA, none of the sectors have shown to be effective < Appendix Table 6, Equation (3.2)>.

<Table 1> Summary of Regression Results (2005-2013)

Dependent Variable: HDI	Full Sample		Regional: Asia	
	Equation(1)	Equation(2)	Equation(1)	Equation(2)
ODA	0.000581		0.0105	
	(0.77)		(0.51)	
ODA *ICRG	-0.000805		-0.00810	
	(-1.48)		(-1.11)	
FDI	0.00176***	0.00169***	-0.00482	-0.00633*
	(2.95)	(3.13)	(-1.32)	(-1.93)
FDI*ICRG	-0.000858***	-0.000832***	0.00168	0.00238*
	(-3.01)	(-3.23)	(1.18)	(1.91)
ICRG	0.0123	0.00591	0.0443	0.0304
	(1.69)	(0.81)	(1.40)	(0.87)
Social ODA		-0.00256		0.0471
		(-1.18)		(0.91)
Social ODA *ICRG		0.000225		-0.0275
		(0.19)		(-1.31)
Economic ODA		0.0132***		0.00683
		(4.32)		(0.15)
Economic ODA *ICRG		-0.00487***		-0.00192
		(-3.19)		(-0.10)
Production ODA		-0.0117		-0.0303
		(-1.16)		(-0.71)
Production ODA *ICRG		0.00511		0.00863
		(1.08)		(0.87)
Multi ODA		-0.0100		-0.348
		(-1.16)		(-1.23)

Multi ODA *ICRG		0.00371		0.118
		(0.80)		(0.97)

Note: 1) Number in parentheses are t-statistics.

    2) *, **, ***, represent the level of significance at 10%, 5% and 1%, respectively.

Table1 continued

Dependent Variable: HDI	Regional: Africa		Regional: Latin America	
	Equation(1)	**Equation(2)**	**Equation(1)**	**Equation(2)**
ODA	-0.000139		-0.0112***	
	(-0.09)		(-4.93)	
ODA *ICRG	-0.000539		0.00366***	
	(-0.57)		(3.87)	
FDI	0.00145	0.00157*	-0.000754	-0.00132
	(1.49)	(1.74)	(-0.52)	(-0.90)
FDI*ICRG	-0.000617	-0.000659	0.000169	0.000403
	(-1.09)	(-1.29)	(0.32)	(0.73)
ICRG	0.000911	-0.00961	-0.0136*	-0.0132*
	(0.08)	(-1.02)	(-2.03)	(-1.75)
Social ODA		-0.00184		0.00184
		(-0.59)		(0.18)
Social ODA *ICRG		0.0000238		-0.00361
		(0.01)		(-0.66)
Economic ODA		0.0147***		0.0201**
		(3.07)		(2.57)
Economic ODA *ICRG		-0.00619**		-0.00944**
		(-2.13)		(-2.44)
Production ODA		-0.0221		-0.0429
		(-1.63)		(-1.69)
Production ODA *ICRG		0.00970		0.0200
		(1.45)		(1.61)
Multi ODA		-0.00375		-0.112***
		(-0.33)		(-4.14)
Multi ODA *ICRG		0.000538		0.0439***
		(0.07)		(3.41)

Note: 1) Number in parentheses are t-statistics.

    2) *, **, ***, represent the level of significance at 10%, 5% and 1%, respectively.

Table1 continued

Dependent Variable: HDI	By Income: UMICs		By Income: LMICs	
	Equation(1)	Equation(2)	Equation(1)	Equation(2)
ODA	-0.00140		-0.000767	
	(-0.48)		(-0.83)	
ODA *ICRG	0.000510		-0.0000591	
	(0.28)		(-0.16)	
FDI	-0.000909	0.000464	0.00230	0.00384
	(-0.44)	(0.21)	(0.66)	(1.48)
FDI*ICRG	-0.000543	-0.00112	-0.00107	-0.00168
	(-0.49)	(-0.94)	(-0.74)	(-1.53)
ICRG	0.0120	0.00320	0.0445*	0.0536**
	(0.56)	(0.16)	(1.93)	(2.51)
Social ODA		-0.00820		0.0140*
		(-1.33)		(1.55)
Social ODA *ICRG		-0.00317		-0.00798**
		(-1.14)		(-2.18)
Economic ODA		-0.0166		0.0180***
		(-0.96)		(3.37)
Economic ODA *ICRG		0.00870		-0.00723***
		(0.96)		(-2.78)
Production ODA		-0.122***		-0.0458***
		(-5.05)		(-2.91)
Production ODA *ICRG		0.0546***		0.0203**
		(3.15)		(2.55)
Multi ODA		-0.0149		-0.0556***
		(-1.08)		(-3.37)
Multi ODA *ICRG		0.00680		0.0233***
		(0.63)		(2.71)

Note: 1) Number in parentheses are t-statistics.

