Aid Determinants in Recent Years: Korean Case

By

Taejun Park

Thesis

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

MASTER OF PUBLIC POLICY

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Committee in charge

Professor Lee, Kye-Woo, Supervisor

Professor Kim, Taejong

Professor Park, Jin

Approval as of December, 2011

Abstract

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The purpose of this study is to identify and analyze the factors which may affect the allocation of bilateral aid from Korea in recent years. Both recipient countries′ factors and donor interests were considered as variable which may affect the allocation. Recipient countries′ factor variables explain their physical needs and political status, and donor interest variables explain the economic relationship between Korea and each recipient country. According to the regression result of the most reliable model which controlled the recipient-country fixed effect and included all possible variables, Korean bilateral aid is responsive to population of recipient countries, export to recipient countries, import from recipient countries, and FDI investment in recipient countries.

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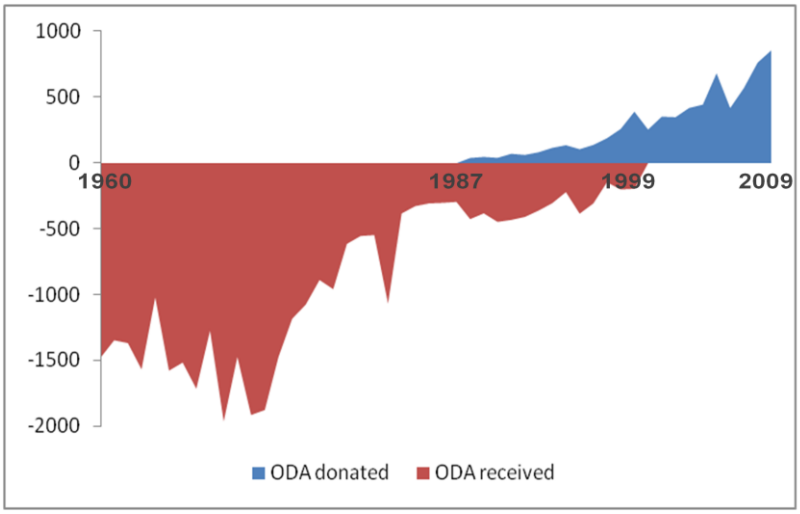
Ⅰ. Introduction

1. Why should we look at this matter?

Korea is the only DAC member country which transformed from a recipient country to a donor country. It first received aid from international community in 1945 as an emergency aid mainly from the US and the UN. The ODA volume received reached an all time high in 1969 and started to fall quickly. It started its first official assistances to Indonesia and Nigeria in 1987. Korea joined Development Assistance Committee (DAC) in 2010.

Figure 1. Korean ODA flow



DAC carried out a special review on Korean ODA before Korea joined DAC. The report pointed out many aspects of Korean ODA which needed to be improved. ODA/GNI ratio and tied ODA ratio are cases in point. Thus Committee for International Development Cooperation (CIDC) of Korea set a target of 0.15% ODA/GNI ratio by 2012, 0.25% ODA/GNI ratio by 2015, and 90% of untied aid ratio by 2015.

Table 1. ODA/GNI ratio and untied aid ratio of Korea ODA

		2003	2005	2007	2009	2012 (Target)	2015 (Target)
ODA/GNI ratio (Unit:%)	Korea	0.06	0.10	0.07	0.10	0.15	0.25
	DAC	0.24	0.32	0.27	0.31		
Untied aid ratio (Unit:%)	Korea	2.5	2.6	24.7	48.3		90.0
	DAC	91.1	91.4	83.9	84.5		

These factors are important quantitative and qualitative aspects of ODA, however they are factors that are easily recognized. And setting a target to improve them is not difficult because there are already practices of 22 countries and European Commission in DAC with longer history of ODA as donor countries.

What this study estimates is how much Korea considers recipient countries' circumstances when it gives bilateral aid to various recipient countries. Considering recipient countries' circumstances is very important because it is hard to recognize whether a donor country considers recipients' circumstances by only looking at simple statistics or ODA report. More importantly, considering recipient countries' circumstances is a cornerstone for all donors to achieve higher level goals such as Millennium Development Goals or Paris Declaration on Aid Effectiveness. The MDG talks about 8 factors. They are all about improving recipient countries' poor conditions which are extreme poverty, primary education, gender equality, child mortality rate, maternal health, diseases such as AIDS/HIV and malaria, environment, and global partnership for development. Recipient countries' physical and economic needs should be considered for sure to improve these conditions. Measures discussed in Paris Declaration are also deeply related to the recipient countries' circumstances. If a donor country tries to align its objectives with recipient countries and use their systems,

recipient countries' social and governmental factors should be considered.

Moreover, this study estimates if Korean bilateral aid is related to its economic interest variables. If it is related to them, it is hard to say that Korean ODA is altruistic to international community. Trade and FDI relationships with recipient countries are considered as economic interests of Korea.

2. Literature Review

For long periods, factors that may affect aid allocation have been researched and discussed. Mckinlay and Little (1979) divided aid determinants into 2 sides of donors' interests and recipients' needs. They argued that recipients' needs are compensates for the shortfalls in domestic resources and donors' interests serve political/security, investment and trade interests. Many of early studies on aid determinants followed the dichotomy of Mckinlay and Little. On this ground, Maizels & Nissanke (1984) found that multilateral aid allocation is determined by recipients' needs and bilateral aid allocation is determined by donors' interests. In 1994, Trumbull & Wall said that, when recipient country fixed effect is controlled, aid received per capita is related to infant mortality and civil/political rights, but not to GDP per capita of recipient country. Wall (1995) showed that aid received per capita responds to changes in GDP per capita and does not respond to changes in infant mortality rate and civil/political rights. Alesina and Dollar (2000) said that GDP per capita, democracy level, trade openness, colonial history, and friendlinessat the UN of recipient countries are positively correlated to aid per capita received, but not civil/political rights. In 2002, Alesina and Weder found that corrupt government does not receive less aid per capita than clean government. Neumayer (2003) argued that as economic needs and civil/political development needs of recipient countries are high, they tend to receive more aid from the UN. And before the Cold War, civil/political rights were positively related to the bilateral aid received. In

Bandyopadhyay and Wall's research (2007), aid from all sources respond to GDP per capita, infant mortality rate, government effectiveness, and population of recipient countries in the post-Cold War era. When country fixed effects, however, were controlled, civil/political rights were positively correlated to aid received.

Ⅱ. Korean ODA in Recent Years

Korean ODA volume fell sharply from 678.42 US million dollars in 2005 to 416.22 US million dollars in 2006. Since then, the ODA volume is increasing steadily. It reached 850.75 US million dollars in 2009. ODA/GNI ratio also fell sharply from 0.1% in 2005 to 0.05% in 2006. As the ODA volume increases, the ratio is also recovering and reached the previously highest level of 0.1% in 2009. In recent years, bilateral aid share occupies about 70% of total ODA.

Table 2. General aspects of total Korean ODA for recent 5 years

	2005	2006	2007	2008	2009
Gross Disbursement (Unit:2009 Constant USDm)	678.42	416.22	567.38	758.22	850.75
ODA/GNI	0.10%	0.05%	0.07%	0.09%	0.10%
Bilateral share	62.0%	78.2%	71.9%	68.7%	72.4%

For last 5 years from 2005 to 2009, sectors that total Korean ODA assisted most are infrastructure sectors. Social infrastructure sector occupies 44.8% and economic infrastructure sector occupies 41.4% of total ODA.

Table 3. Korean ODA allocation by sector

Allocation by sector(Gross Disbursement)	
Social Infrastructure	44.8%
Economic Infrastructure	41.4%
Production	6.7%
Humanitarian Aid	3.2%
Multisector	2.5%
Support to NGOs	0.7%
Unallocated	0.4%
Debt Relief	0.3%
Commodity Aid	0.04%

Iraq is the biggest recipient country of Korean bilateral aid for last 5 years. Following countries are Viet Nam, Sri Lanka, Indonesia, Cambodia, etc. Most of top 10 recipient countries of total Korean bilateral aid are Asian countries.

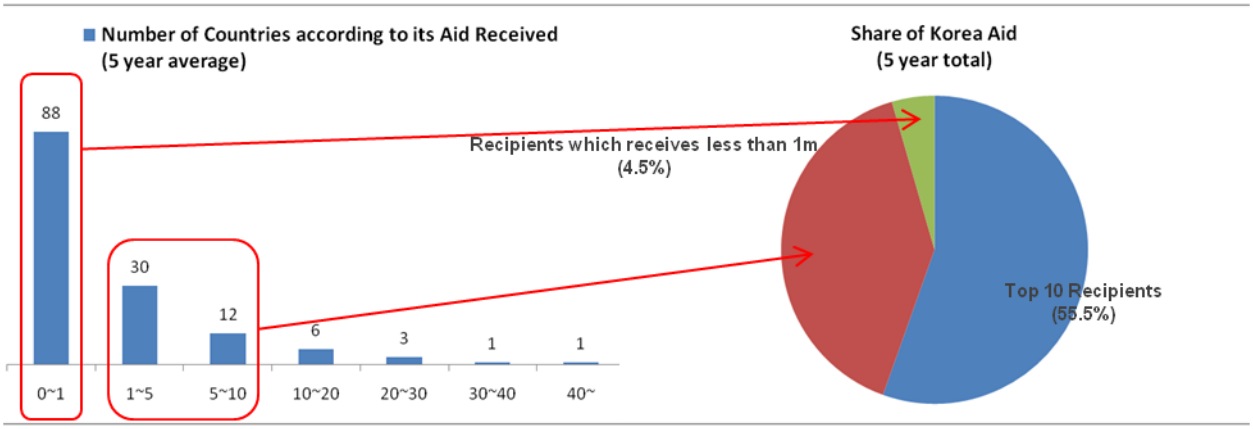
Table 4. Top 10 recipients of Korean bilateral ODA

Top 10 Recipients of Gross ODA(USD million)	
1. Iraq	233.63
2. Viet Nam	164.49
3. Sri Lanka	125.84
4. Indonesia	110.82
5. Cambodia	102.36
6. Philippines	85.21

7. Bangladesh	79.37
8. Angola	73.43
9. Laos	68.97
10. Mongolia	67.66

On average, 88 recipient countries of Korean bilateral aid received less than 1 US million dollars a year, 30 countries received between 1 and 5 US million dollars, 12 countries received between 5 and 10 US million dollars, and all of top 10 countries received more than 10 US million dollars a year. These countries received more than 55% of total Korean bilateral aid for 5 years from 2005 to 2009 while 88 least-receiving countries received less than 5%.

Figure 2. Distribution of recipients according to aid received from Korea



The reason why Iraq became a number 1 country in the list is because Korea declared a special aid for Iraqi rehabilitation in 2002 and provided enormous amount of aid money for 5 years from 2003 to 2007. Although the amount is not as huge as that of Iraq, Afghanistan also received a special aid for rehabilitation from Korea from 2002.

Table 5. Korean ODA to Iraq and Afghanistan

(Unit:2009 Constant USDm)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Iraq	0.02	0.04	0.01	42.64	70.79	130.36	46.32	41.61	8.79	6.55
Afghanistan	0	0	5.47	22.2	21.13	7.75	1.74	2.0	3.62	24.09

\

Ⅲ. Empirical model

1. Recipient factors model

In order to know if Korean bilateral aid considers recipient countries' factors, this study borrows a regression model from a previous study. In 2007, Bandyopadhyay and Wall used a regression equation below to find if ODA from the world is related to recipients' conditions.

$$\mathbf{Aid(fromAllSources)_{it}} = \alpha_0 + \alpha_i + \gamma_t + \beta_1 \mathbf{GDPpercapita_{it}} + \beta_2 \mathbf{GDPpercapita_{it}^2} + \beta_3 \mathbf{InfantMortality_{it}} + \beta_4 \mathbf{InfantMortality_{it}^2} + \beta_5 \mathbf{Civil\&PoliticalRights} + \beta_6 \mathbf{GovernmentEffectiveness} + \beta_7 \mathbf{Population_{it}} + \beta_8 \mathbf{Population_{it}^2} + \varepsilon_{it} \ldots (1)$$

In this literature paper, dependent variable is real net official development assistance from all sources including multilateral aid for country *i* in year *t*. Bandyopadhyay and Wall looked at post-Cold War era, using three years of data, 1995, 2000, and 2003. They controlled a recipient-country fixed effect and a period effect by putting country dummy variables and year dummy variables into the model. Generalized least squares method is used, allowing for recipient-specific heteroskedasticity.

According to the result, it turned out that the World ODA is related to many of recipient factors. When the recipient-country fixed effect was not controlled, GDP per capita, infant mortality rate, government effectiveness, and population variables were significant, but not civil/political rights. However, when the effect was controlled, all recipient-country variables, even including civil/political rights, turned out to be significant to ODA received from all sources.

Figure 3. Regression results of Bandyopadhyay and Wall(2007)

Regression Results: Dependent Variable = Level of Real Aid

	No fixed effects			With fixed effects		
	Coefficient	Standard error	*t*-Statistic	Coefficient	Standard error	*t*-Statistic
Common intercept	564.693*	48.850	11.56	400.684*	126.088	3.18
Recipient fixed effects	No			Yes		
2000 dummy	–56.913*	12.688	–4.49	–82.195*	6.984	–11.77
2003 dummy	–18.343	12.985	–1.41	–11.714	10.667	–1.10
Real GDP per capita	–78.178*	5.955	–13.13	–116.490*	8.848	–13.17
Real GDP per capita squared	2.646*	0.268	9.86	3.927*	0.387	10.14
Infant mortality	–3.053*	0.693	–4.41	3.632*	1.291	2.81
Infant mortality squared	0.022*	0.004	5.75	–0.015*	0.008	–1.95
Civil/political rights	0.212	1.841	0.12	8.940*	2.486	3.60
Government effectiveness	114.432*	13.934	8.21	82.453*	12.856	6.41
Population (millions)	7.497*	0.394	19.01	13.419*	2.815	4.77
Population squared	–0.005*	0.000	–10.78	–0.012*	0.002	–6.95
Log likelihood		–2,563.56			–2,264.07	
Number of observations		395			395	
Number of recipient countries		135			135	
Estimated coefficients		11			145	

This paper looks at Korean bilateral aid of recent five years, using Bandyopadhyay and Wall's method.

$$\mathbf{Aid(fromKorea)_{it}} = \alpha_0 + \alpha_i + \gamma_t + \beta_1 \mathbf{GDPpercapita_{it}} + \beta_2 \mathbf{GDPpercapita_{it}^2}$$
$$+ \beta_3 \mathbf{InfantMortality_{it}} + \beta_4 \mathbf{InfantMortality_{it}^2} + \beta_5 \mathbf{Civil\&PoliticalRights}$$
$$+ \beta_6 \mathbf{GovernmentEffectiveness} + \beta_7 \mathbf{Population_{it}} + \beta_8 \mathbf{Population_{it}^2} + \varepsilon_{it} \dots (2)$$

The same GLS method is used, using five years of data from 2005 to 2009.

2. Recipient factors + donors interests model

This study also looks at the recipient factors and donors' interest at the same time. Three more variables which may explain Korean economic relationships with recipient countries are added to the previous model.

$$\begin{aligned}\mathbf{Aid(fromKorea)_{it}} = {} & \alpha_0 + \alpha_i + \gamma_t + \beta_1 \mathbf{GDPpercapita_{it}} + \beta_2 \mathbf{GDPpercapita_{it}^2} \\ & + \beta_3 \mathbf{InfantMortality_{it}} + \beta_4 \mathbf{InfantMortality_{it}^2} + \beta_5 \mathbf{Civil\&PoliticalRights} \\ & + \beta_6 \mathbf{GovernmentEffectiveness} + \beta_7 \mathbf{Population_{it}} + \beta_8 \mathbf{Population_{it}^2} \\ & + \beta_9 \mathbf{Export(toKorea)_{it}} + \beta_{10} \mathbf{Export(toKorea)_{it}^2} + \beta_{11} \mathbf{Import(fromKorea)_{it}} \\ & + \beta_{12} \mathbf{Import(fromKorea)_{it}^2} + \beta_{13} \mathbf{FDI(fromKorea)_{it}} + \beta_{14} \mathbf{FDI(fromKorea)_{it}^2} \\ & + \varepsilon_{it} \ldots \mathbf{(3)}\end{aligned}$$

Those three variables are each recipient country's export volume to Korea, import volume from Korea, and FDI investment volume from Korea. When there is no trade transaction or FDI investment, the value is zero.

Ⅳ. Variable data

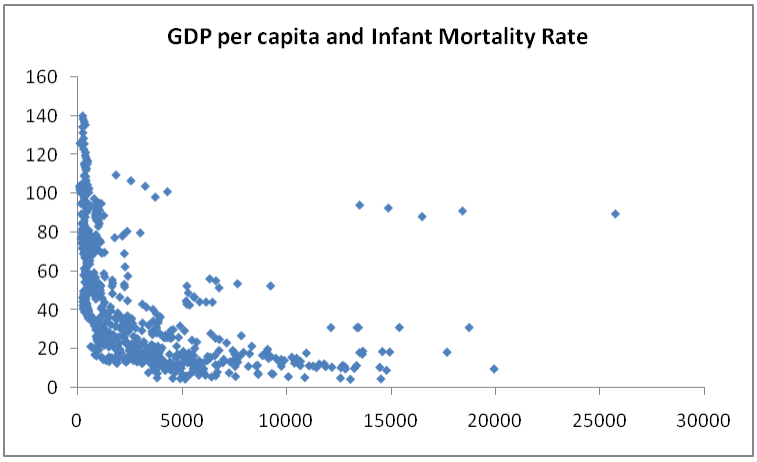
1. Variables

The dependent variable of this study is each recipient country's bilateral aid received from Korea. The latest five years are used from 2005 to 2009. This variable does not include debt reduction. For last five years, Korea gave bilateral aid to 139 countries. Iraq received the biggest volume of 270 million US dollars. The unit of variable in this study is US-million-dollar and the value is 2005 constant price. The data were taken from the OECD statistics site.

The first independent variable, GDP per capita, is a variable which explains recipient country's economic needs well. The unit is US-dollar and the value is 2005 constant price. The data were taken from the World Bank statistics site.

Infant mortality rate is one of the variables which show how serious the recipient country's physical conditions are. It is a number of children, who died when they are one year old or younger, per 1,000 live births. The World Bank statistics site also provides the data. These two variables of Korean bilateral aid-receiving countries show a negative correlation.

Figure 4. Relationship between GDP per capita and Infant Mortality Rate of Recipients of Korean Bilateral Aid



Population is the total number of population of each recipient country, and the data are taken from the World Bank.

Civil liberty index and political rights index from Freedom House are used for recipient countries' rights variable. Freedom House grades all countries from score 1 to 7 for each index every year. Receiving score 1 stands for being the most free and 7 means the most restrictive. These two scores are added, making a simple single variable of civil/political rights. However, the value is reversed in this study so that 7 means the most free and 1 means the most restrictive. Thus, the higher the score is, the more liberal the recipient country is. Among recipient countries of Korean bilateral aid, on average for last five years, Libya, Sudan, Turkmenistan, Uzbekistan were the most restrictive countries with 2 of civil/political rights and Barbados, Chile, Costa Rica, Dominica, Kiribati, Marshall Islands, Micronesia, Nauru, Palau, St. Kitts-Nevis, St. Lucia, Tuvalu, Uruguay were the most free countries with 14. All recipient country average is 8.43.

Government effectiveness is 1 of 7 variables of World Bank Worldwide Governance Indicators. The indicators consist of Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption. The government effectiveness indicator rates every country from -2.5 to 2.5. The higher the number is, the more effective the government is. In 2009, Singapore, Denmark and Finland were top-rated while Somalia, North Korea and Myanmar were rated at the worst countries.