    2) *, **, ***, represent the level of significance at 10%, 5% and 1%, respectively.

Table1 continued

Dependent Variable: HDI	By Income: LDCs	
	Equation(1)	Equation(2)
ODA	-0.00292***	
	(-3.19)	
ODA *ICRG	0.000382	
	(1.02)	
FDI	-0.000273	0.0000778
	(-1.30)	(0.34)
FDI*ICRG	0.000160**	0.0000403
	(1.98)	(0.47)
ICRG	-0.00304	-0.000818
	(-0.34)	(-0.09)
Social ODA		-0.00287
		(-1.20)
Social ODA *ICRG		0.000670
		(0.49)
Economic ODA		-0.000970
		(-0.31)
Economic ODA *ICRG		0.000703
		(0.44)
Production ODA		-0.00227
		(-0.33)
Production ODA *ICRG		0.000848
		(0.26)
Multi ODA		0.0138
		(0.93)
Multi ODA *ICRG		-0.00958*
		(-2.03)

Note: 1) Number in parentheses are t-statistics.

2) *, **, ***, represent the level of significance at 10%, 5% and 1%, respectively.

Ⅴ. Conclusion

Aid Effectiveness has been a topic of debate in development discourse for a long time. Development entities have a burden to prove that value for aid money is being realized, thus it has been effective for reducing poverty. Conventional studies have focused on impact of ODA and FDI on economic growth expressed as GDP growth. With the advent of Post-MDGs, new interest has been emerged for sustainable development and inclusive growth. In this study, aid effectiveness as a contributor to welfare was analyzed using the data collected from 108 countries over the period 2005-1013. This paper has empirically proven and compared impact of ODA, FDI and disaggregated ODA.

The major findings of this empirical study are; first, ODA as a whole does not have significant impact on HDI, but marginal impact of disaggregated ODA on welfare is positive, second, when tested by disaggregated ODA, economic infrastructure ODA had higher impact than FDI, third, policy interaction term was insignificant in many cases as single ICRG was statistically insignificant.

However, variables had shown mixed results when samples were divided by regional and income level. When observed by region, neither economic ODA nor FDI had a positive impact in Asia. In Africa samples, both economic ODA and FDI were positive and insignificant, but FDI was slightly greater than economic ODA. Impact of ODA was generally insignificant, except for Latin America where ODA was negatively associated with welfare. In this region, economic ODA had higher impact than FDI.

Apropos of samples by income level, ODA was statistically insignificant except among LDCs group which had negative correlation with HDI. Impact of ODA by sector was significant only for LMICs group of which Social ODA variable had positive impact on

welfare. Meanwhile, FDI alone was insignificant among all three groups. Policy interaction term of Economic ODA and Multi Sector ODA were also effective in improving welfare of LMICs. In conclusion, this paper fails to reject null hypothesis for hypothesis (1) as higher impact of ODA than FDI was not proven. It also rejects null hypothesis for hypothesis (2), as ICRG variable was insignificant in most cases, and as a number of interaction terms were negatively correlated with HDI. Implication of overall findings suggests that there is no 'one size fits all' method for international development. Therefore, relevant development agencies and ODA donors should consider individual strategies based on different regional and income level when executing development aid.

Appendix

<Appendix Table 1> Description of Data

Variable	Explanation	Source
HDI	Human Development Index is a composite statistic of life expectancy, education, and per capita income indicators.	UNDP
ODA	Net official development assistance and official aid received (% of GDP)	World Bank Data
FDI	Foreign direct investment, net inflows (% of GDP)	World Bank Data
Trade	Sum of exports and imports of goods and services (% of GDP)	World Bank Data
ICRG	Average of Indicator; bureaucracy quality (Range 0~4), corruption (0~6), and law and order (0~6)	The PRS Group
Social Expenditure	Sum of health expenditure and education expenditure (% of GDP)	World Bank Data
Inflation	Inflation GDP deflator (annual %)	World Bank Data
GFC	Gross fixed capital formation (% of GDP)	World Bank Data
Population Growth	Population growth (annual %)	World Bank Data
GDPPC	Gross domestic product per Capita	World Bank Data
Social ODA	Social Infrastructure and Services Aid (% of GDP)	OECD Statistics
Economic ODA	Economic Infrastructure and Services Aid (% of GDP)	OECD Statistics
Production ODA	Production Sectors Aid (% of GDP)	OECD Statistics
Multi ODA	Multisector Aid (% of GDP)	OECD Statistics