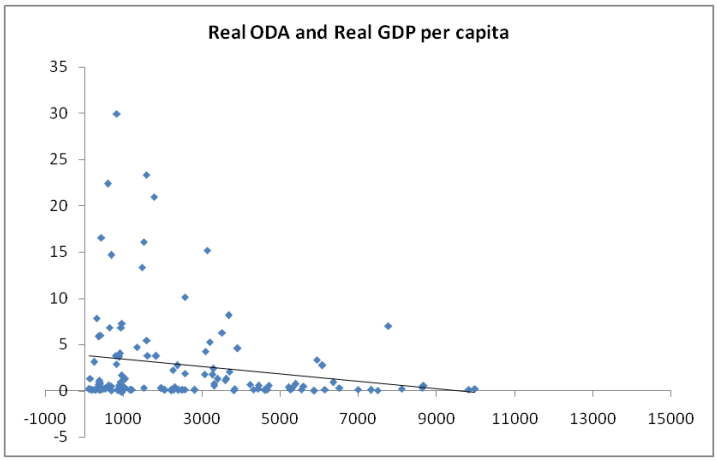
Export and import variable data are taken from UNCTAD statistics site. They are merchandise transaction data, thus service export to Korea and service import from Korea is not included. The unit is US-thousand-dollar and the value is 2005 constant price.

FDI variable data are taken from Korea Eximbank. Negative flow of FDI, which means capital withdrawal, is not included. Only net new investment is used for FDI variable. The unit is US-thousand-dollar and the value is 2005 constant price.

2. Korean ODA and variables

2.1. Real ODA and Real GDP per capita

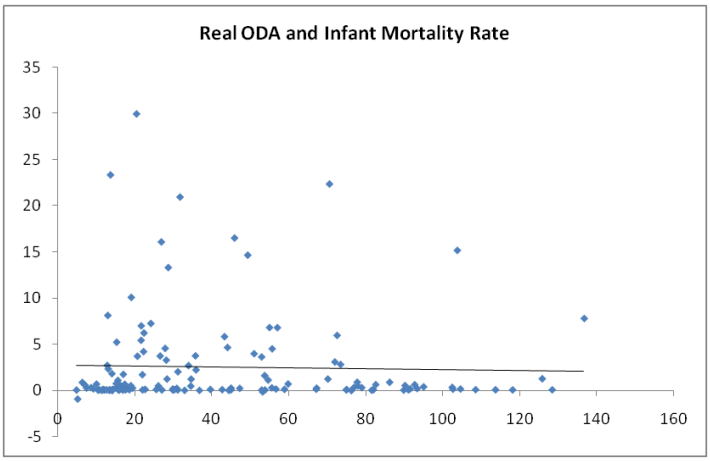
Figure 5. The Relationship between Real ODA from Korea and GDP per capita of Recipients



Since the most recipient countries have low GDP per capita, outliers which have an average of GDP per capita over 10,000 US dollars. They are Equatorial Guinea (GDP per capita : USD 17,803, bilateral aid from Korea : USD 86,154), Saudi Arabia (14,872 and 106,739), Oman (14,867 and 106,775), Trinidad and Tobago (14,616 and 83,368), Barbados (12,540 and 51,625), Croatia (12,225 and -911,487), Antigua and Barbuda (11,772 and 123,081), and Seychelles (10,188 and 33,461). Iraq is also excluded because its aid level was abnormal with USD 54 million of aid a year. According to the trend line, the variables are negatively related.

2.2. Real ODA and Infant Mortality Rate

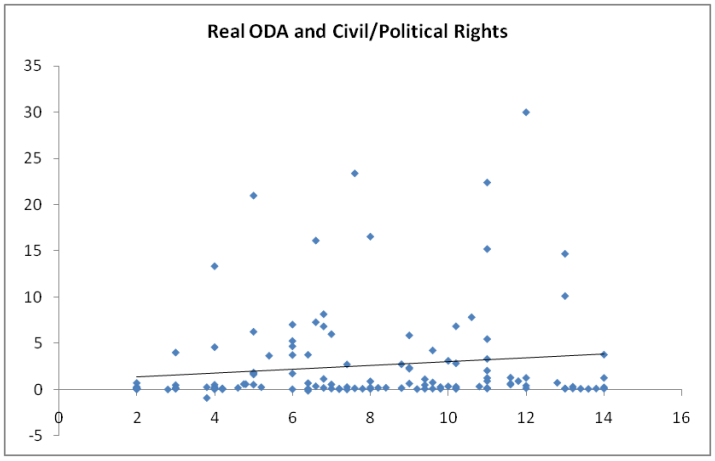
Figure 6. The Relationship between Real ODA from Korea and Infant Mortality Rate of Recipients



In this graph which shows the relationship between real ODA and infant mortality rate, only Iraq is excluded due to its heavy aid volume. The trend line in this graph is almost flat.

2.3 Real ODA and Civil/Political Rights

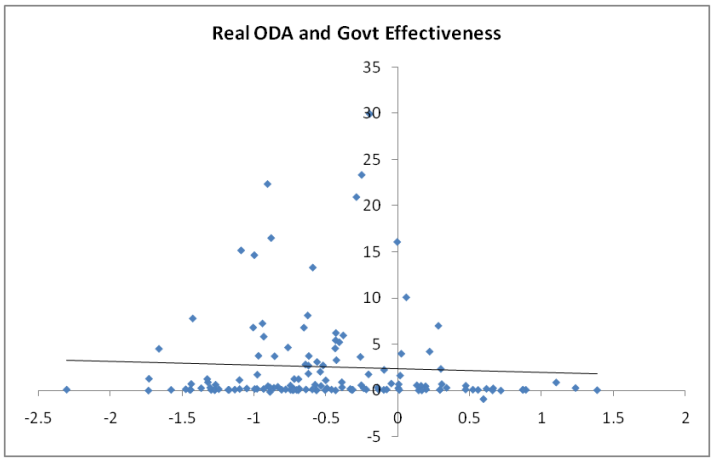
Figure 7. The Relationship between Real ODA from Korea and Civil/Political Rights of Recipients



Since the maximum value of index is 14 and the minimum is 2, this graph includes all recipient countries except for Iraq. The trend line is slightly positive upward sloping.

2.4 Real ODA and Government Effectiveness

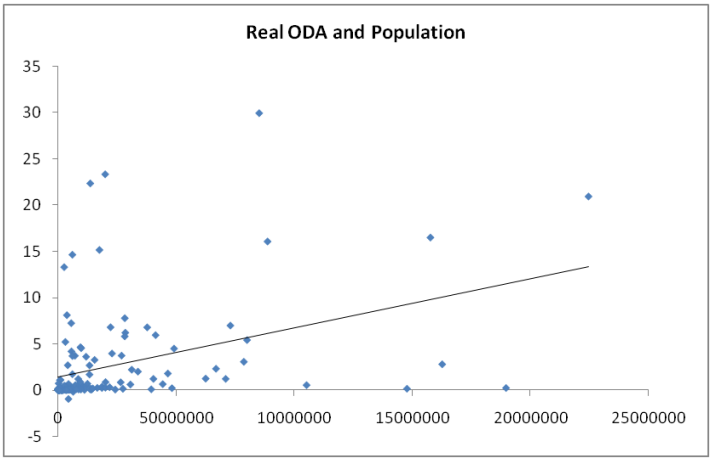
Figure 8. The Relationship between Real ODA from Korea and Government Effectiveness of Recipients



Only Iraq is also excluded in this graph. The trend line of the graph looks a bit negatively skewed.

2.5 Real ODA and Population

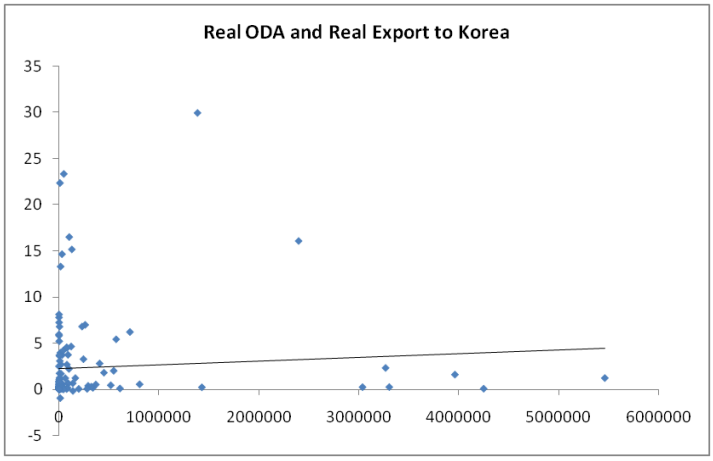
Figure 9. The Relationship between Real ODA from Korea and Population of Recipients



China and India among the recipients are the extreme cases with 1,317,748,000 people and 1,124,898,751 people on average each. These two countries and Iraq are excluded as outliers of this scatter plot. The line clear shows that as the number of population increases, the bilateral aid amount also increases.

2.6 Real ODA and Real Export to Korea

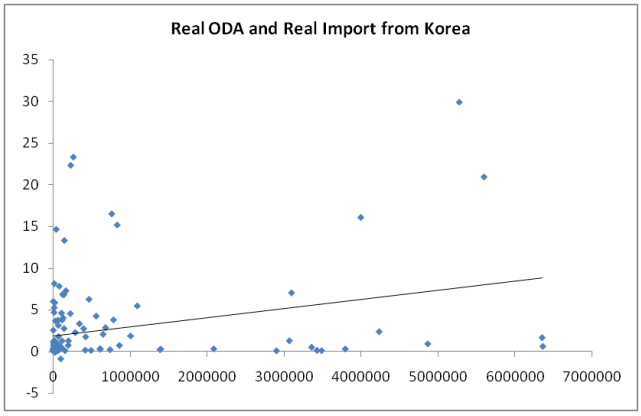
Figure 10. The Relationship between Real ODA from Korea and Real Export to Korea of Recipients



Trade volume of some countries has a huge gap with following countries. China exports the biggest volume of USD 53,059 million and Saudi Arabia exports the second biggest volume of USD 21,007 million. Indonesia and Malaysia follow with USD 8,841 million and USD 7,401million each. The biggest export volume in the graph is USD 5,467 million of Iran. Iraq is also excluded. Among 139 recipient countries, 4 countries do not export to Korea. The trend line is slightly positively skewed.

2.7 Real ODA and Real Import from Korea

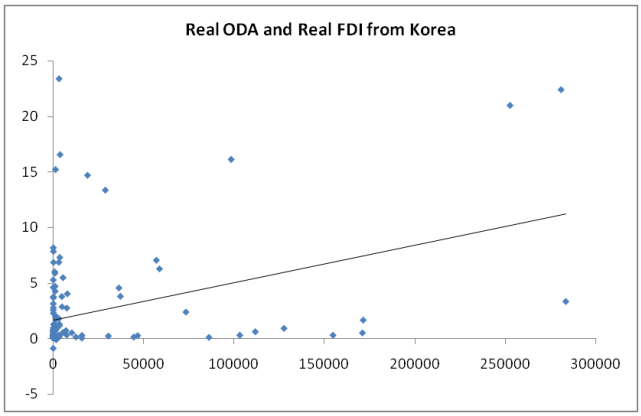
Figure 11. The Relationship between Real ODA from Korea and Real Import from Korea of Recipients



In this graph, only China is excluded due to the extreme import volume. Its import volume from Korea is USD 73,914 million on average. However, the following country is Mexico with USD 6,358 million. Iraq is also excluded. Among 139 recipient countries, 3 countries do not import from Korea. The relationship between aid from Korea and import from Korea is positively related.

2.8 Real ODA and Real FDI from Korea\

Figure 12. The Relationship between Real ODA from Korea and Real FDI from Korea of Recipients



Korea invests relatively larger amount of FDI on China and Viet Nam. Korea invested USD 3,283 million of FDI on average for last five years on China and USD 779 million on Viet Nam. The biggest FDI volume exists in the graph is USD 284 million of Kazakhstan. Iraq is also excluded due to its exceptional aid volume. Among 139 recipient countries, 51 countries do not have FDI investment from Korea. The line shows the positive correlation.

Ⅴ. Result

1. Case A : All observations available

The first case includes all observations available. The number of recipient countries is 139 and the number of regression observation is 578. Among 139 countries, 90 countries have 5 year observations, 13 countries have 4 year observations, 19 countries have 3 year observations, 8 countries have 2 year observations, and 3 countries have 1 year observation. And 6 countries do not have any appropriate observations for regression. The 6 countries without observations are Nauru, Palestinian Adm. Areas, Somalia, Montenegro, Myanmar, and Tuvalu. These countries do not provide GDP data and Civil/Political Rights data. Nauru and Palestinian Adm. Areas do not provide any statistic. Below is the sample statistics.

Table 6. Sample statistics of Case A

Variable	Observation	Mean	Std. Dev.	Min	Max
RealODA(million)	604	3.314048	9.088015	-1.760828	149.54
Real GDP per capita	668	3282.159	3594.765	107.8706	25733.99
Real GDP per capita squared	668	2.37E+07	5.41E+07	11636.06	6.62E+08
Infant mortality	685	43.22175	31.85332	4.4	139.8
Infant mortality squared	685	2881.272	3838.125	19.36	19544.04
Civil liberty & Political rights	679	8.431517	3.559972	2	14
Govt. Effectiveness	684	-0.4815745	0.6883941	-2.495002	1.514487
Population(thousand)	685	3.89E+07	1.49E+08	9694	1.33E+09
Population squared(million)	685	2.37E+16	1.82E+17	9.40E+07	1.77E+18
Real Export to Korea(thousand)	695	940141.2	5050064	0	7.08E+07
Real Export to Korea Squared	695	2.64E+13	2.73E+14	0	5.02E+15
Real Import from Korea(thousand)	695	1114749	6393079	0	8.41E+07

Real Import from Korea Squared	695	4.21E+13	4.78E+14	0	7.08E+15
Real FDI from Korea(thousand)	695	46848.88	303355.5	0	4937385
Real FDI from Korea Squared	695	9.41E+10	1.16E+12	0	2.44E+13

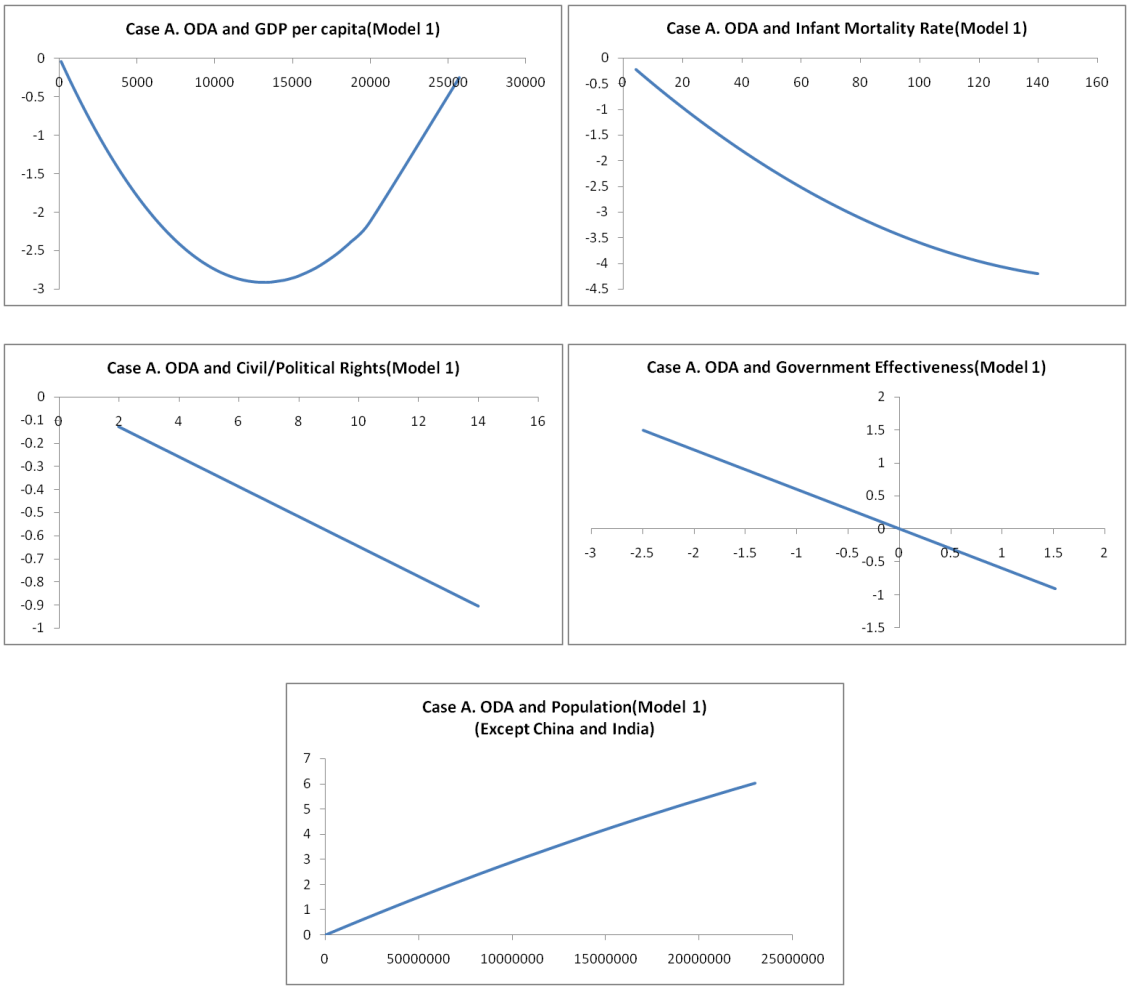
When the loan payment from the recipient country surpasses new aid amount from Korea, ODA has negative sign. As mentioned above, when there is no trade transaction or FDI investment, the value is zero. And FDI investment withdrawal, which may cause a negative value, is not included.

Table 7. Regression Result of Recipient Factors Model of Case A

Dependent variable : Real ODA from Korea (Year 2005 ~ 09)	Recipient factors model (Real : 2005년 기준)			
	no fixed effects		with fixed effects	
	Coefficient	t-statictic	Coefficient	t-statictic
Common intercept	3.694965	5.63	6.620637	1.29
2006 dummy	-0.0211413	-0.13	-0.0373423	-0.38
2007 dummy	0.2635307	1.56	0.0797093	0.69
2008 dummy	0.3673442	2.05	-0.0503785	-0.36
2009 dummy	0.2110458	1.1	-0.1065104	-0.59
Real GDP per capita	-0.0004423	-3.85	-0.0001445	-0.98
Real GDP per capita squared	1.68E-08	2.35	4.40E-09	0.66
Infant mortality	-0.0508845	-4.33	-0.1328687	-2.08
Infant mortality squared	0.000149	2.11	0.000601	1.91
Civil/political rights	-0.0647482	-2.59	0.0462167	0.57
Government effectiveness	-0.5985435	-4.6	-0.4870171	-1.13
Population	3.12E-08	6.36	1.33E-07	2.12
Population squared	-2.17E-17	-5.04	-6.83E-17	-1.9

The first model of case A is recipient factors model without fixed effects (hereafter, it is called model A-1.) This model shows that all recipient factors variables are significant. Real GDP per capita is negatively significant and its squared variable is positively significant. Infant mortality rate is also negatively significant and its squared variable is also positively significant. Civil/political rights variable is positively significant while government effectiveness variable is negatively related. Population is positively significant and its squared variable is negatively significant. Following graphs show the relationships between bilateral aid from Korea and each variable, using significant coefficients of model A-1.

Figure 13. The Relationship between Real ODA from Korea and Recipient Variables of Model A-1



The second model of case A is recipient factors model with fixed effects (hereafter, it is called model A-2.) In this model, recipient country fixed effect is controlled by putting country dummy variables. This model shows that only two variables among recipient factors are significant. They are infant mortality rate and population. The squared forms of the variables, however, are not significant. Following graphs show the relationships between bilateral aid from Korea and each variable, using significant coefficients of model A-2.