< Appendix Table 2> Summary Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
HDI	954	0.588	0.134	0.292	0.822
ODA	972	9.464	20.449	-0.5544482	228.400
(ODA)²	972	507.319	3636.082	4.72e-09	52166.660
ODA *ICRG	674	14.546	35.075	-1.293712	342.600
FDI	971	5.184	6.438	-5.980456	85.368
FDI*ICRG	673	11.541	13.789	-11.30306	142.280
Trade	961	84.310	34.362	22.1383	219.255
ICRG	674	2.233	0.562	0.6666667	4.167
Social Expenditure	961	12.613	21.246	2.20131	290.662
Inflation	970	8.306	9.145	-25.3128	103.823
GFC	896	23.252	8.715	1.356692	79.349
Population Growth	971	1.711	1.004	-0.789469	4.938
GDPpc	972	3039.515	3020.977	29.61651	16883.950
Social ODA	972	2.950	6.421	0.0065782	72.573
(Social ODA)²	972	49.888	279.924	0.0000433	5266.845
Social ODA *ICRG	674	3.964	9.166	0.0153491	108.860
Economic ODA	965	0.807	2.499	0.0000425	50.364
(Economic ODA)²	965	6.888	88.604	1.81e-09	2536.527
Economic ODA *ICRG	672	1.092	4.175	0.0001063	92.334
Production ODA	972	0.395	0.813	0.0001946	9.722
(Production ODA)²	972	0.816	4.903	3.79e-08	94.520
Production ODA *ICRG	672	0.586	1.080	0.0007191	7.703
Multi ODA	972	0.458	1.520	0.0000634	37.228
(Multi ODA)²	972	0.000	0.005	4.02e-13	0.139
Multi ODA *ICRG	674	0.613	2.507	0.0001373	55.841

< Appendix Table 3> Variable Correlations

Panel A. Variable Correlations for Equation (1)

Variable	HDI	ODA	ODA²	ODA *ICRG	FDI	FDI* ICRG	Trade	ICRG	Soc Ex	Inflation	GFC	POPGR	GDP pc
HDI	1												
ODA	-0.314	1											
ODA²	-0.1483	0.9371	1										
ODA *ICRG	-0.3457	0.9893	0.9087	1									
FDI	-0.0682	0.142	0.0552	0.1602	1								
FDI* ICRG	0.0477	0.0661	0.012	0.0926	0.9521	1							
Trade	0.0846	-0.0827	-0.08	-0.0959	0.2554	0.2825	1						
ICRG	0.4139	-0.2612	-0.1668	-0.2084	-0.0073	0.2091	0.0519	1					
Soc Ex	0.0892	0.4175	0.3059	0.4185	-0.0144	-0.0343	-0.1136	-0.1291	1				
Inflation	-0.0459	0.0642	0.0266	0.0571	0.0038	0.0023	0.0435	-0.0795	0.0012	1			
GFC	0.2097	-0.0164	0.0091	0.0149	0.2818	0.3541	0.1955	0.3767	0.0072	0.0229	1		
POP GR	-0.6742	0.2518	0.1187	0.2846	0.0904	0.0149	-0.1415	-0.2916	-0.0401	0.0222	-0.1638	1	
GDPpc	0.6582	-0.2904	-0.1341	-0.3293	-0.0447	0.0546	0.0708	0.3974	-0.1386	-0.0587	0.0934	-0.4129	1

Panel B. Variable Correlations for Equation (2)