Figure 14. The Relationship between Real ODA from Korea and Recipient Variables of Model A-2

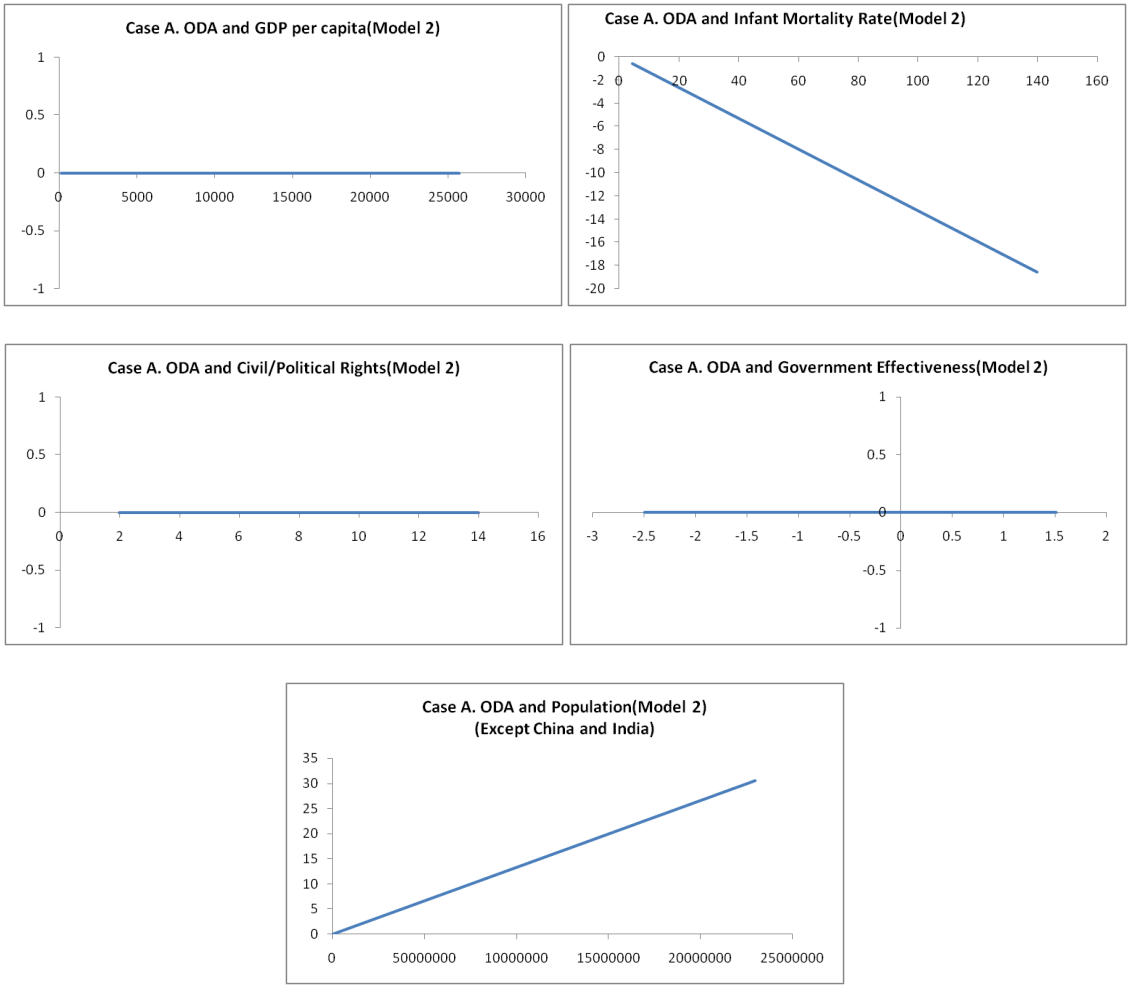


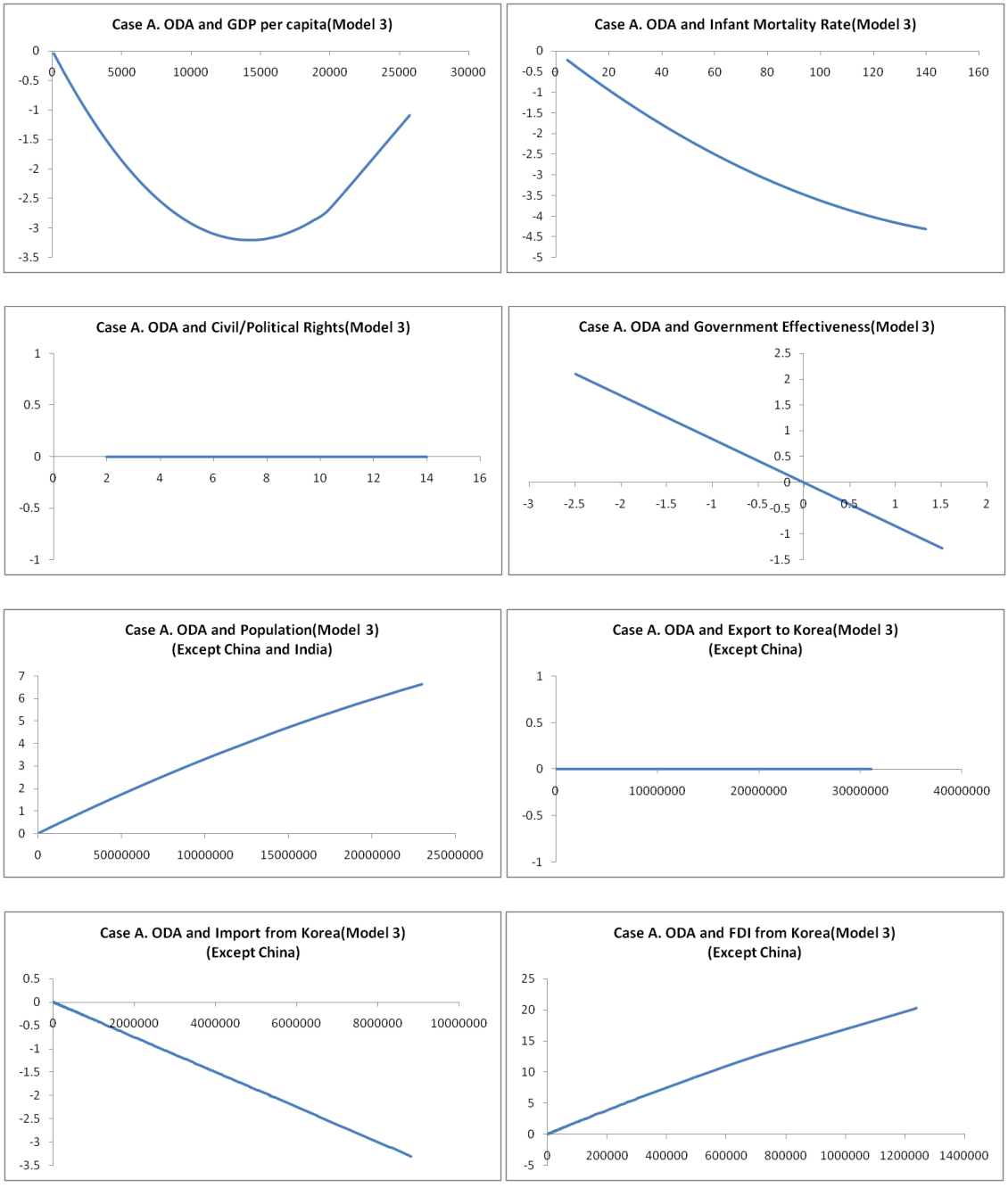
Table 8. Regression Result of Recipient Factors + Donor Interest Model of Case A

Dependent variable : Real ODA from Korea (Year 2005 ~ 09)	Recipient factors + Donor interests model (Real : 2005년 기준)			
	no fixed effects		with fixed effects	
	Coefficient	t-statictic	Coefficient	t-statictic
Common intercept	2.98341	4.9	10.49634	2.16
2006 dummy	-0.0743993	-0.4	-0.1568882	-2.38
2007 dummy	0.2227097	1.29	-0.0143593	-0.16
2008 dummy	0.3487089	1.76	-0.031751	-0.26
2009 dummy	0.2521036	1.21	-0.2112109	-1.26
Real GDP per capita	-0.0004517	-4.07	-0.0002902	-2.56
Real GDP per capita squared	1.59E-08	2.33	1.48E-08	3.18
Infant mortality	-0.0497081	-4.81	-0.1562545	-2.99
Infant mortality squared	0.0001352	2.18	0.0005978	2.89
Civil/political rights	0.000851	0.03	0.0516218	0.81
Government effectiveness	-0.8390114	-4.25	-0.511213	-1.56
Population	3.63E-08	7.59	1.13E-07	1.49
Population squared	-3.24E-17	-7.85	-1.23E-16	-1.9
Real Export to Korea	1.15E-07	1.04	-2.58E-06	-5.45
Real Export to Korea Squared	4.49E-16	0.17	2.86E-14	7.25
Real Import from Korea	-3.75E-07	-3.83	4.69E-07	1.44
Real Import from Korea Squared	9.81E-16	0.56	-8.28E-15	-2.53
Real FDI from Korea	0.0000199	6.47	4.33E-07	0.11
Real FDI from Korea Squared	-2.85E-12	-5.38	-2.87E-13	-0.58

The third model of case A is recipient factors and donor interest model without fixed effects (hereafter, it is called model A-3.) In this model, recipient factors variables show similar results with those of the model 1. The only difference is that civil/political rights variable in the model 3 is not significant. Among donor interest variables, export variables are

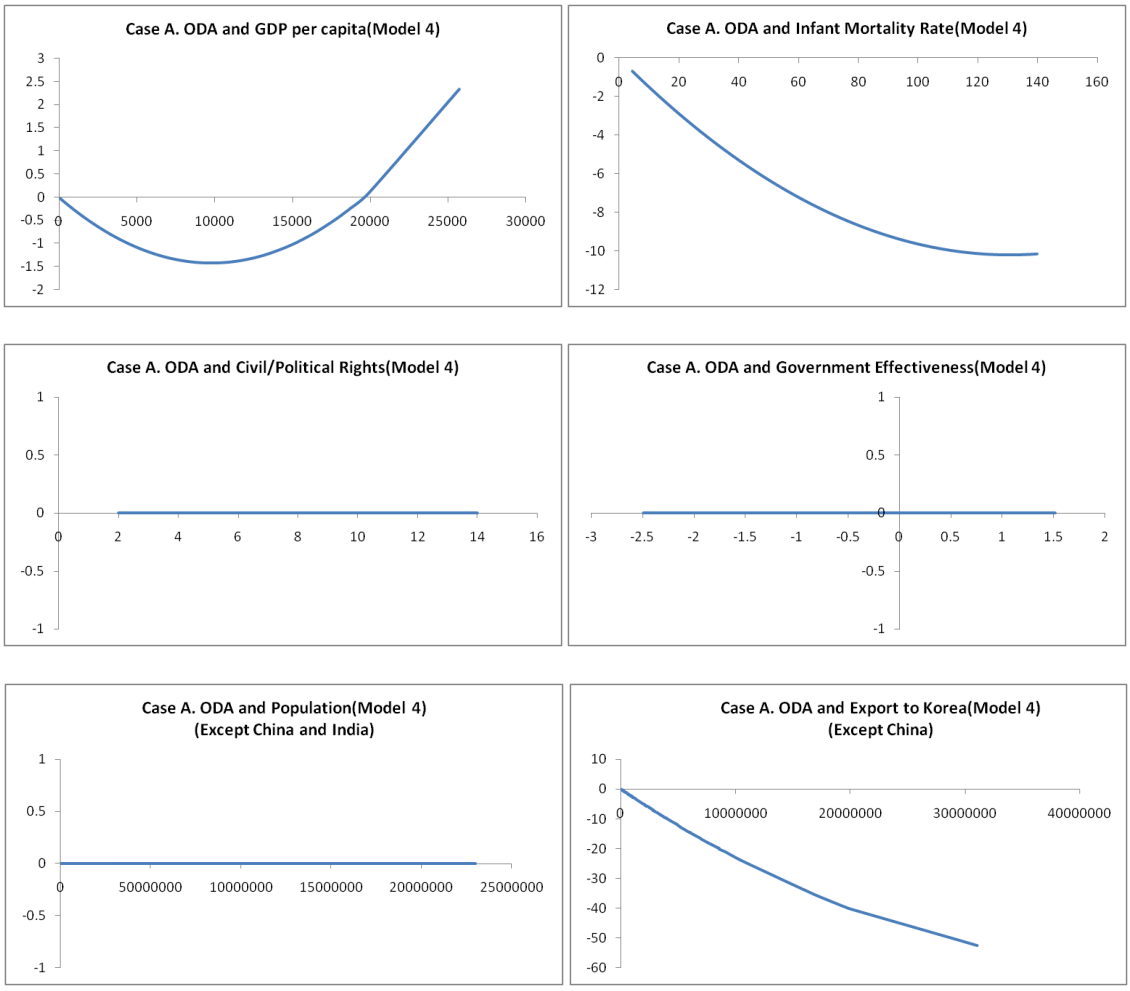
not significant. Import from Korea variable is significant but its squared variable is not significant. FDI variables are both significant with different sign each. Following graphs show the relationships between bilateral aid from Korea and each variable, using significant coefficients of model A-3.

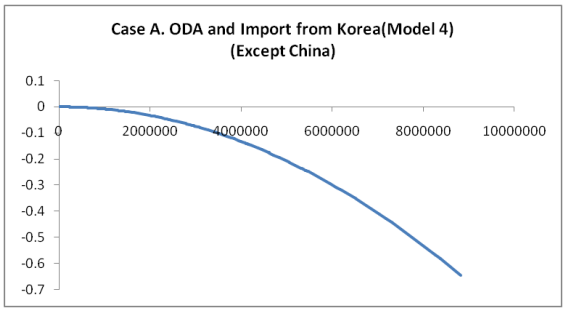
Figure 15. The Relationship between Real ODA from Korea and Recipient Variables of Model A-3

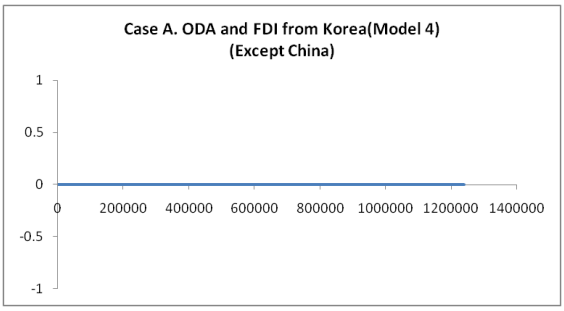


When the country fixed effect of recipient factors and donor interest model is controlled (hereafter, this model is called model A-4), the results drastically change. Among recipient factors, only GDP per capita variables and infant mortality variables turn out to be related to the bilateral aid of Korea. Export variables both show significance. Real import from Korea squared is significant with its t-value smaller than negative 2. No other variable among donor interest variables is significant. Following graphs show the relationships of variables in the model A-4.

Figure 16. The Relationship between Real ODA from Korea and Recipient Variables of Model A-4







2. Case B : Except Iraq and Afghanistan

The second case excludes Iraq and Afghanistan from case A, because the bilateral aids to those two countries were special cases for rehabilitation purposes. They may interrupt analyzing the general trend of Korean bilateral aid. After eliminating observations of Iraq and Afghanistan, 569 observations are left. In the previous case, Iraq provided 5 year observations, but Afghanistan provided only 4 year observations due to missing values.

Table 9. Sample statistics of Case B

Variable	Observation	Mean	Std. Dev.	Min	Max
RealODA(million)	594	2.849097	6.220807	-1.760828	52.48728
Real GDP per capita	659	3311.67	3609.045	107.8706	25733.99
Real GDP per capita squared	659	2.40E+07	5.44E+07	11636.06	6.62E+08
Infant mortality	675	42.58267	31.04843	4.4	134.2
Infant mortality squared	675	2775.86	3614.114	19.36	18009.64
Civil liberty & Political rights	669	8.484305	3.558553	2	14
Govt. Effectiveness	674	-0.4662855	0.6814037	-2.495002	1.514487
Population(thousand)	675	3.91E+07	1.50E+08	9694	1.33E+09
Population squared(million)	675	2.41E+16	1.84E+17	9.40E+07	1.77E+18
Real Export to Korea(thousand)	685	936607.7	5083469	0	7.08E+07
Real Export to Korea Squared	685	2.67E+13	2.75E+14	0	5.02E+15
Real Import from Korea(thousand)	685	1128376	6438596	0	8.41E+07

Real Import from Korea Squared	685	4.27E+13	4.82E+14	0	7.08E+15
Real FDI from Korea(thousand)	685	47418.6	305520.8	0	4937385
Real FDI from Korea Squared	685	9.55E+10	1.17E+12	0	2.44E+13

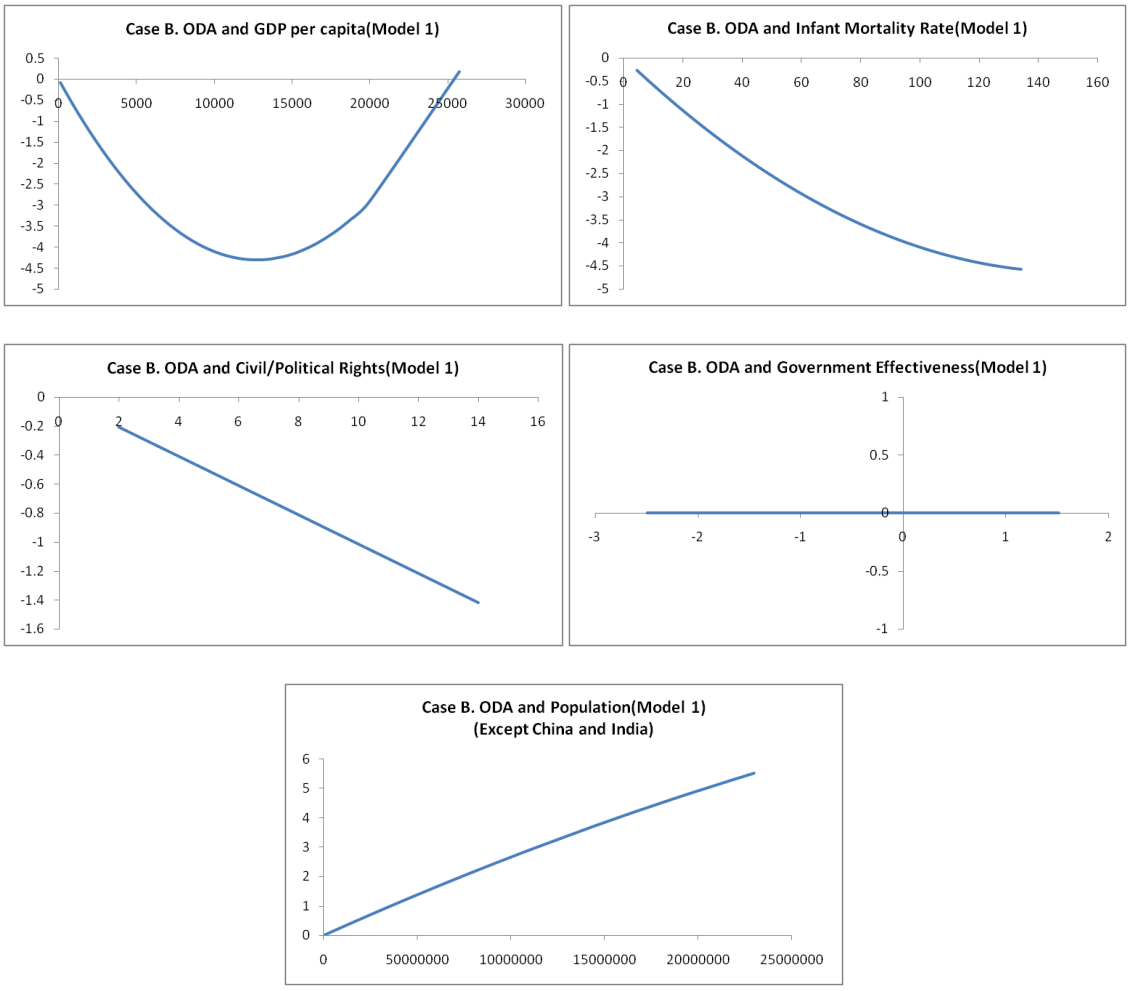
Table 10. Regression Result of Recipient Factors Model of Case B