Variable	HDI	Social ODA	(Social ODA)²	Social ODA *ICRG	Econ ODA	(Econ ODA)²	Econ ODA *ICRG	Production ODA	(Production ODA)²	Production ODA *ICRG
HDI	1									
Social ODA	-0.2446	1								
(Social ODA)²	-0.0931	0.91	1							
Social ODA *ICRG	-0.259	0.9877	0.8725	1						
Economic ODA	-0.0461	0.4126	0.3306	0.4244	1					
(Economic ODA)²	0.0342	0.1341	0.0884	0.1408	0.8967	1				
Economic ODA *ICRG	-0.0381	0.364	0.2761	0.3861	0.9909	0.8878	1			
Production ODA	-0.2614	0.685	0.4965	0.7149	0.455	0.1808	0.4284	1		
(Production ODA)²	-0.0928	0.6985	0.6116	0.7037	0.4185	0.1482	0.3805	0.9048	1	
Production ODA *ICRG	-0.2667	0.6176	0.4204	0.6704	0.4331	0.173	0.4235	0.9756	0.8347	1
Multi ODA	-0.1095	0.6535	0.6114	0.6267	0.1976	0.0882	0.177	0.2797	0.2646	0.2536
(Multi ODA)²	-0.055	0.4079	0.4089	0.378	0.0301	0.0102	0.0229	0.0399	0.0329	0.0291
Multi ODA * ICRG	-0.1119	0.6597	0.6044	0.642	0.2178	0.1005	0.2013	0.3112	0.286	0.293
FDI	-0.0674	0.1104	0.0149	0.1214	0.1246	0.0103	0.124	0.1592	0.0962	0.155
FDI *ICRG	0.0488	0.0471	-0.0164	0.07	0.0914	0.0003	0.1039	0.0938	0.0454	0.1101
Trade	0.084	-0.0988	-0.0986	-0.1053	-0.0082	-0.0261	0.0031	-0.0959	-0.0899	-0.0912
ICRG	0.4147	-0.2306	-0.1439	-0.1704	-0.0926	-0.0415	-0.0416	-0.2114	-0.1666	-0.1207
Social Expenditure	0.0901	0.5585	0.4096	0.5685	0.4385	0.3466	0.4159	0.5961	0.5996	0.5456
Inflation	-0.0502	0.0411	0.0107	0.0373	0.0349	0.0048	0.0384	0.081	0.0653	0.0722

GFC	0.2123	-0.0282	-0.0067	0.0013	0.0452	0.0081	0.0755	0.0195	0.0002	0.0605
Population Growth	-0.6748	0.2052	0.0778	0.2277	0.0558	-0.0052	0.0442	0.2243	0.0926	0.2298
GDPpc	0.6572	-0.2859	-0.1269	-0.3153	-0.1665	-0.0544	-0.1707	-0.3642	-0.1986	-0.3809

Panel B Continued

Variable	Multi ODA	(Multi ODA)²	Multi ODA *ICRG	FDI	FDI* ICRG	Trade	ICRG	Soc Ex	Inflation	GFC	POPGR	GDPpc
Multi ODA	1											
(Multi ODA)²	0.9279	1										
Multi ODA *ICRG	0.9959	0.9092	1									
FDI	0.0355	0.0024	0.0439	1								
FDI *ICRG	0.0059	-0.0121	0.0207	0.9521	1							
Trade	-0.0697	-0.0489	-0.0675	0.2557	0.2828	1						
ICRG	-0.1297	-0.0678	-0.1051	-0.0074	0.209	0.052	1					
Soc Ex	0.3356	0.1043	0.3601	-0.0146	-0.0346	-0.1134	-0.1292	1				
Inflation	0.0013	0.0011	0.0008	0.0052	0.0038	0.0426	-0.0793	0.0023	1			
GFC	0.0127	0.0035	0.0301	0.2813	0.3537	0.1962	0.3768	0.0066	0.0263	1		
POPGR	0.0984	0.0396	0.1072	0.0903	0.0148	-0.1414	-0.2916	-0.0402	0.0227	-0.1642	1	
GDPpc	-0.158	-0.0535	-0.1804	-0.0437	0.056	0.0702	0.3985	-0.1381	-0.0638	0.0962	-0.4134	1

< Appendix Table 4>   Regression Results of Full Sample (2005-2013)