Dependent variable : Real ODA from Korea (Year 2005 ~ 09)	Recipient factors model (Real : 2005년 기준)			
	no fixed effects		with fixed effects	
	Coefficient	t-statictic	Coefficient	t-statictic
Common intercept	5.036972	9.44	4.440358	1.24
2006 dummy	0.0147922	0.12	-0.0585376	-0.92
2007 dummy	0.4383017	3.36	0.2541886	2.99
2008 dummy	0.8911036	5.36	0.4079776	3.3
2009 dummy	0.6518071	3.8	0.3048623	2.26
Real GDP per capita	-0.0006747	-7.3	0.0000757	0.63
Real GDP per capita squared	2.65E-08	4.47	-5.75E-09	-1.35
Infant mortality	-0.061068	-6.29	-0.0613984	-1.47
Infant mortality squared	0.0002009	3.19	0.0004565	1.68
Civil/political rights	-0.1013626	-4.52	0.0757216	1.9
Government effectiveness	0.1007033	0.94	-0.0192326	-0.11
Population	2.86E-08	6.55	1.79E-07	5.14
Population squared	-2.02E-17	-5.13	-9.12E-17	-3.28

Compared with the result of regression model 1 of case A, model 1 of case B shows only a different result of one variable, government effectiveness. In the model A-1, the government effectiveness variable was significant with t-value of -4.6. However, it is not significant with t-value of 0.94 in the model B-1. All other variables except the government

effectiveness are significant in this model. Following graphs also show the relationships between bilateral aid from Korea and recipient factor variables.

Figure 17. The Relationship between Real ODA from Korea and Recipient Variables of Model B-1



If the country fixed effect of model B-1 is controlled, which stands for the model B-2, all variables show no significance except population variables. Population and population squared variables are significant with t-values of 5.14 and -3.28 each. Among the graphs below, only population graph shows significant relationship.

Figure 18. The Relationship between Real ODA from Korea and Recipient Variables of Model B-2

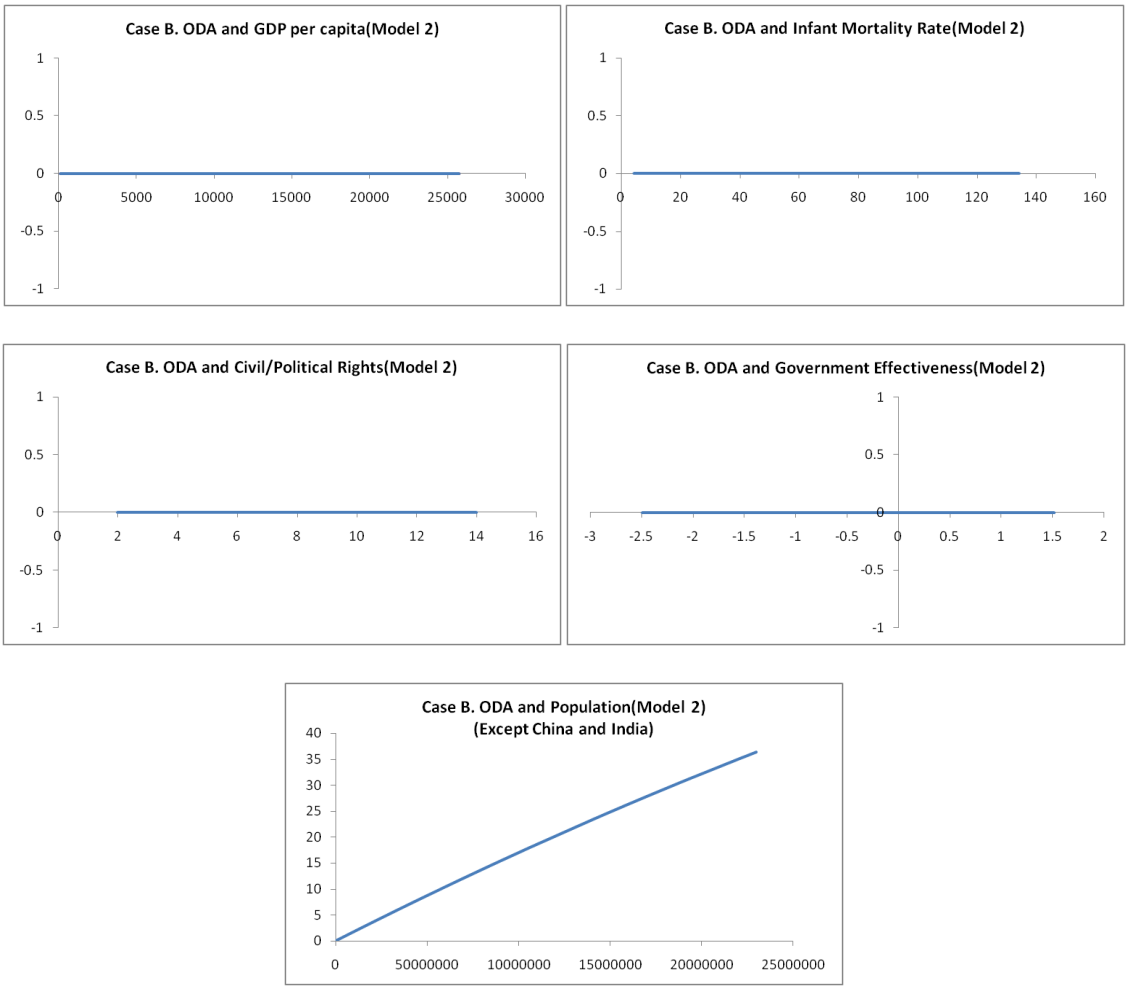


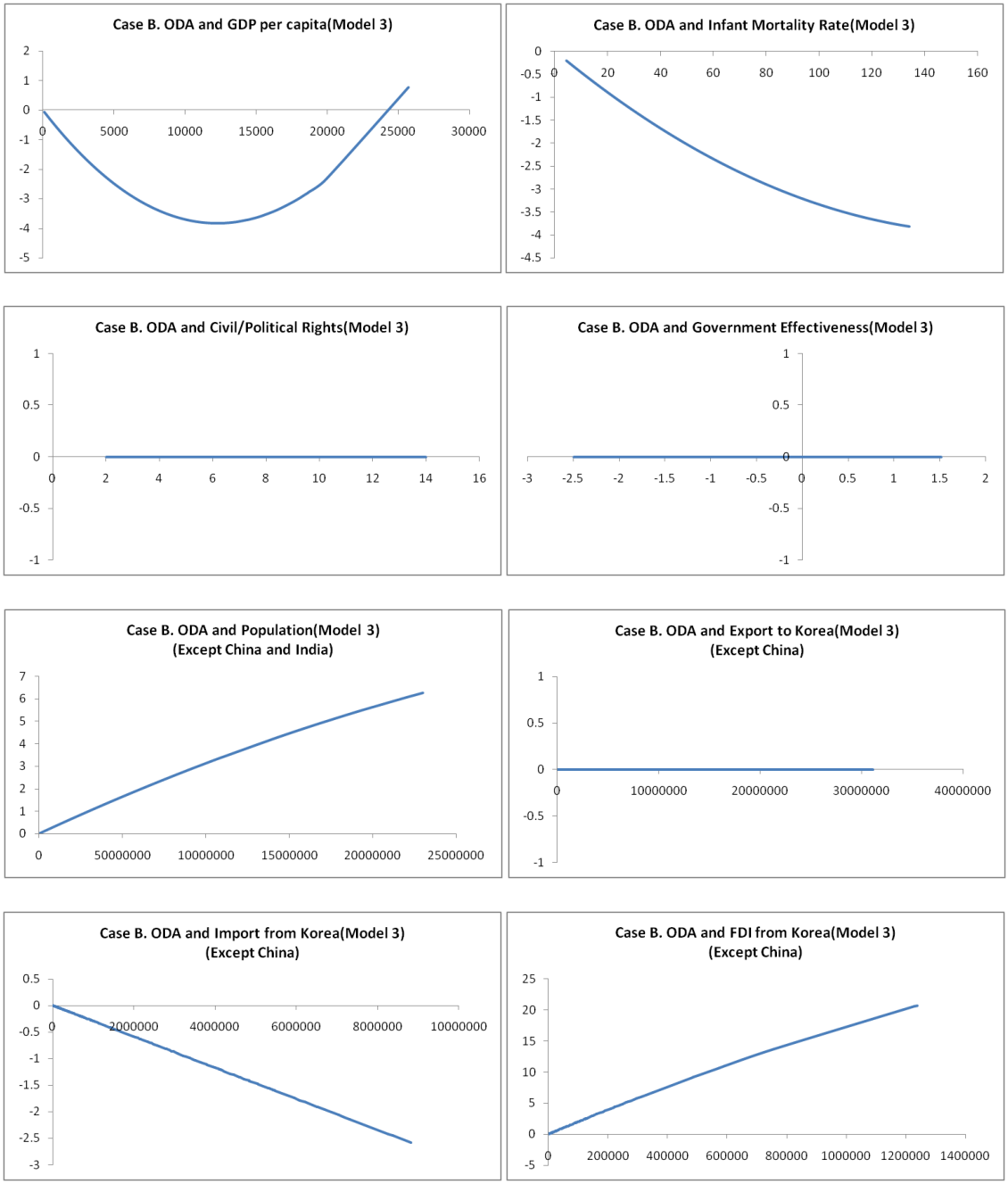
Table 11. Regression Result of Recipient Factors + Donor Interest Model of Case B

Dependent variable : Real ODA from Korea (Year 2005 ~ 09)	Recipient factors + Donor interests model (Real : 2005년 기준)			
	no fixed effects		with fixed effects	
	Coefficient	t-statictic	Coefficient	t-statictic
Common intercept	3.411719	7.43	4.591743	1.27
2006 dummy	-0.055626	-0.54	-0.0924047	-1.33
2007 dummy	0.2786745	2.57	0.1437472	1.69

2008 dummy	0.488127	3.44	0.1324506	1.15
2009 dummy	0.4750401	2.79	0.0882434	0.59
Real GDP per capita	-0.0006237	-7.36	0.0000947	0.73
Real GDP per capita squared	2.54E-08	4.27	-6.90E-09	-1.33
Infant mortality	-0.047782	-6.03	-0.0590754	-1.23
Infant mortality squared	0.0001439	2.88	0.0002854	0.94
Civil/political rights	-0.0031586	-0.13	0.0735465	1.34
Government effectiveness	-0.176906	-1.47	0.110053	0.53
Population	3.45E-08	9.1	1.78E-07	3.81
Population squared	-3.15E-17	-9.62	-8.57E-17	-4.16
Real Export to Korea	5.56E-08	0.98	5.05E-07	2.94
Real Export to Korea Squared	2.72E-16	0.12	3.19E-15	0.97
Real Import from Korea	-2.93E-07	-2.72	-2.59E-07	-1.67
Real Import from Korea Squared	5.19E-16	0.31	-6.98E-15	-2.31
Real FDI from Korea	0.0000203	6.85	7.27E-06	3.43
Real FDI from Korea Squared	-2.89E-12	-5.63	-1.41E-12	-3.74

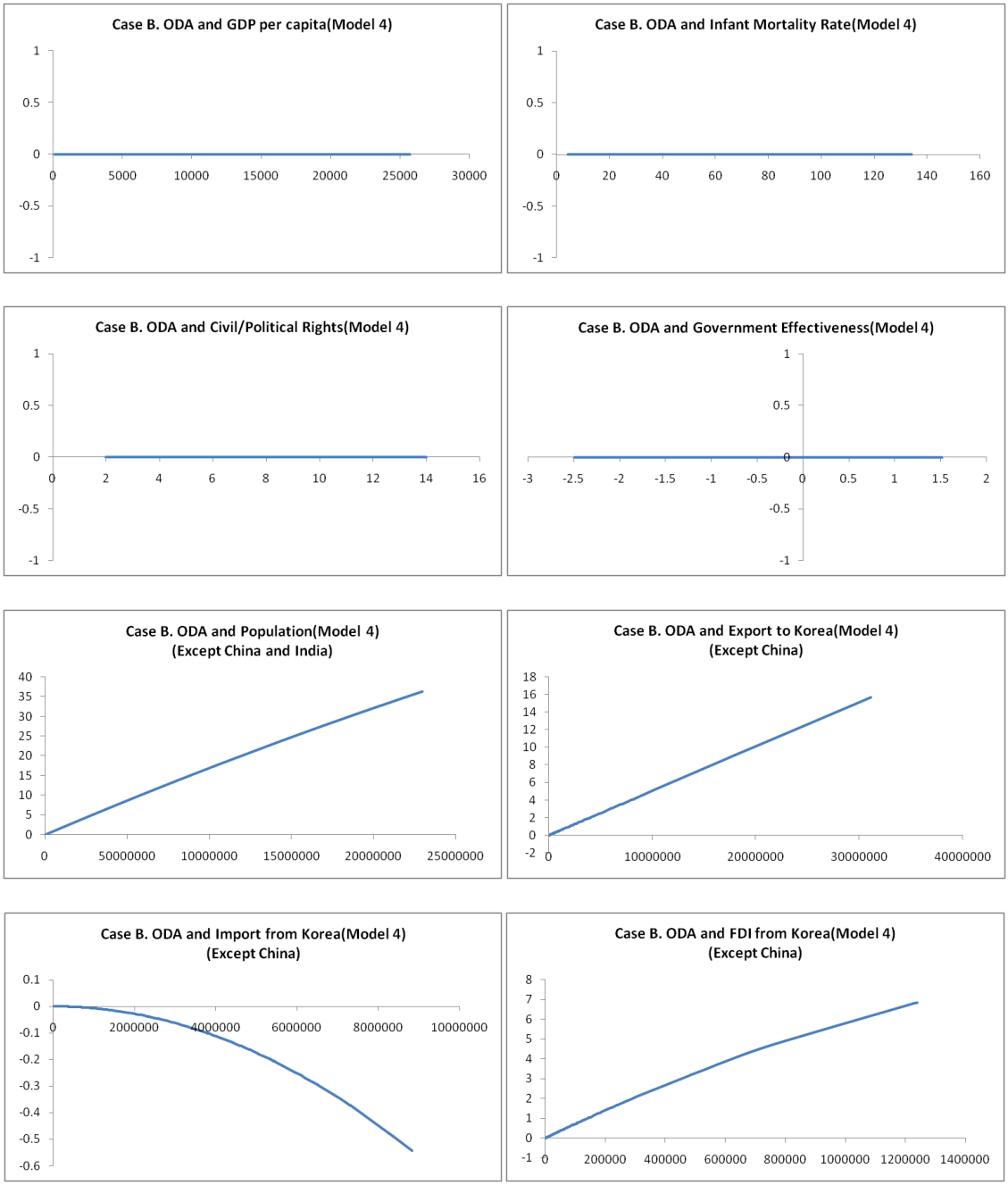
In the recipient factor and donor interest model of case B, Korean bilateral aid is responsive to some recipient factor variables and donor interest variables. Those recipient factor variables are real GDP per capita, infant mortality, population, and their squared variables. And the significant donor interest variables are real import from Korea, real FDI from Korea, and real FDI from Korea squared.

Figure 19. The Relationship between Real ODA from Korea and Recipient Variables of Model B-3



In the last model of this study, only population and its squared variable show significance among recipient variables. And aid is responsive to every donor interest aspect. Real export, real import squared, real FDI, and real FDI squared are significant variables among donor interest variables.

Figure 20. The Relationship between Real ODA from Korea and Recipient Variables of Model B-4



VI. Conclusion

According to the result of country fixed effect model of Bandyopadhyay and Wall (2007), the world ODA is clearly associated with recipient's conditions. As a recipient's GDP per capita increases, the country receives less aid from outside. As a GDP per capita gets over about 15 thousand dollars, however, the aid increases again. The ODA received also increases as the infant mortality rate increase, but it falls as the rate gets over about 110 of every 1,000 children. As the people of recipient country have better civil/political rights, and as the government is more effective, the country tends to receive more aid. The population of a recipient country also affects the aid received. As the population increases, the country also gets more aid. However, it starts to decrease as the size of population gets over about 500 millions.

However, Korea's aid does not clearly consider recipient's conditions. The models which best describe Korean bilateral aid trend are model A-4 and B-4 because they control recipient country fixed effect and include recipient factors and donor interest at the same time. If A-4 is considered to be a true model of Korea bilateral aid, there are some aspects needed to be improved for real altruistic contribution to the international community. Aid is responsive to only real GDP per capital and infant mortality rate among many recipient factors. The relationship between aid and GDP per capita is quadratic. As real GDP per capita of recipient country increases, the aid amount decreases. It seems that Korea considers recipient country's economic needs. However, as the real GDP per capita gets over about 10,000 US dollars, the aid starts to increase. Korea gives less aid to richer countries in low and middle income country group, but more aid to richer countries in high income country group. In the case of infant mortality, Korea gives more aid to countries with the lower rate. That is, Korea gives less aid to countries which have more serious physical needs. Instead of

considering other recipient factors, trade relationships are considered when giving aid. Korean bilateral aid is negatively responsive to both real export to Korea and real import from Korea. As Korea trade more, it tends to give less aid.

As mentioned earlier, including Iraq and Afghanistan may hinder exact analysis of Korean bilateral aid trend, because those countries are special case countries. Thus, the results of model B-4 may give us a more reliable snapshot of trends. According to the results of this model, Korean bilateral aid does not respond to any recipient factors except for population. Instead, it is responsive to all donor interest variables. As the recipient country exports more, it receives more bilateral aid from Korea. Real import from Korea variable has an opposite sign from real export from Korea variable. As it imports more from Korea, it receives less aid from Korea. Iraq is the biggest recipient country in the model of A-4, but its FDI investment volume from Korea is relatively small. Thus, as Iraq and Afghanistan are excluded from the data set, FDI variables show significance. Korea gives more bilateral aid, as it invests more FDI in the recipient countries.

This study shows that Korean bilateral aid is more responsive to economic interest of Korea than to recipient circumstances. As Korea became a Development Assistance Committee member, it is time to think of real altruistic role of Korea as a donor. Altruistic ODA which considers recipient circumstances is a fundamental behavior of true donors in the international community, not to mention Millennium Development Goals or Paris Declaration on Aid Effectiveness. There is a limitation of this study. The study does not find if the responsiveness of Korean bilateral aid to its economic interests is led by any Korean government policy. Certain policies may have affected the responsiveness, or there may have been no cause of the responsiveness. However, the most important factor is that Korea bilateral aid is more responsive to donor interests than to recipient conditions. This may be seen as an egoistic behavior to other members of the international society. To avoid this

egoistic image and to play a humanitarian role of DAC member country, Korea should know how much its recipient countries need physical and economical assistance from outside. Korea should also consider how effectively its recipient countries can use assistance from outside. All these aspects should be counted in the ODA strategy of a donor country of DAC.

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우리WON 우리은행

거래별 상세내용

인쇄

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