Dependent Variable: HDI	Equation (1)	Equation (2)
ODA	0.000581	
	(0.77)	
ODA²	0.00000176**	
	(2.09)	
ODA *ICRG	-0.000805	
	(-1.48)	
FDI	0.00176***	0.00169***
	(2.95)	(3.13)
FDI*ICRG	-0.000858***	-0.000832***
	(-3.01)	(-3.23)
Trade	0.0000585	0.0000859
	(0.59)	(0.96)
ICRG	0.0123	0.00591
	(1.69)	(0.81)
Social Expenditure	0.000525***	0.000353***
	(4.27)	(4.01)
Inflation	-0.000106	-0.000135*
	(-1.73)	(-2.00)
GFC	0.000779*	0.000727**
	(2.64)	(2.43)
Population Growth	0.00954*	0.00771
	(1.82)	(1.40)
GDPpc	0.00000655***	0.00000697***
	(6.86)	(6.90)
Social ODA		-0.00256
		(-1.18)
(Social ODA)²		0.0000183**
		(2.06)
Social ODA *ICRG		0.000225
		(0.19)
Economic ODA		0.0132***
		(4.32)
(Economic ODA)²		-0.0000811***
		(-4.17)
Economic ODA *ICRG		-0.00487***
		(-3.19)

Production ODA		-0.0117
		(-1.16)
(Production ODA)²		0.000850
		(1.10)
Production ODA *ICRG		0.00511
		(1.08)
Multi ODA		-0.0100
		(-1.16)
(Multi ODA)²		1.243**
		(2.34)
Multi ODA *ICRG		0.00371
		(0.80)
_cons	0.506***	0.520***
	(25.14)	(25.59)
N	640	639

Note: 1) Number in parentheses are t-statistics.
2) *, **, ***, represent the level of significance at 10%, 5% and 1%, respectively.

< Appendix Table 5> Regression Results of Sub-samples by Geographical Location

Dependent Variable:	Asia		Africa		Latin America	
HDI	Equation(1.1)	Equation(1.2)	Equation(2.1)	Equation(2.2)	Equation(3.1)	Equation(3.2)
ODA	0.0105		-0.000139		-0.0112***	
	(0.51)		(-0.09)		(-4.93)	
ODA²	0.000596		0.00000320**		0.0000728***	
	(1.18)		(2.58)		(6.27)	
ODA *ICRG	-0.00810		-0.000539		0.00366***	
	(-1.11)		(-0.57)		(3.87)	
FDI	-0.00482	-0.00633*	0.00145	0.00157*	-0.000754	-0.00132
	(-1.32)	(-1.93)	(1.49)	(1.74)	(-0.52)	(-0.90)
FDI*ICRG	0.00168	0.00238*	-0.000617	-0.000659	0.000169	0.000403
	(1.18)	(1.91)	(-1.09)	(-1.29)	(0.32)	(0.73)
Trade	0.0000810	0.0000704	0.0000578	0.000114	0.0000559	0.0000266
	(0.37)	(0.24)	(0.38)	(0.94)	(0.44)	(0.21)
ICRG	0.0443	0.0304	0.000911	-0.00961	-0.0136*	-0.0132*
	(1.40)	(0.87)	(0.08)	(-1.02)	(-2.03)	(-1.75)
Social Expenditure	0.00520*	0.00514	0.00114***	0.000653**	0.000380***	0.0000553
	(1.99)	(1.11)	(3.28)	(2.30)	(10.00)	(1.34)
Inflation	-0.000113	-0.000195	-0.000129**	-0.000171**	-0.000451**	-0.000449*
	(-0.51)	(-0.78)	(-2.21)	(-2.31)	(-2.31)	(-2.04)
GFC	-0.000529	-0.000601	0.000969**	0.000969***	0.0000839	-0.000108
	(-0.73)	(-0.75)	(2.47)	(2.79)	(0.23)	(-0.27)
Population	-0.0122	-0.0155	0.0141**	0.0107*	-0.00473	-0.00755

Growth						
	(-0.88)	(-1.17)	(2.50)	(1.70)	(-0.48)	(-0.76)
GDPpc	0.00000542	0.00000485	0.0000122***	0.0000149***	0.00000490***	0.00000491***
	(1.70)	(1.51)	(3.27)	(4.36)	(12.02)	(11.55)
Social ODA		0.0471		-0.00184		0.00184
		(0.91)		(-0.59)		(0.18)
(Social ODA)²		0.00600		0.00000209		0.0000745***
		(1.18)		(0.15)		(3.20)
Social ODA *ICRG		-0.0275		0.0000238		-0.00361
		(-1.31)		(0.01)		(-0.66)
Economic ODA		0.00683		0.0147***		0.0201**
		(0.15)		(3.07)		(2.57)
(Economic ODA)²		-0.0000567		0.000162		-0.0000525
		(-0.08)		(0.80)		(-1.56)
Economic ODA *ICRG		-0.00192		-0.00619**		-0.00944**
		(-0.10)		(-2.13)		(-2.44)
Production ODA		-0.0303		-0.0221		-0.0429
		(-0.71)		(-1.63)		(-1.69)
(Production ODA)²		0.0121		0.00149*		0.0000795
		(0.77)		(1.80)		(0.08)
Production ODA *ICRG		0.00863		0.00970		0.0200
		(0.87)		(1.45)		(1.61)
Multi ODA		-0.348		-0.00375		-0.112***

		(-1.23)		(-0.33)		(-4.14)
(Multi ODA)²		241.0		1.075**		38.71***
		(0.54)		(2.16)		(5.83)
Multi ODA *ICRG		0.118		0.000538		0.0439***
		(0.97)		(0.07)		(3.41)
_cons	0.526***	0.569***	0.403***	0.422***	0.702***	0.721***
	(5.67)	(4.85)	(15.35)	(17.01)	(35.03)	(34.71)
N	107	107	302	301	158	158

Note: 1) Number in parentheses are t-statistics.
2) *, **, ***, represent the level of significance at 10%, 5% and 1%, respectively.

< Appendix Table 6> Regression Results of Sub-samples by Income Level

Dependent Variable:	UMICs		LMICs		LDCs	
HDI	Equation(1.1)	Equation(1.2)	Equation(2.1)	Equation(2.2)	Equation(3.1)	Equation(3.2)
ODA	-0.00140		-0.000767		-0.00292***	
	(-0.48)		(-0.83)		(-3.19)	
ODA²	-0.00000264		0.00000134		0.0000116***	
	(-0.74)		(0.85)		(2.93)	
ODA *ICRG	0.000510		-0.0000591		0.000382	
	(0.28)		(-0.16)		(1.02)	
FDI	-0.000909	0.000464	0.00230	0.00384	-0.000273	0.0000778
	(-0.44)	(0.21)	(0.66)	(1.48)	(-1.30)	(0.34)
FDI*ICRG	-0.000543	-0.00112	-0.00107	-0.00168	0.000160**	0.0000403
	(-0.49)	(-0.94)	(-0.74)	(-1.53)	(1.98)	(0.47)
Trade	0.0000917	0.0000911	0.0000148	0.0000463	-0.0000769	-0.0000546
	(0.58)	(0.64)	(0.08)	(0.26)	(-0.55)	(-0.36)
ICRG	0.0120	0.00320	0.0445*	0.0536**	-0.00304	-0.000818
	(0.56)	(0.16)	(1.93)	(2.51)	(-0.34)	(-0.09)
Social Expenditure	0.0000574***	0.000323*	0.0000493	0.000408***	0.00169***	0.00201***
	(2.70)	(1.59)	(0.44)	(4.38)	(2.94)	(2.74)
Inflation	0.000109	0.000131	-0.0000950	-0.0000612	-0.000303*	-0.000310*
	(0.57)	(0.79)	(-1.27)	(-0.76)	(-1.98)	(-1.82)
GFC	0.00159*	0.00150*	-0.000118	-0.00000350	0.000631**	0.000576*
	(1.69)	(1.59)	(-0.18)	(-0.00)	(2.12)	(1.68)
Population Growth	-0.0110	-0.00732	0.0196*	0.0256**	-0.0130**	-0.0173**

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	(-0.72)	(-0.51)	(1.84)	(2.31)	(-2.10)	(-2.44)
GDPpc	0.00000068**	0.00000065**	0.00000051***	0.00000048***	7.02e-08***	7.00e-08***
	(2.22)	(2.25)	(3.47)	(3.42)	(7.27)	(7.25)
Social ODA		-0.00820		0.0140*		-0.00287
		(-1.33)		(1.55)		(-1.20)
(Social ODA)²		0.000285**		-0.00000904		0.0000197
		(2.39)		(-0.16)		(0.90)
Social ODA *ICRG		-0.00317		-0.00798**		0.000670
		(-1.14)		(-2.18)		(0.49)
Economic ODA		-0.0166		0.0180***		-0.000970
		(-0.96)		(3.37)		(-0.31)
(Economic ODA)²		0.0000122		-0.000117*		-0.00000488
		(1.01)		(-1.84)		(-0.19)
Economic ODA *ICRG		0.00870		-0.00723***		0.000703
		(0.96)		(-2.78)		(0.44)
Production ODA		-0.122***		-0.0458***		-0.00227
		(-5.05)		(-2.91)		(-0.33)
(Production ODA)²		0.00349**		0.000279**		-0.0000297
		(2.25)		(2.62)		(-0.05)
Production ODA *ICRG		0.0546***		0.0203**		0.000848
		(3.15)		(2.55)		(0.26)
Multi ODA		-0.0149		-0.0556***		0.0138
		(-1.08)		(-3.37)		(0.93)
(Multi ODA)²		0.00134		0.000755***		0.000874
		(1.46)		(3.11)		(0.43)
Multi ODA *ICRG		0.00680		0.0233***		-0.00958*

		(0.63)		(2.71)		(-2.03)
_cons	0.542***	0.540***	0.448***	0.404***	0.602***	0.591***
	(10.14)	(8.60)	(8.44)	(8.03)	(21.22)	(19.99)
N	190	189	159	159	254	254

Note: 1) Number in parentheses are t-statistics.

2) *, **, ***, represent the level of significance at 10%, 5% and 1%, respectively.

< Appendix Table 7> Classification of Sample Countries by Geographical Location

Asia	Africa	Latin America
Afghanistan	Algeria	Argentina
Armenia	Angola	Belize
Azerbaijan	Benin	Bolivia
Bangladesh	Botswana	Brazil
Bhutan	Burkina Faso	Chile
Georgia	Burundi	Colombia
Kazakhstan	Cabo Verde	Costa Rica
Kyrgyzstan	Cameroon	Dominican Republic
Maldives	Central African Republic	Ecuador
Nepal	Chad	El Salvador
Pakistan	Comoros	Guatemala
Sri Lanka	Congo	Haiti
Tajikistan	Côte d'Ivoire	Honduras
Turkmenistan	Democratic Republic of the Congo	Jamaica
Uzbekistan	Egypt	Mexico
Cambodia	Ethiopia	Nicaragua
Indonesia	Gabon	Panama
Lao People's Democratic Republic	Gambia	Paraguay
Malaysia	Ghana	Peru
Mongolia	Guinea	Uruguay
Philippines	Guinea-Bissau	
Thailand	Kenya	
Timor-Leste	Lesotho	
Viet Nam	Liberia	
	Libya	
	Madagascar	
	Malawi	
	Mauritania	
	Mauritius	
	Morocco	
	Mozambique	
	Namibia	
	Niger	
	Nigeria	

Rwanda
Sao Tome and Principe
Senegal
Sierra Leone
South Africa
Sudan
Swaziland
Tanzania
Togo
Tunisia
Uganda
Zambia
Zimbabwe

< Appendix Table 8> Classification of Sample Countries by Income Level

UMICs	LMICs	LDCs
Albania	Armenia	Afghanistan
Algeria	Belize	Angola
Argentina	Bolivia	Bangladesh
Azerbaijan	Cabo Verde	Benin
Belarus	Cameroon	Bhutan
Bosnia and Herzegovina	Congo	Burkina Faso
Botswana	Côte d'Ivoire	Burundi
Brazil	Egypt	Cambodia
Chile	El Salvador	Central African Republic
Colombia	Fiji	Chad
Costa Rica	Georgia	Comoros
Dominican Republic	Ghana	Democratic Republic of the Congo
Ecuador	Guatemala	Ethiopia
Former Yugoslav Republic of Macedonia	Honduras	Gambia
Gabon	Indonesia	Guinea
Iran	Iraq	Guinea-Bissau
Jamaica	Moldova	Haiti
Jordan	Mongolia	Kiribati
Kazakhstan	Morocco	Lao People's Democratic Republic
Lebanon	Nicaragua	Lesotho
Libya	Nigeria	Liberia
Malaysia	Pakistan	Madagascar
Maldives	Paraguay	Malawi
Mauritius	Philippines	Mauritania
Mexico	Sri Lanka	Mozambique
Namibia	Swaziland	Nepal
Panama	Tonga	Niger
Peru	Turkmenistan	Rwanda
Serbia	Ukraine	Samoa
South Africa	Uzbekistan	Sao Tome and Principe
Thailand	Viet Nam	Senegal
Thailand		Senegal
Tunisia		Sierra Leone
		Solomon Islands
		Sudan
		Tanzania
		Timor-Leste
		Togo
		Uganda
		Vanuatu
		Zambia

Source: World Bank (2012)

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